

**ITATUBE**

# Journal

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# Greetings from Dr. Gunther Voswinckel President International Tube Association (ITA)

Dear Reader,

As I write this edition's Editorial column, preparations are coming to a peak for the highlight of our year: the ITA Conference, due to take place in Düsseldorf from the 7 – 8 November, 2017, with the focus on "How to stay competitive in difficult times".

Research reports tell us global tube and pipe markets are projected to display sustainable growth represented by a CAGR of over 3.55% during 2017 – 2022, primarily driven by rising energy demand and the production of vehicles. Nonetheless, profit margins in some market segments are being squeezed "to unacceptable levels" by increases in production costs. And developments in the USA, where the administration seems determined to install rigid protectionist measures to shield its own steel markets, are causing further uncertainty.

The ITA Conference brings together decision makers and industry specialists from all over the world. As such, it is an excellent opportunity to discuss these issues, to present and promote your products and services to the tube and pipe industry, and to develop ties with further potential customers.

There is an extensive and varied program of specialist talks and a foyer exhibition to complement the Conference sessions and provide an opportunity for one-to-one discussions with suppliers and producers

during breaks and lunch. It's also worth mentioning that the highlights of the Conference are two works tours on November 8: one at the Vallourec plant in Düsseldorf, and one at the EUROPIPE mill in Mülheim. Be there and get connected with other experts and specialists from your field. Visit [www.conference.itatube.org](http://www.conference.itatube.org) for details.

Should you have the misfortune to miss out on this premium networking opportunity, it's to be hoped you and your colleagues have managed to obtain a spot at the next major industry event, Tube Düsseldorf. Held here at the Düsseldorf exhibition grounds from 16 – 20 April, 2018, this is "the world's most important trade fair for the tube and tube processing industry and the central hub for international business". Most exhibitors have already booked their places and preparations here, too, are well underway.

At this and all other main events on the pipe and tube industry calendar, the ITA booth and other hosting and marketing opportunities are fully available to you. And whilst we're on the subject: ITA members have the option of publishing press releases and specialist articles free of charge in our publication, ITAtube Journal, which is available in both hardcopy and online versions. A large range of advertising options is available to both members and non-members. Visit [www.itatube.org](http://www.itatube.org) for more information.



*Dr. Gunther Voswinckel  
President ITA*

We near the end of 2017, a difficult year, and many of its uncertainties look likely to continue into 2018 and beyond. Predictions aren't entirely gloomy, but as Hillary Clinton – loosely quoting Benjamin Franklin – said: "Fail to plan, plan to fail". The ITA is nothing without its members and if we can help you Plan to Succeed, we're doing our job.

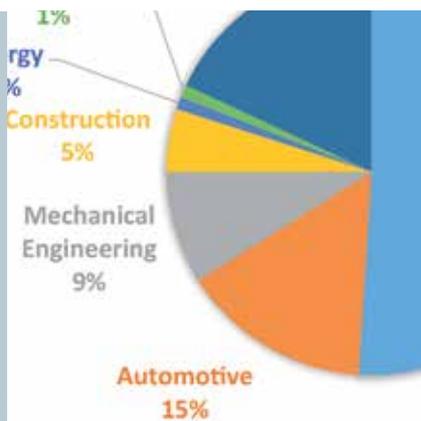
So we hope to see you at our ITA Conference and the many other events to come, for fruitful discussions and future plans. In the meantime, stay with us, stay informed!

Yours sincerely,

Dr. Gunther Voswinckel

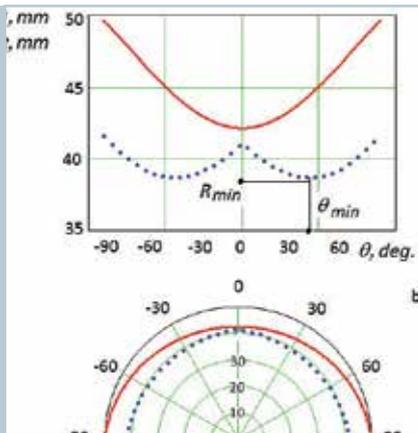
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*Mair Research has supplied a new finishing line for a high productivity CW Mill in the USA*



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# World Steel Tube Production – Forecast

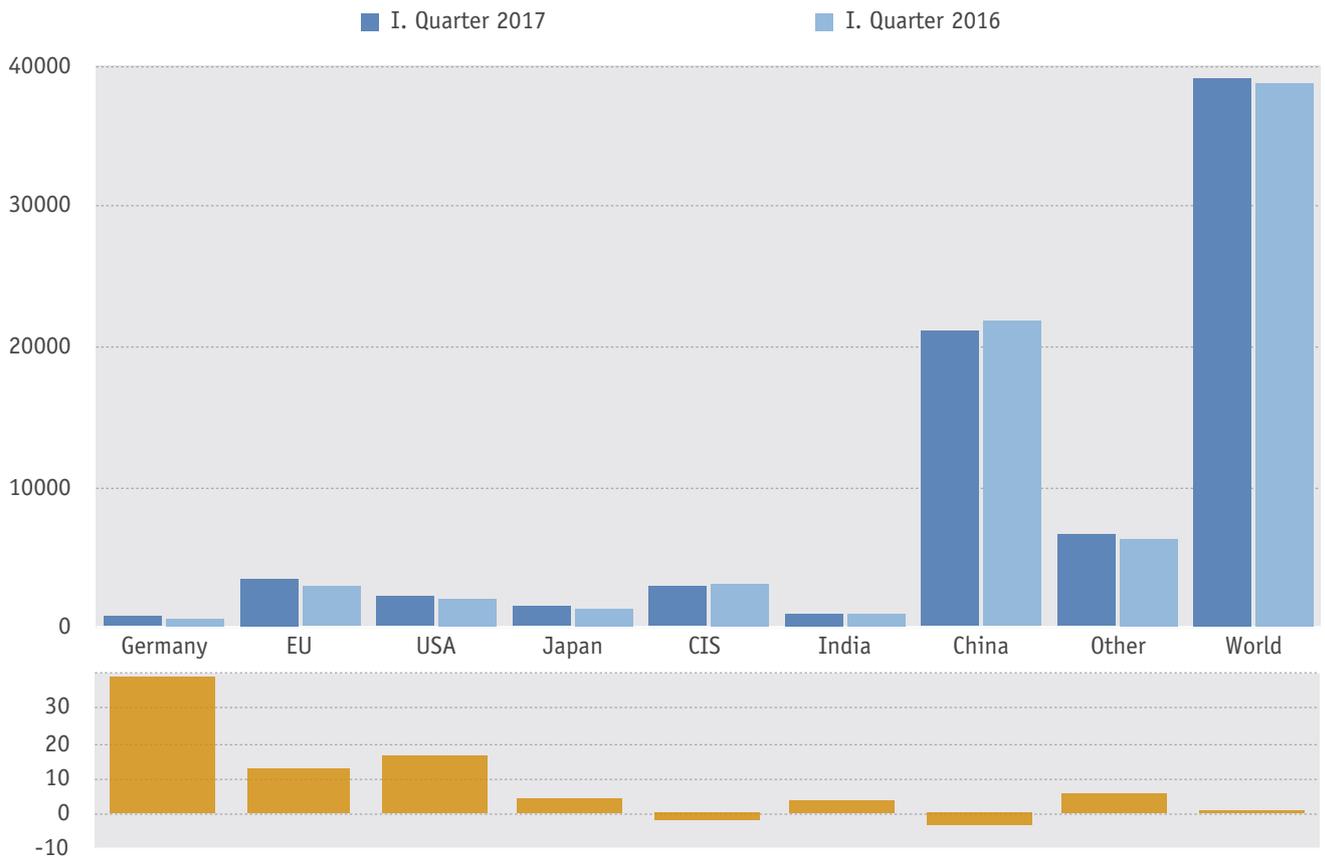
In the first Quarter 2017 the World Steel Tube Production reaches 39.1 million tons, an increase of 1.3%. The production of seamless tubes increased down 7.0 % to 9.9 Mio

to, significant is the increase in the USA with 81.6 %.

Germany reached with an increase of 111.2 % a positive result in the large diameter pipe market.

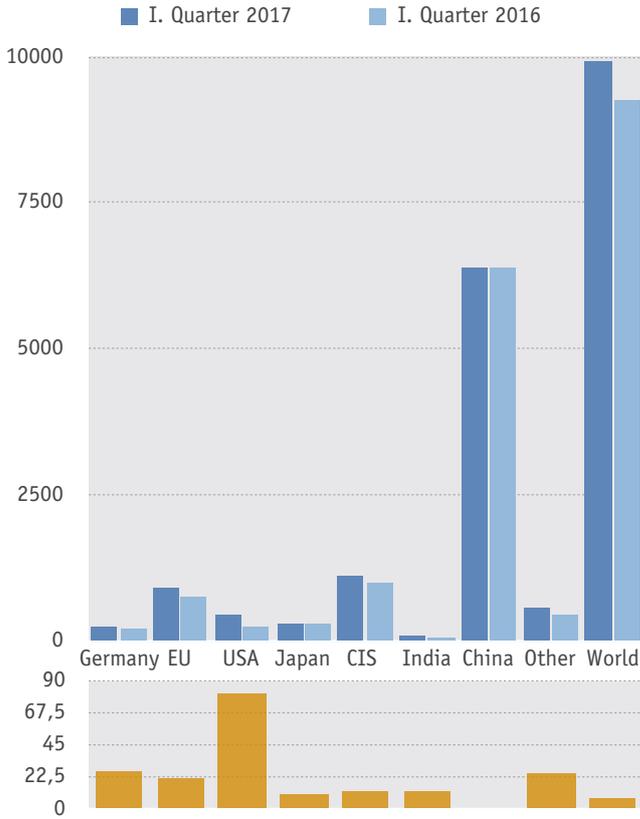
EU steel tube producers achieved a production of 3.4 million metric tons, a plus of 13.4 %

## Total in Tto.

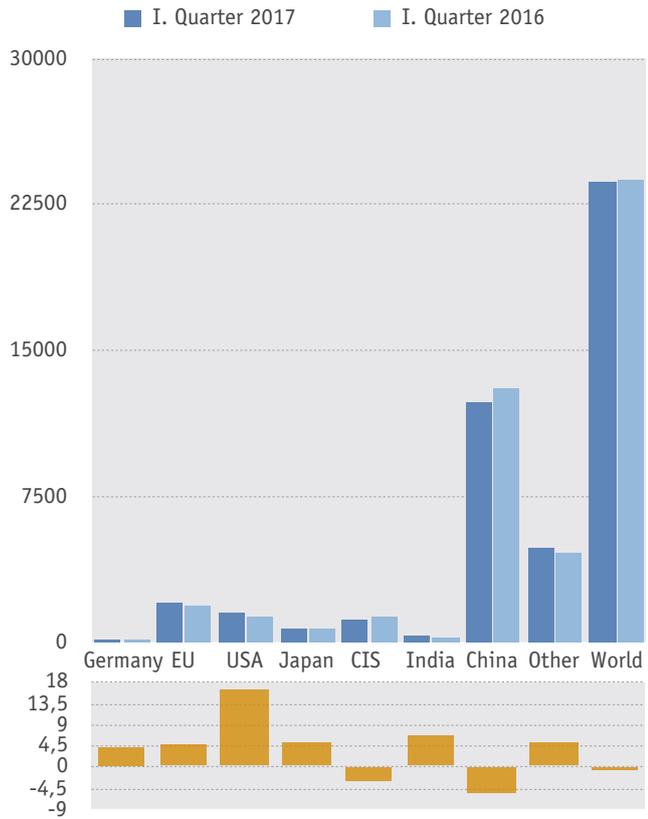


Region/ country	seamless tubes			welded tubes <406			welded tubes >406			welded tubes			TOTAL		
	I. Qtr 2017	I. Qtr 2017	Change in %	I. Qtr 2017	I. Qtr 2017	Change in %	I. Qtr 2017	I. Qtr 2017	Change in %	I. Qtr 2017	I. Qtr 2017	Change in %	I. Qtr 2017	I. Qtr 2017	Change in %
Germany	288	227	26.9	232	222	4.5	302	143	111.2	534	365	46.3	822	592	38.9
EU(+Germany)	932	765	21.8	2,107	2,009	4.9	412	269	53.2	2,519	2,278	10.6	3,451	3,043	13.4
USA	454	250	81.6	1,641	1,406	16.7	247	348	-29.0	1,888	1,754	7.6	2,342	2,004	16.9
Japan	324	292	11.0	839	796	5.4	361	372	-3.0	1,200	1,168	2.7	1,524	1,460	4.4
CIS	1,121	998	12.3	1,307	1,344	-2.8	607	738	-17.8	1,914	2,082	-8.1	3,035	3,080	-1.5
India	95	85	11.8	400	375	6.7	500	500	0.0	900	875	2.9	995	960	3.6
China	6,400	6,400	0.0	12,450	13,150	-5.3	2,350	2,350	0.0	14,800	15,500	-4.5	21,200	21,900	-3.2
Other	578	464	24.6	4,899	4,652	5.3	1,168	1,139	2.5	6,067	5,791	4.8	6,645	6,255	6.2
World	9,904	9,254	7.0	23,643	23,732	-0.4	5,645	5,716	-1.2	29,288	29,448	-0.5	39,192	38,702	1.3

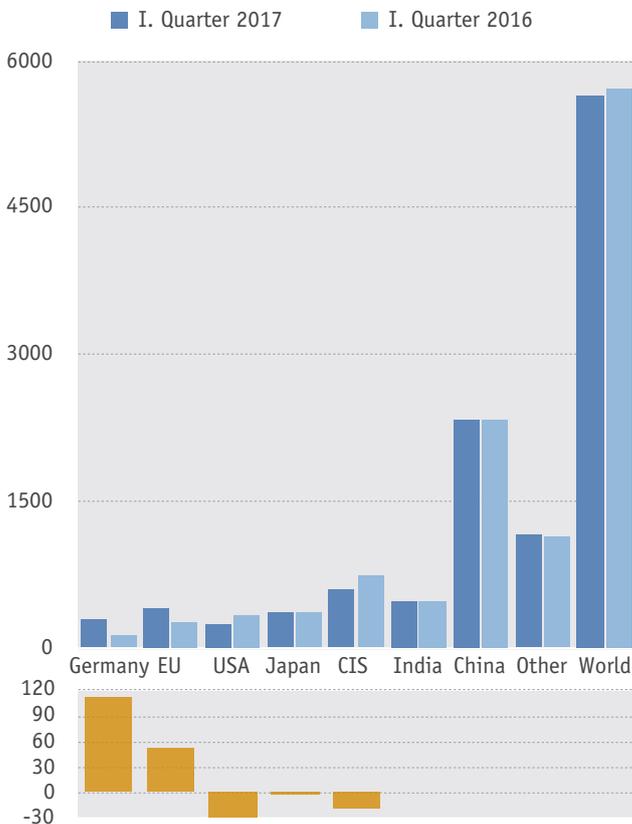
Seamless tubes in Tto.



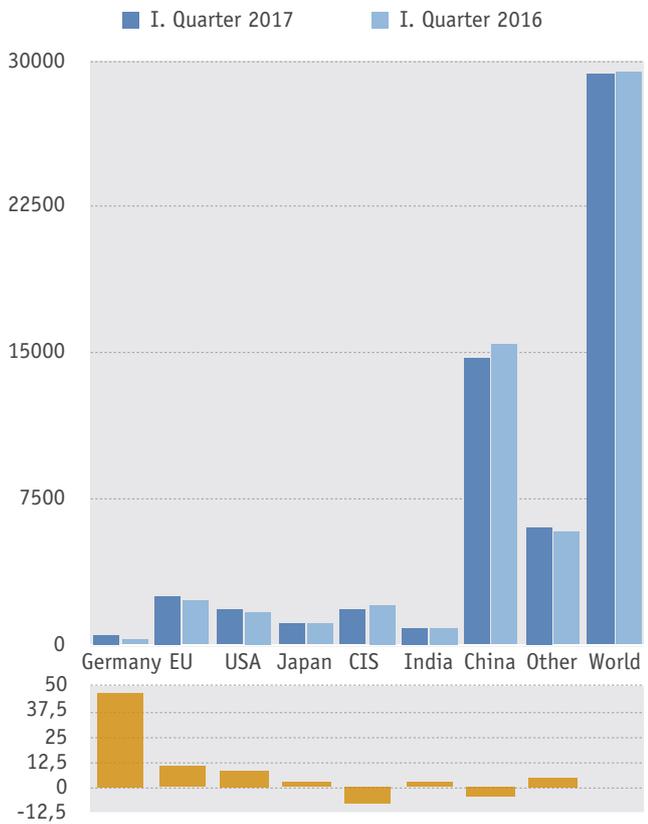
Welded tubes <406 in Tto.



Welded tubes >406 in Tto.



Welded tubes in Tto.



Dr. Gunther Voswinckel, VOSCO GmbH

# Pipe & Tube Market – some influencing factors on the present situation

**Dr. Gunther Voswinckel – Update as per August 2017**

Oil prices are still low despite OPEC attempts to stabilize them by agreeing on crude oil pumping levels. Several important oil-producing countries have refused to stick to their agreements and in consequence, after a brief recovery period prices fell again this August 2017 to 52 US\$. Analysts predict that prices are likely to fall still further. The crude oil stock in the US decreased by about 9 million barrels in the second week of August 2017. Most oil and gas exploring countries have seen their earnings drop dramatically compared to 2012 to 2014 and some are facing severe financial problems due to their lack of income from this industry.

In this presentation, several other economic consequences for the pipe and tube industry are discussed. Pipe and tube markets such as the automotive, building and construction industry are attractive market segments for our industry, and we look at developments there.

World production of steel tubes extrapolated from the 1st quarter 2017 shows a reduction of 6%, whilst in contrast a growth margin of 19% is reported for the USA, supported by political trade barriers for tubular products.

For welded tubes below 406 mm diameter, the 1st quarter 2017 has seen a production downturn overall of 11%. The US is reporting growth of 21% after major losses in 2016 (-18%). On the other hand China is facing a decrease of 9%. For welded tubes of 406 mm or larger, 1st quarter production in 2017 showed an overall decrease of 7%. But Europe (+51%) showed remarkable production increases. For seamless tubes, the 1st quarter 2017 has seen production shrink by 3%. The USA on the other hand, after a bad year in 2016 (-22%), has made an extraordinary swing to a production increase of 53%.

This is a remarkable change in trend; for the second time in several years, the shift of tube production capacity to China has been reversed in favor of the USA and Europe. It would seem that the trade barriers policy is having an effect.

Meanwhile, over-capacity is leading to further consolidation in the steel tube industry. The pipe price index rose in 2017 from 260 in January to a peak of 300 in April, then dropping again slightly to stand now, in August, at 290. Competition in saturated markets is prompting minor investments in those tube markets that display growth. Demanding high-tech products are the strategic targets rather than commodity-grade tubes.

Tube suppliers located in high-cost countries are successfully taking steps to counter the strong international competition. As well as seeking to specialize in products with higher technical requirements, they are globalizing into markets with increased demand, and increasing their productivity to reduce the costs of production.

Finally, we also discuss the impact of currency exchange rates on the pipe market: Whilst exports from the eurozone were favored in 2016, the euro has been considerably strengthened in 2017, giving rise to export disadvantages due to its exchange rate with the other major currencies.

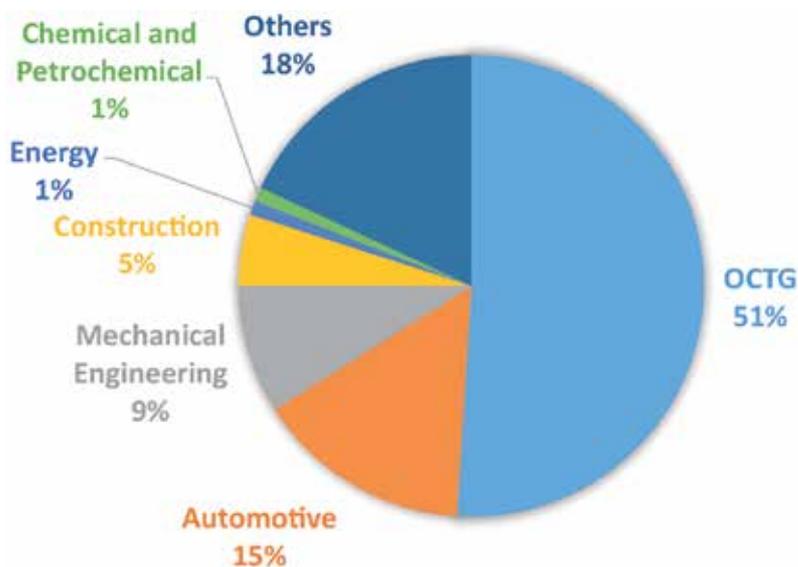


Fig.1: Markets for Steel Pipe Industries in 2012

Source: ITAtube Journal/Wirtschaftsvereinigung Stahlrohre e.V.

Looking at the main market segments for steel pipe suppliers, this market is dominated by the OCTG industry (51%). The automotive (15%), mechanical engineering (9%) and construction industries (5%) are also strong market segments for the sector. (Fig.1)

World car production levels grew by about 1.7% in 2015 (Fig.2). Seen regionally, growth rates differed considerably, with Europe (+3.5%), Nafta (+2.6%) and Asia (+2.6%) - dominated by China (+7.4%) - offset by the Mercosur market (-20%) (Fig.3). The attractiveness of the automotive market with its remarkable growth is exemplified by the German car market, which showed remarkable growth of 13% from May 2016 to May 2017. Since pipe usage in cars continues to increase, the automotive market is likely to remain an attractive market segment for pipe producers for some time to come.

The tube and pipe market in the building and construction industry is smaller, but also quite attractive due to a world industry growth of about 3.3 % per year (see also ITAtube Journal IV 2015). Urbanization and population growth are the driving factors here.

In the 1st quarter of 2017, world steel tube production was once again dominated by China (54%) followed by Others/RoW -Rest of World- (17%) (Fig.4). China's domination was reduced by 5% from 59% in 2016; this was counterbalanced by slight growth in: RoW, (+2%), EU (+1%), USA (+1%) and CIS (+1%).

In 2013, Middle East OCTG producers headed by Saudi Arabia started to pump more oil. (As cost leaders they are very price elastic and so can withstand the impact of low oil

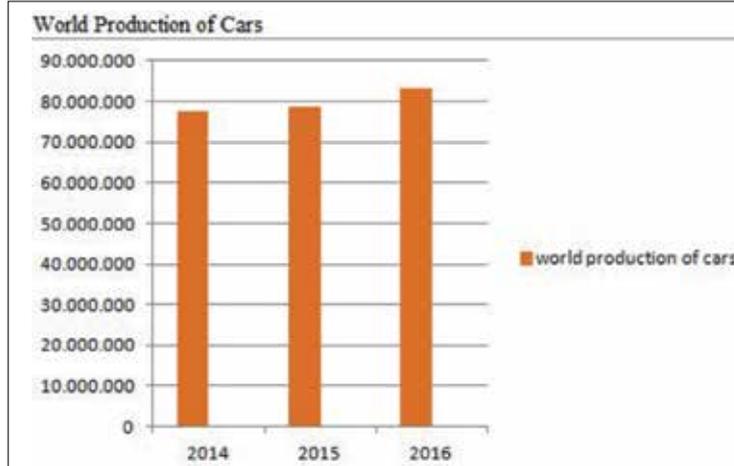


Fig.2: World Car Production 2014-16. Source: German Association of the Automotive Industry (VDA), 09 January 2017.

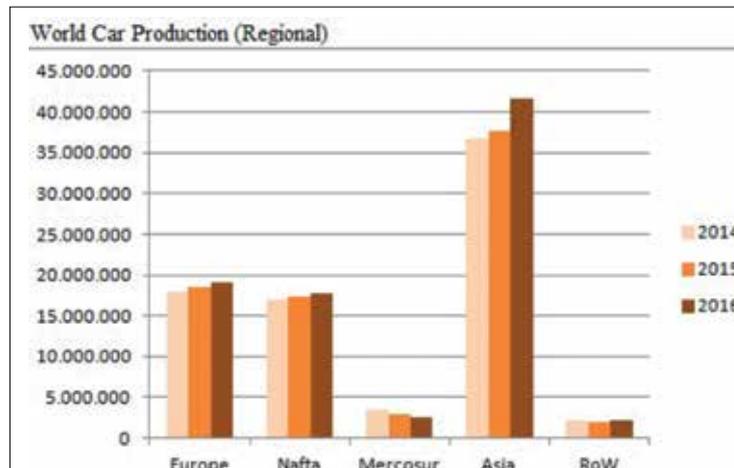
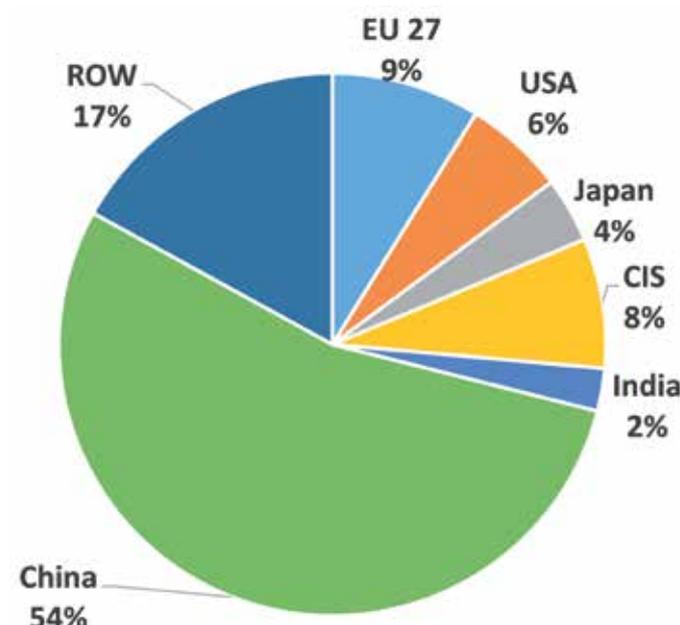


Fig.3: World Car Production by Region 2014-16  
Source: German Association of the Automotive Industry (VDA), 9 January 2017.



Global Steel Tube Production by Geography 1st quarter 2017  
Source: ITAtube Journal/Wirtschaftsvereinigung Stahlrohre e.V.

# Market information

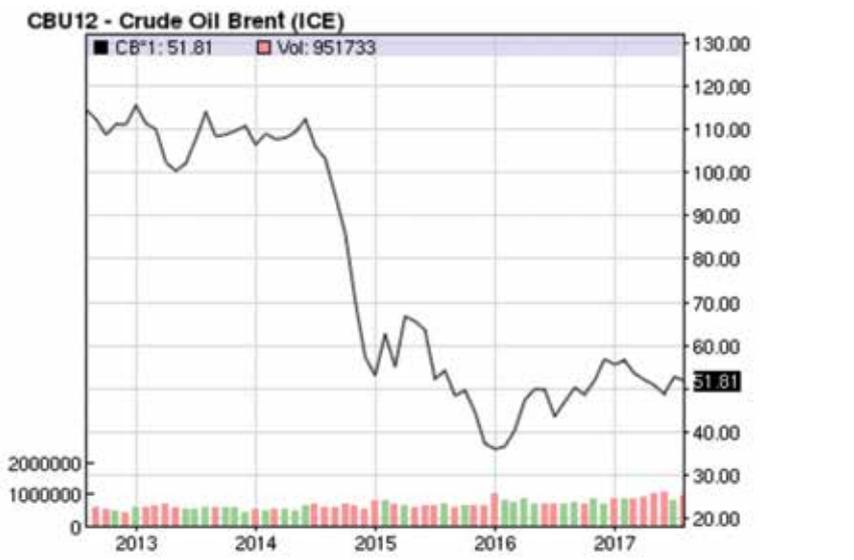


Fig.5: Crude Oil Brent Price as per 11 August 2017. Source: NASDAQ

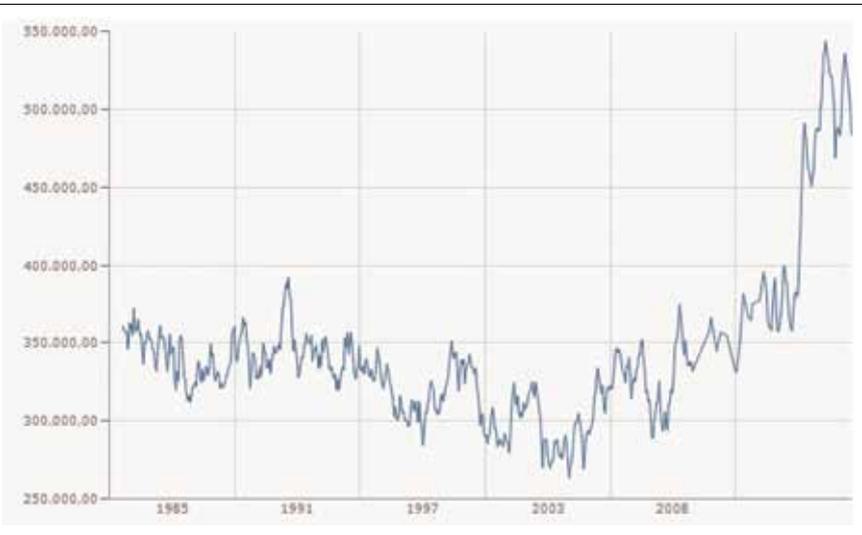


Fig.6: US Crude Oil Stock volume as per 15 August 2017. Source: EIA

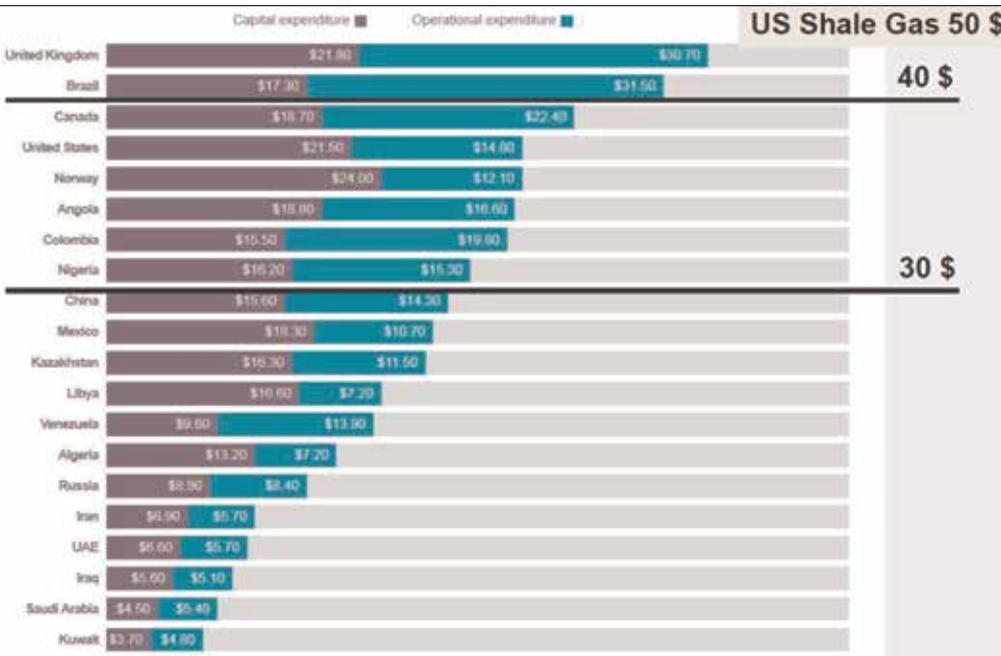


Fig 7: Cost to Produce a Barrel of Oil  
Source: UCube by Rystad Energy, published 23rd November 2015

prices while still maintaining positive margins.)

As a result, in the second half of 2014 oil prices fell dramatically, dropping from 110 US\$/barrel to 36 US\$ in February 2016. Since then, the price has recovered slightly, hitting 52 US\$ in August 2017 (Fig. 5). But the OCTG market is still seriously impacted by the fall in prices and analysts predict further price tumbles. This is indicated by the fact that the crude oil stock volume in the US has lately been reduced by about 10% (Fig. 6), most recently in just the second week of August 2017 by about 9 million barrels. Normally if rising crude oil prices are expected, the storage volume increases whereas falling crude oil prices lead to an erosion of the crude oil stock volume.

Given that many oil exploring countries have production costs in the range of 30 to 40 US\$, it is clear that the industry is reacting with the utmost sensitivity to the present oil price developments (Fig.7).

In addition, the entire shale gas exploring industry, still considered a highly attractive industry segment in 2014, is having a hard time since, notwithstanding optimization (from 60 US\$ down to about 50 US\$), production costs are still just 2 US\$ lower than the current price offered for crude oil by the market. Some US-based shale gas producers therefore, profiting from the positive business climate of the past months, have been hedging their oil in order to sell in the future at higher prices. In consequence, shale gas production has been increased.

Some countries, trying to compensate for income losses related

to oil exports, increased their oil production level and consequently also increased their exploration activities – resulting in remarkable OCTG tube consumption. This put even more pressure on the oil price but has kept the pipe market buoyant.

On the other hand, OPEC announced a reduction in their oil supplies at the close of 2016 and in addition, US crude oil inventories fell sharply (Fig.6). Despite this announcement, oil production is still high (July 2017 32 million barrels), driven by producers such as Libya and Saudi Arabia. However, China's oil imports are at their lowest level this year.

Of course, many exploration firms can only pump oil or gas with minimal margins at this price level, and so have reduced their exploration activities for oil and gas. This trend had an immediate effect on the OCTG pipe consumption. This month the pipe price index, which had climbed since January 2017 by about 15% (Fig.8), fell back by 3%. Traders' moves to carefully restock, a positive signal much in evidence at the close of 2016, fell off again this year.

These dramatic pipe price corrections have certainly left their mark on global steel pipe production (Fig.9). 2016 was considered a no-growth year. In the 1st quarter 2017, world tube production was further reduced (down 6%). Looking at numbers by region, it can be noted that only China (-13%) had a significant downturn in pipe production. All other regions more or less increased their pipe production (US +19%, EU +11%, RoW +6%, India +5%)

The most significant variations are reflected in the market segment of



Fig.8: Producer Pipe Price Index 14th April 2017 (January 1982 = 100%)  
 Source: US Bureau of Labor Statistics/ Federal Reserve Bank of St. Louis

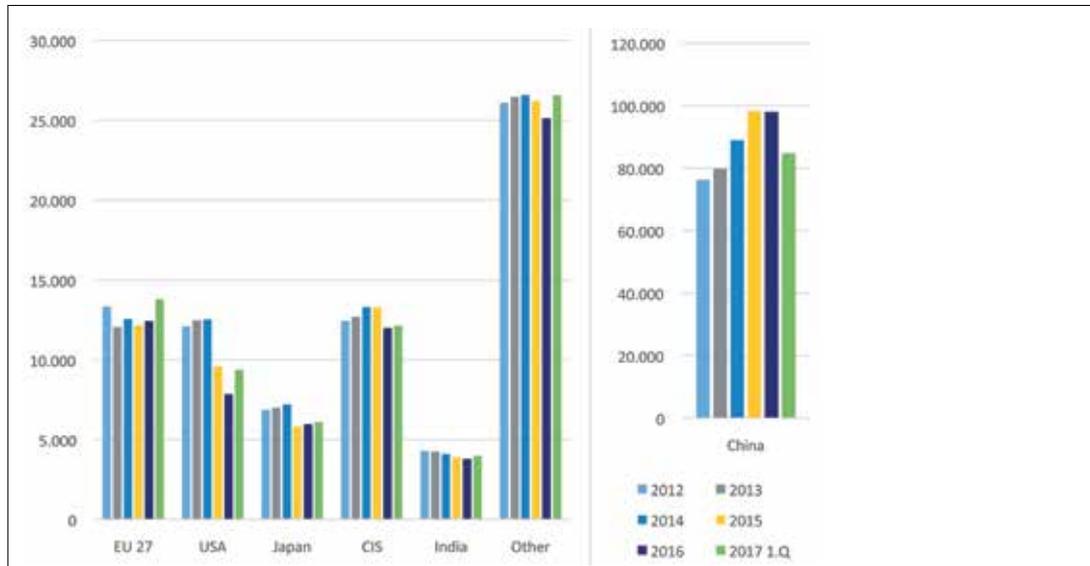


Fig.9: World Steel Pipe Production in Tons  
 Source: ITAtube Journal/Wirtschaftsvereinigung Stahlrohre e.V.

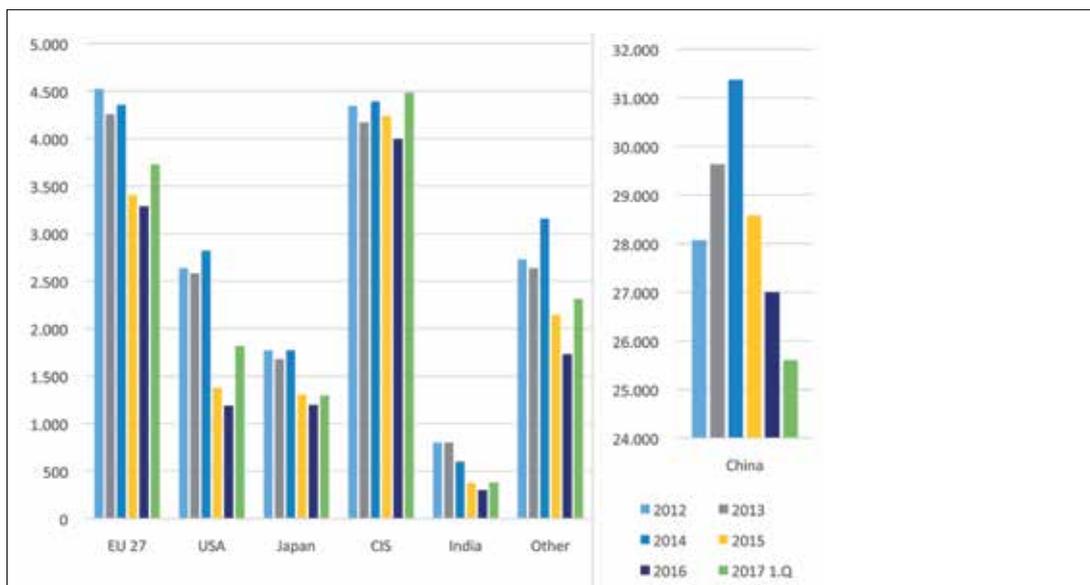


Fig.10: World Steel Pipe Production in Tons (seamless)  
 Source: ITAtube Journal/Wirtschaftsvereinigung Stahlrohre e.V.

## Market information

seamless pipes and tubes (Fig.10). Global production volumes, extrapolated from the 1st quarter 2017, fell by 3%, dominated by the largest fall in China (-5%). All other tube-producing territories managed to increase their production in 2017. This trend was led by the US (+53%), followed by other territories/RoW (+34%), India (+27%), EU (+13%), and CIS (+12%).

The production of welded pipes < 406 mm OD is facing an even larger worldwide production volume decrease in the 1st quarter 2017

(-11%). China again reported the most significant decrease (-19%). The CIS region also reported a decrease (-9%) but all other regions reported production volume growth: US (+21%), India (+7%) and Europe (+5%) (Fig.11).

Numbers for welded pipes ≥ 406 mm OD, large diameter line pipe, showed a production decrease of 7%, extrapolated from the 1st quarter 2017, dominated by losses in the US (-18%). This trend reflects the decreased demand for pipelines in these regions. The pipeline market is dominated by large pro-

jects, which are mostly politically driven. Europe (+51%) managed to considerably increase production and have again strengthened their position as technologically advanced producers of large diameter line pipe tubes (Fig.12). The new US government has recently started to place import duties on line pipe imports in order to protect US line pipe producers; it seems so far this political signal has not had the desired effect on the US pipe production.

In the entire scenario, currency exchange rates have also had a significant impact on pipe exports and pipe manufacturing machinery exports throughout the world.

Since the second half of 2014, the euro has lost about 20% against the US Dollar (US\$) (Fig.13). Throughout 2016, the euro held its value against the US\$ at a level of about 1.07 but this far into 2017 the currency has strengthened by about 10% to 1.18. This does of course mean reduced imports into the US.

At the same time, in 2017 the exchange rate of the euro to the Chinese yuan has gained about 10%. This means that exports from PR China now have a 10% price advantage, which will probably help to compensate for some of the production losses China was suffering from in the 1st quarter 2017.

The value of the Russian ruble lost about 16% in the first half of 2017. As a result, imports into Russia became more expensive again and this meant that local pipe production had to serve Russian pipe consumption needs as far as possible, in order to compensate for the drop in imports (Fig.14).

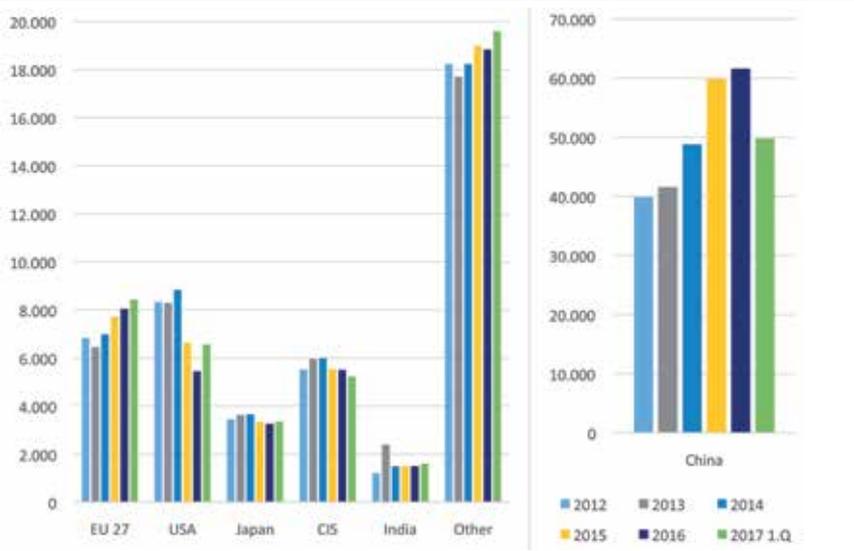


Fig.11: World Steel Pipe Production in Tons (welded < 406 mm OD)  
Source: ITAtube Journal/Wirtschaftsvereinigung Stahlrohre e.V.

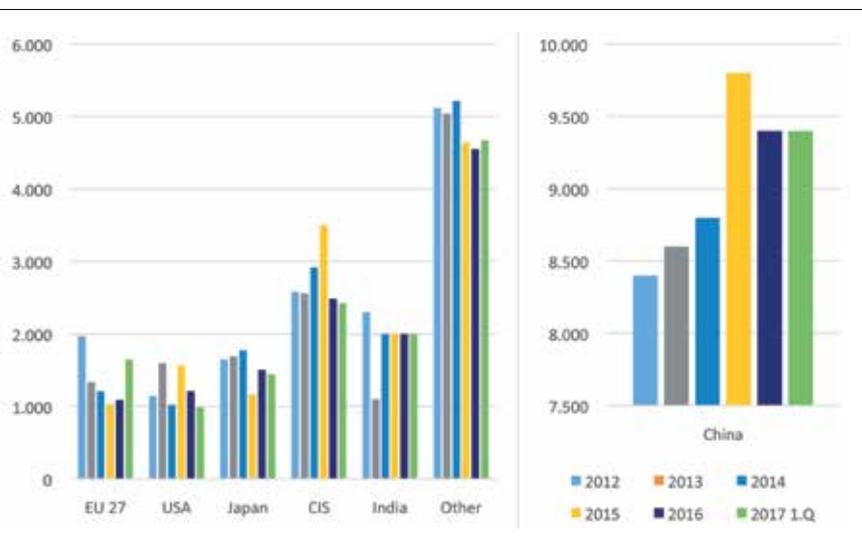


Fig.12: World Steel Pipe Production in Tons (welded ≥ 406 mm OD)  
Source: ITAtube Journal/Wirtschaftsvereinigung Stahlrohre e.V.

The exchange rate of the euro to the Saudi Arabian riyal (SAR) gained about 10% from January 2017 (4.0) to August 2016 (4.4).

Exchange rate developments from 2014 have meant that imports from Europe to Saudi Arabia became significantly less expensive. This trend of course meant an increase in euro-zone imports into Saudi Arabia. As predicted in my last reviews in the ITAtube Journal in February 2017, European pipe producers/exporters in particular took advantage of this effect as expected.

What measures are pipe producers and pipe production equipment suppliers taking to overcome current difficulties and to generate sustainable business?

Over-capacity is leading to consolidation in the steel tube industry. Several pipe-producing companies are still looking into overcoming such capacity problems by closing production facilities with a questionable economic future.

Still, despite the remarkable problems in the USA, globalization into markets with increased demand remains one of the key answers. The Middle East and locations with major automotive production are to be considered. Besides this, shale gas exploration, deep-sea offshore exploration and oil sand exploration remain major challenges to our industry.

Price competition from China and elsewhere demands further specialization in products with high technological demands. This applies in particular to regions with high production costs. The producers now seem to have evaluated their market approach and decided to serve commodities or high-tech products even if they only represent niches. Some countries/



Fig.13: Currency Exchange Rates vs euro as per 11 August 2017  
Source: Finance.net



Fig.14: Currency Exchange Rates vs euro as per 11 August 2017  
Source: Finance.net

regions have also installed trade barriers to control imports from other countries.

Finally, every producer has to make permanent improvements to increase productivity and reduce production costs. Technology suppliers should find interesting business opportunities in this field.

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SMS digital GmbH

# Smart Alarm – an intelligent SaaS solution for alarm handling



*Smart Visualization according to machine tree, showing clearly the duration of each alarm and aggregating alarm information to the next higher machine tree element. User-specific priorities can be set and unnecessary alarms can be suppressed.*

Alarm and warning messages contain valuable information about the health status of a plant or machine, which is of vital importance for the constant monitoring of their condition. Thus, a big potential lies within the intelligent usage of existing machine data and in new ways of software development. SMS digital takes up this challenge to stay competitive by facing the process of digitization and industry 4.0.

Shaping the next industrial revolution with you – that is the slogan of SMS digital GmbH. Founded in May 2016 by SMS group as an independent start-up, SMS digital (my.sms-group.com) develops new digital applications in close collaboration with their customers. To face the fourth industrial revolution, they pursue a user-centric

approach and put themselves in the position of the customers to truly understand their issues. Thereby they act according to the principle of Design Thinking: making ideas visible and continuously enhancing the digital application with the help of user feedback. Like most SMS digital products, the applications are provided as Software as a Service (SaaS), allowing an easy and fast installation without having to invest in additional sensors or hardware. One example of SMS digital's innovative product development is an intelligent alarm management system.

### Smart Alarm – a smart solution

From customer interviews, SMS digital learned that alarm messages are often insufficiently used or even ignored by operators. The main reasons were found to be their uncomfortable and unintuitive handling in the existing automation systems as well as poor handling of alarm-floods (a single failure causing multiple other systems to fail) that can easily produce hundreds of alarms within a single millisecond, hiding the root cause. Furthermore, finding the source of the problem is difficult and depends on the experience of the operator in charge and the availability of skilled maintenance personnel. Alarm messages are only being acknowledged and are not solving the problem until they finally cause the machine to fail. Unplanned downtimes and unnecessary repairs are the result.

Together with operators from different plants, SMS digital found

that the current solutions do not address the problem well. They identified the most valuable measures to improve the situation and created Smart Alarm, a stand-alone system which facilitates the handling of alarm messages. In its first version, an intuitive visualization using the equipment tree shows directly where problems have

occurred. This allows drilling down to the root source, which leads to a better understanding of the alarms. Irrelevant or flicker alarms can be suppressed, giving the operator the chance to focus on the important tasks. As Smart Alarm is a Software as a Service solution, you can connect it to all existing automation systems without supplementary costs.

SMS digital continues to deliver by continuously integrating user feedback into the future product development. More value can be added by an alarm analysis dashboard and the possibility to connect already proven ways of solving problems directly to the alarm messages. These features will be available in the next version – and many more will follow. Yuriy Gulyaev, Dr. Sc. (Techn.), Professor, Adviser at Interpipe Niko-Tube JSC

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More Bite  
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# Optimization of the roll pass design for continuous longitudinal tube rolling

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The roll pass shape ensuring absence of the work-piece flattening at the entrance to the deformation zone during continuous longitudinal rolling of tubes was theoretically substantiated. A procedure for choosing the pass shape was proposed to minimize flattening in the production conditions.

Introduction. In continuous longitudinal rolling, when the tube rolled in the pre-vious mill stand enters the

next stand, it contacts the surface of the rolls only at the points of the roll pass vertices. As the tube moves in the rolling direction, the initial shape of its cross section changes (creasing). In the process of creasing, the axial (in the rolling direction) deformation is practically absent and the transverse deformation (widening) takes place. During creasing, the area of contact between the tube and the rolls increases and, correspondingly, the axial deformation (elongation) increases. Creasing (widening) of the tube adversely affects quality of the finished product since it results in formation of surface defects and growth of the transverse wall thickness nonuniformity [1, 2].

**The work objective.** This work objective was to establish the relationship between the roll pass design and the parameters of creasing of the tube shape at the entrance to the deformation zone and minimize the length of the deformation zone section where creasing takes place.

**The law of variation of the pass parameters along the deformation zone.** To analyze the workpiece shape behavior during rolling in the pass, it is necessary to establish patterns of the pass shape variation along the deformation zone. Let us consider the pass shape in a secant plane shifted from the plane  $YO_kZ$  of the roll centers by a distance  $x$  and passing parallel to the plane  $YO_kZ$  thru points  $A$  and  $O_x$  (Fig. 1). Assume that the law  $R_\theta(\theta)$  of variation of the pass radius  $R_\theta$  in a direction from the polar coordinate  $\theta$  in the plane  $YO_kZ$  of the rolls centers is known. It is necessary to establish a relationship between the pass radius  $R_\theta$  and the radius  $R_\beta$  in an arbitrary section of the deformation zone with a coordinate  $x$ .

$$\text{As it follows from the triangle } B''O_k''D, \\ a = R_\theta \cos \theta \quad (1)$$

$$\text{As it follows from the triangle } A''O_k''D, \\ z = R_\beta \cos \beta \quad (2)$$

Taking into account equation (1), the roll radius  $R_{b\theta}$  in the cross section  $A''D$  is equal to

$$R_{b\theta} = R_u - a = R_u - R_\theta \cos \theta \quad (3)$$

The same radius determined on the basis of the ratios in the triangle  $AOC$  with the equation (2) taken into account, is as follows:

$$R_{b\theta} = \sqrt{(R_u - z)^2 + x^2} = \sqrt{(R_u - R_\beta \cos \beta)^2 + x^2} \quad (4)$$

Equate the right-hand sides of the equations (3.15.3) and (3.15.4) and obtain

$$R_u - R_\theta \cos \theta = \sqrt{(R_u - R_\beta \cos \beta)^2 + x^2} \quad (5)$$

Solve the equation (5) with respect to the unknown quantity  $R_\beta$  and obtain

$$R_\beta = \frac{R_u - \sqrt{(R_u - R_\theta \cos \theta)^2 - x^2}}{\cos \beta} \quad (6)$$

The side  $c = \overline{DO_k''}$  of the triangle  $B''O_k''D$  is

$$c = R_\theta \sin \theta \quad (7)$$

The same side  $c = \overline{DO_k''}$  of the triangle  $A''O_k''D$  is

$$c = R_\beta \sin \beta \quad (8)$$

Equate the right-hand sides of equations (7) and (8) and obtain

$$\beta = \arcsin \frac{R_\theta \sin \theta}{R_\beta} \quad (9)$$

Taking into account that the equation (6) can be written in the following form:

$$\cos \beta = \cos \left[ \arcsin \left( \frac{R_\theta \sin \theta}{R_\beta} \right) \right] = \sqrt{1 - \left( \frac{R_\theta \sin \theta}{R_\beta} \right)^2}$$

$$R_\beta = \frac{R_u - \sqrt{(R_u - R_\theta \cos \theta)^2 - x^2}}{\sqrt{1 - \left( \frac{R_\theta \sin \theta}{R_\beta} \right)^2}} \quad (10)$$

Solve equation (10) with respect to the sought quantity of the pass radius  $R_\beta$  in an arbitrary section of the deformation zone with coordinate  $x$  and finally obtain

$$R_\beta = \sqrt{\left[ R_u - \sqrt{(R_u - R_\theta \cos \theta)^2 - x^2} \right]^2 + R_\theta^2 \sin^2 \theta} \quad (11)$$

The gap  $\Delta x$  between the flanges of the rolls in the section of the deformation zone with a coordinate  $x$  is determined from equation

$$\Delta x = R_{b\beta} \sin \gamma_{b\beta} \quad (12)$$

where  $R_{b\beta} = R_\beta(x, \gamma_b)$  is the value of  $R_\beta$  at  $\theta = \gamma_b$  (Fig. 1);

$\gamma_b = \arcsin \frac{\Delta}{2R_{\gamma b}}$  is the angle of the pass sides at the exit from the deformation zone ( $x = 0$ );

$R_{\gamma b} = R_\theta(\gamma_b)$  is the value of  $R_\theta$  at  $\theta = \gamma_b$ .

Fig. 2 shows the change in the shape height  $h_\theta = R_\beta \cos \theta$  of a two-roll ( $n = 2$ ) oval pass (the pass radius  $R_k = 100$  mm, the pass eccentricity  $e_k = 20$  mm, the ideal radius  $R_u = 200$  mm, the gap  $\Delta = 0$ ) in different sections of the deformation zone.

It follows from the calculated data that when  $x > R_u - h$  (for the example in question,  $R_u - h = R_u - (R_k - e_k) = 120$  mm), shape of the pass in its vertex zone is not limited by the roll surface.

**Ideal shape of adjacent passes.** The term *ideal shape* of the passes of two adjacent stands in the continuous mill means such a combination of pass shapes in which the outer generatrix of the tube rolled in the *previous* stand (let it be stand #1) has the same shape as the pass at the entrance to the deformation zone of the *next* stand (let it be stand #2).

If this condition is met, then the tube entering the stand #2 comes into a contact with the roll surface round the entire perimeter of the pass (Fig. 3). This minimizes the transverse metal flow (widening).

Let us consider a general scheme of constructing an ideal pass system.

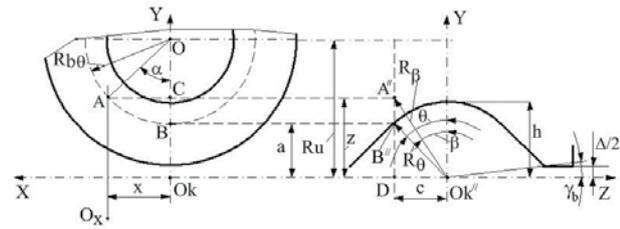


Fig. 1. To the determination of the pass shape in a section with a coordinate  $\bar{o}$

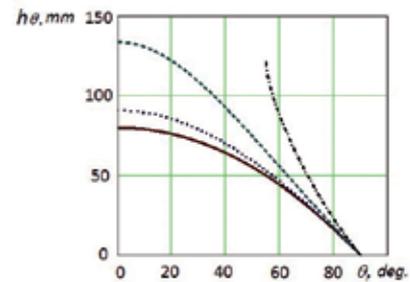


Fig. 2. Change of the pass shape height  $h_0$  ( $\bar{o}=0$  – firm line;  $\bar{o}=50$  mm – points;  $\bar{o}=100$  mm – broken line;  $\bar{o}=150$  mm – dash-dot line)

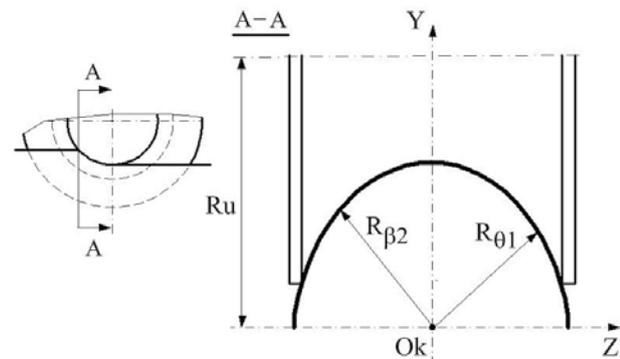


Fig. 3. Cross-section of the entrance to the deformation zone of stand #2 for an ideal pass system

Let the round tube with diameter  $D_0$  enters the stand #1. Substitute  $R_\beta = \frac{D_0}{2}$  in (11) and solve the resulting equation for  $R_\theta = R_{\theta 1}$ . Equation  $R_{\theta 1}(\theta, x)$  of the shape of the stand #1 pass is obtained at which the workpiece simultaneously comes into a contact with the surface of the roll round the entire perimeter of the pass. The length  $l_{D1}$  of the deformation zone in the stand #1 is determined as the root of equation

$$m_1 = \frac{D_0 - D_{cp1}^*}{D_0}, \quad (13)$$

where  $m_1$  is the specified partial deformation in diameter in the first stand;

$$D_{cp1}^* = \int_0^{\frac{\pi}{n}} R_{\theta 1}(\theta, l_{D1}) d\theta$$

is the specified *mean* diameter of the stand #1 pass.

At the exit from the deformation zone of the stand #1, the radius  $R_{T1}$  of the outer generatrix of the tube variable round the perimeter of the pass is defined as  $R_{T1}(\theta) = R_{\theta 1}(\theta)$ . Write down the condition for an ideal combination of passes of two adjacent stands #1 and #2 as follows

$$R_{T1}(\theta_1) = R_{\beta 2}(\theta_2), \quad (14)$$

where  $R_{\theta 1}(\theta_1)$  is the shape of the tube at the exit from the deformation zone of the stand #1 in a system of polar coordinates  $x\theta_1 R_1$  of this stand ( $\theta_1 = 0$  at the vertex of the stand #1 pass);

$R_{\beta 2}(\theta_2)$  is the pass shape at the entrance to the deformation zone of the stand #2 in the system of polar coordinates  $x\theta_2 R_2$  of this stand ( $\theta_2 = 0$  at the vertex of the stand #2 pass).

Considering the turn of the rolling stands relative to each other by an angle  $\frac{\pi}{n}$ , the following is obtained:

$$\theta_1 = \frac{\pi}{n} - \theta_2$$

The shape  $R_{\theta 2}(\theta_2)$  of the second pass and the length  $l_{D2}$  of the deformation zone in the stand #2 which correspond to the condition (14) are determined from the system of equations

$$\begin{cases} m_2 = \frac{D_{cp1}(D_\phi, F) - D_{cp2}(R_{\theta 2})}{D_{cp1}(D_\phi, F)} \\ R_{T1}\left(\frac{\pi}{n} - \theta_2\right) - R_{\beta 2}(\theta_2, l_{D2}) = 0 \end{cases} \quad (15.1-2)$$

The first equation of the system (15) is the condition for realization of the specified partial deformation in diameter in the second stand and the second equation is the condition for an ideal combination of the passes of the adjacent stands #1 and #2.

Fig. 4 shows the calculated values of the radii  $R_{\theta 1}$  and  $R_{\theta 2}$  round the perimeters of the passes in stands #1 and #2, respectively, at the following initially specified rolling parameters: the number of rolls in the stand  $n = 2$ ;  $R_u = 200$  mm;  $D_0 = 100$  mm;  $m_1 = 0.10$ ;  $m_2 = 0.12$ .

**Practical realization of the idea of ideal adjacent passes.** The shape of an ideal pass is described by a transcendental function  $R_{\theta u} = R_{\theta u}(\theta)$ . In practice, when cutting passes, it is necessary to use the dependence  $R_{\theta u} = R_{\theta u}(\theta)$  in the form of an equation in an explicit form. Therefore, it is expedient to approximate the dependence  $R_{\theta u} = R_{\theta u}(\theta)$  having fulfilled the condition of the maximum possible correspondence of assumed and approximating functions. Analysis shows that the ideal pass should

have a shape with a "break" (Fig. 4) at the vertex (in the theory of rolling, such passes

are called "ogival passes"). For ogival passes,  $\left. \frac{\partial R_{\theta}}{\partial \theta} \right|_{\theta=0} \neq 0$ . They are not used when rolling tubes because of the risk of defects on the outer surface.

Proceeding from the above, when rolling tubes, it is advisable to use a pass with the *greater part* of its shape (except for the vertex zone) corresponding to the shape of an ideal pass. In the zone the pass vertex, it is advisable to "smooth" it in such a way

that condition  $\left. \frac{\partial R_{\theta}}{\partial \theta} \right|_{\theta=0} = 0$  is fulfilled. With this approach, a number of positive factors are provided for the problem of constructing pass shapes for adjacent stands of the continuous mill:

- flattening of the tube at the entrance to the deformation zone is minimized;
- the tendency to a transverse metal flow in the deformation zone is minimized (metal flow into the pass flanks is minimized);
- the risk of formation of surface defects caused by a break in the shape of the pass at its vertex is minimized.

One of the ways to solve this problem is to use two-radius oval passes with parameters that maximally approximate their shape to an ideal one (Fig. 5). Specify the shape of a two-radius oval pass by a logical condition

$$R_{\theta} = \begin{cases} \sqrt{R_{kh}^2 - e_{kh}^2 \sin^2 \theta} - e_{kh} \cos \theta \text{ е.л.и } 0 \leq \theta \leq \theta_s \\ \sqrt{R_{kb}^2 - e_{kb}^2 \sin^2 \theta} - e_{kb} \cos \theta \text{ е.л.и } \theta_s < \theta \leq \frac{\pi}{n} \end{cases} \quad (16.1-2)$$

where  $R_{kh}$ ,  $e_{kh}$  are the radius and eccentricity of the pass in its vertex zone;  
 $R_{kb}$ ,  $e_{kb}$  are the radius and eccentricity of the pass in its zone of the side angle;

$\theta_s$  is the polar coordinate of the boundary between the zone of vertex and the zone of side angle of the pass.

Lay down the following requirements to the pass parameters.

1. The height  $h$  of the pass should be equal to the height  $h_u$  of the ideal pass.
2. The width  $b$  of the pass should be equal to the width  $b_u$  of the ideal pass.
3. The angle  $\theta_r$  of conjugation of radii of the two-radius pass should be equal to the angle  $\theta_{min}$  at which the ideal pass is minimal (Fig. 4).
4. When  $\theta = \theta_s = \theta_{min}$ , the conditions of equality of the minimum ideal radius  $R_{min}$  (Fig. 4) and the radii of the passes calculated in the zone of vertex and in the zone of side angle of the two-radius pass are satisfied

In accordance with the *four* conditions formulated above, a system of *four* equations for determining *four* unknown parameters, i.e.  $R_{kh}$ ,  $e_{kh}$ ,  $R_{kb}$  and  $e_{kb}$  of a two-radius oval pass: is obtained

$$\begin{cases} R_{kh} - e_{kh} = h_u \\ \sqrt{R_{kb}^2 - e_{kb}^2 \sin^2 \frac{\pi}{n}} - e_{kb} \cos \frac{\pi}{n} = b_u \\ \sqrt{R_{kh}^2 - e_{kh}^2 \sin^2 \theta_{min}} - e_{kh} \cos \theta_{min} = \sqrt{R_{kb}^2 - e_{kb}^2 \sin^2 \theta_{min}} - e_{kb} \cos \theta_{min} \\ \sqrt{R_{kh}^2 - e_{kh}^2 \sin^2 \theta_{min}} - e_{kh} \cos \theta_{min} = R_{min} \end{cases} \quad (17)$$

For the example considered above, there are the following parameters of the ideal pass in the stand #2:  $h_u = 41.121$  mm;  $b_u = 41.606$  mm;  $\theta_{min} = 43.912$  degrees;  $R_{min} = 38.688$  mm. Substitute these values into the system of equations (17) to obtain:  $R_{kh} = 33.794$  mm,  $e_{kh} = -7.327$  mm,  $R_{kb} = 41.817$  mm and  $e_{kb} = 4.203$  mm. Fig. 6 shows behavior of the radius  $R_{\theta u}$  of an ideal pass and behavior of the radius  $R_{\theta}$  of a two-radius pass with parameters calculated from the system of equations (17)

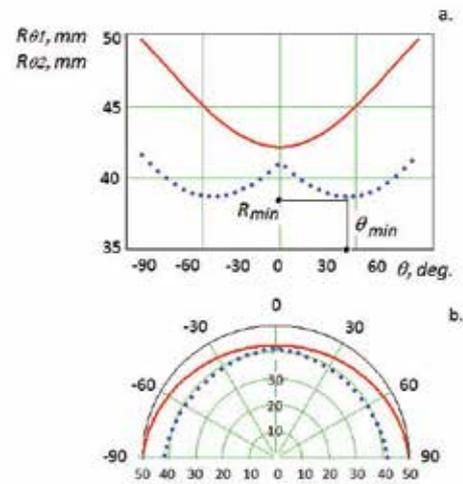


Fig. 4. Calculated radii  $R_{\theta 1}$  (solid lines) and  $R_{\theta 2}$  (points) in Cartesian (a) and polar (b) coordinate systems

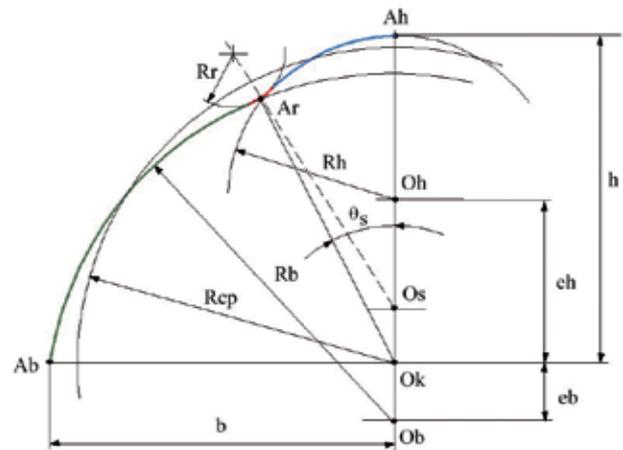


Fig. 5. The two-radius oval pass and its parameters

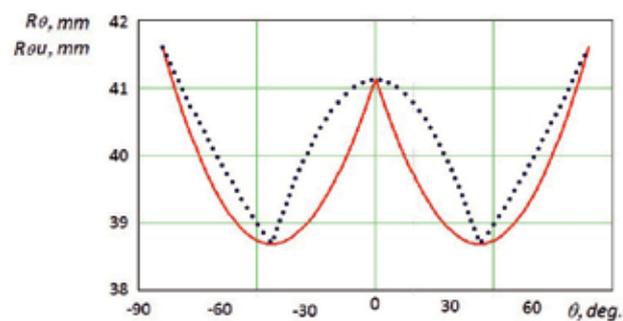


Fig. 6. Changes in the radius  $R_{\theta u}$  of an ideal pass (solid line) and the radius  $R_{\theta}$  of a two-radius pass (points)

$$R_{\theta} = \begin{cases} \sqrt{R_{kh}^2 - e_{kh}^2 \sin^2 \theta} - e_{kh} \cos \theta & \text{ecnu } 0 \leq \theta \leq \theta_s \\ \sqrt{R_{kb}^2 - e_{kb}^2 \sin^2 \theta} - e_{kb} \cos \theta & \text{ecnu } \theta_s < \theta \leq \frac{\pi}{n} \end{cases} \quad (16.1-2)$$

where  $R_{kh}$ ,  $e_{kh}$  are the radius and eccentricity of the pass in its vertex zone;

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4. When  $\theta = \theta_s = \theta_{\min}$ , the conditions of equality of the minimum ideal radius  $R_{\min}$  (Fig. 4) and the radii of the passes calculated in the zone of vertex and in the zone of side angle of the two-radial pass are satisfied

In accordance with the *four* conditions formulated above, a system of *four* equations for determining *four* unknown parameters, i.e.  $R_{kh}$ ,  $e_{kh}$ ,  $R_{kb}$  and  $e_{kb}$  of a two-radius oval pass: is obtained

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The mean radius of the ideal pass for the example under consideration is  $R_{cpu} = 39.600$  mm. The mean radius of the two-radius pass for the example under consideration is  $R_{cp} = 40.162$  mm. The relative difference between the values  $R_{cp}$  and  $R_{cpu}$  is 1.42%. A "practically improper" break of the radius  $R_{\theta}$  of a two-radius pass at the point  $A_r$  of radii conjugation is easily eliminated by rounding of the shape made by the radius  $R_r$  (Fig. 5).

The two-radius oval passes designed according to the proposed procedure have been successfully tested in industrial conditions. In the course of the tests, the fact of improving accuracy of the finished tubes was established.

## Conclusions

1. The pass shape ensuring absence of flattening of the tubes during their continuous rolling was theoretically substantiated.
2. A procedure for choosing pass shapes in production conditions was proposed.

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Ajax TOCCO Magnethermic Corporation

# Ajax TOCCO Retrofits Customer's Existing 35kW Induction Heater with Remote Mounted, Low Profile, Non-Contact Weld Preheat Inductor and Transformer



Ajax TOCCO Magnethermic recently supplied a forestry products manufacturer with a compact remote transformer and low profile heating inductor to be used for preheating prior to GMAW. These items were sold as a field install kit that are compatible with and utilize the customer's existing induction heating cables and accessories. The heating inductor floats above the weldment

without making contact. Versatility and utilization of the 35 kW induction heater were immediately increased.

The customer had a need to be able to heat a rotating weldment with limited space between welds. Existing weld preheat inductors that roll on top of the weldment would not fit between the weldments, forcing the customer to rely combustion heating technology (torches).

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Ajax TOCCO was able to quickly analyze their process and custom build a compact, non-contact weld preheat inductor that provided pin point heating accuracy, rapid heat rates and repeatable traceable results. The size of the inductor is

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- Decreased Energy Costs

## EMMEDI presents a new evolution of HFI Welder

EMMEDI, the HFI welding specialist of the Ajax TOCCO Magnethermic® Corporation global family of companies, presents a new evolution, high-frequency, solid-state induction welder which will showcase at the upcoming FabTech show in Chicago, Illinois USA in November 2017.

The new Mosweld (SiC) system is equipped with highly-reliable (SiC) Silicon Carbide transistors. After

extensive field testing, this innovative product has exceeded Emmedi's expectations and benchmarks in an ERW production tube mill. It has demonstrated to be more efficient and reliable than traditional Mosfet components currently used in the market for HFI welding. Higher amperage SiC transistors are the key – a traditional HFI welder using (Si) Mosfet transistor technology may require up to 64 devices for

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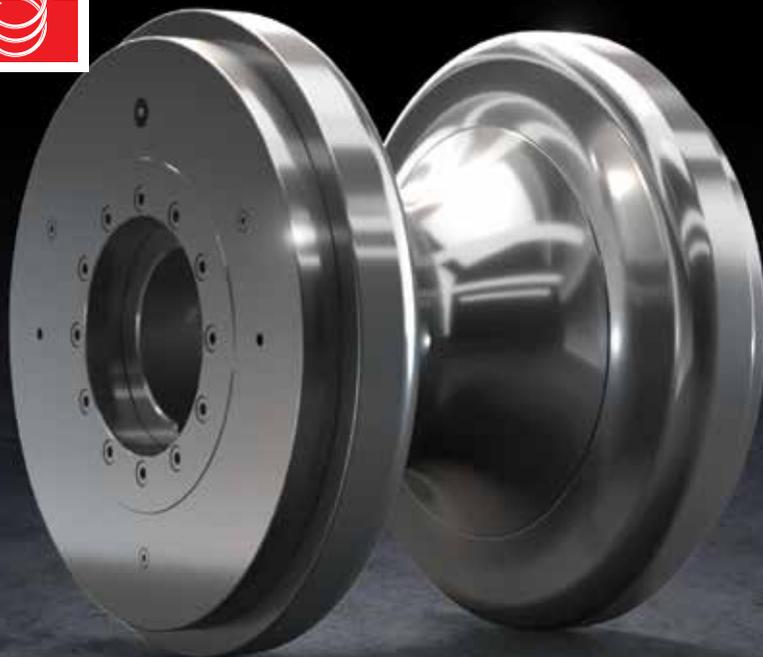
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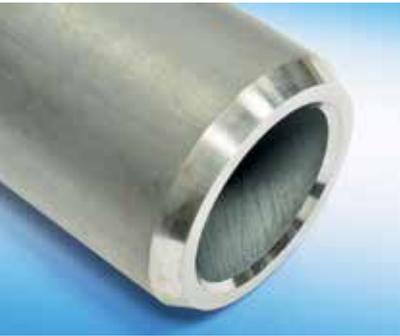


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Stainless Steel World	28 - 30 November, MECC   Maastricht, The Netherlands	Stand S827

Danieli & C Officine Meccaniche S.p.A.

# Final acceptance released for the three-roll cross rolling mill at Vallourec Rath, Germany



The Final Acceptance Certificate for the three-roll Cross Rolling Mill at Vallourec Deutschland's Düsseldorf-Rath Pilger Mill Complex was released on August 2. The CRM installed (among the world's largest of its kind) is a new, unique piece of equipment, specifically designed and developed for this special application, and currently not installed in any other plant in the world.

Tests on quality, productivity, availability and tool changing were successful –“at the first attempt” in most cases- and in keeping with the schedule agreed with the customer. Final quality and productivity fully comply with and even exceed VAD's specifications. Four aspects were decisive in making this project a success.

### Capacity to innovate together with the customer

The engineering, from the preliminary design to the detail design of individual solutions, was carried out with the customer's active and determined contribution, working side by side with Danieli's engineering team right from the initial stages of the project.

The CRM is a “new” 3-roll machine that replaces an “old” 2-roll machine supplied by Mannesmann. In the 3-roll CRM process, the hollow tube is created by means of three barrel-type rolls -arranged at an angle of 120°- and arranged symmetrically around the tube axis, and by a plug. Each roll is individually driven and equipped with two hydraulic capsules.

The CRM has been fitted with a toe angle adjustment system, a necessity resulting from the customer's ambitious specifications that require rolling in diameter reduction (-20%), constant diameter (0%) and expansion (+20%) modes, with external diameters ranging from 400 to 850 mm (!).

Some other particular features of the CRM are:

- Capability to roll both extra-short (L=1,300 mm) and long pieces (up to 4,500 mm);
- New door-type plug bar support system with longitudinal discharge of the piece, customized as per the customer's request;
- Six hydraulic capsules with a stroke of 750 mm and force up to 8,300 KN, for gap adjustment under load;
- When the chock car leaves the stand it opens up like an “artichoke” for rapid extraction of the 3 roll/chock units;
- Drives have a rated power of 21,000 kW and a peak power of 25,200 kW.

### Manufacturing in Danieli's workshop and integration tests

Because all the machine's components were designed and built by Danieli in-house we were able to perform integration tests in our own workshop. The integration tests were decisive in meeting the start-up dates and in allowing the final fine-tuning operations - always necessary in prototypes - to be performed significantly ahead of schedule.

### Erection and commissioning

The third decisive factor was the capability of Danieli's construction team assisted by the customer. During an outage lasting approximately 2 months, they were able to carry out the demolition and excavation work, the civil works and the erection of the plant.

### Project Team

To enable all of this, the VAD and Danieli management/engineering teams continuously worked side

by side throughout all the project phases.

### Project Milestones

- Signing and CIF June 30, 2015
- Start of outage December 5, 2016
- End of civil works December 28, 2016
- End of erection January 31, 2016
- Start of production February 18, 2017
- Final Acceptance August 2, 2017

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## Fourth Danieli Innovaction Meeting opens at Group HQ in Italy

600 people from 70 countries attended the plenary session at Danieli Research Center

Danieli Innovaction Meeting 2017 opened today at the Group's headquarters in Italy, drawing 600 guests from 70 countries for a schedule of panel discussion and technology presentations, all arranged to offer Ideas for the New Normal metals consumption period. That theme has defined the current state of steel production in recent years, and the DIM2017 event will present different perspectives on the trends and technologies that will shape the industry's future.

The first discussion panel of the day addressed directly the New Normal, as World Steel Assn. General Director Edwin Basson narrated the history of steel consumption and industry expansion over the past seven decades. Panelist Emanuele Morandi, CEO of Made in Steel, Italy, declared that advanced controls and automation will define the future of steelmaking operations, predicting that "the factory of the future will produce data, as well as steel."

Deacero S.A. CEO Raul Gutierrez introduced the opinion that steel demand in regional economies, such as in Mexico, will perform better than the forecast 1.1% expansion through 2035.

CMC Steel CEO Barbara Smith advised the audience that the steel industry must continue to refine and develop scrap processing and recycling, in order to control its raw material costs, and move more production away from the BF/BOF route to the EAF route.

Mark Lin, Chairman and President of Feng Hsing Steel, Taiwan, described the necessity of investing to improve the performance of his company's operations. This included the original Feng Hsing plant, still profitable and producing 384 different steel products in 240 different dimensions can be produced in a monthly rolling schedule, with a maximum of 70,000 tons/month. A second bar mill, now over 30 years old, is being made more competitive, with the introduction of Danieli technology to roll low-alloy steel at a lower of temperature of 900 °C.

Mr. Lin declared Feng Hsing Steel is becoming the price and production leader for steel profiles in Taiwan, thanks to highly flexible rolling capabilities, supplied by Danieli. "My experience is it very important for a plant to adopt advanced technology, hire talented staff and workers, and make certain to maintain safe production practices. These are the only ways by which the plant can be competitive and the product can be qualified."

Li Xinchuang, President and Chief Engineer of the China Metallurgical Industry Planning and Research Institute, explained the necessity to plan with careful understanding of population growth and technology trends, making it difficult to forecast demand with reliable accuracy. Of the steel industry's technology planning, he noted that difficulty for steelmakers to increase or decrease production volumes quickly, adding to the unreliability of production forecasts.

Danieli Chairman Gianpietro Benedetti told the audience that the New Normal compels steel plant and

equipment builders to change their operating strategies and product portfolios to address the different needs of steel producers during a period of dynamic changes directed by new technologies.

In addition to decreased steel consumption, Benedetti added that “digitalization will promote smaller production quantities, faster deliveries, and greater flexibility.”

A further highlight of the DIM2017 first day was a second panel discussion on the evolution of the regional micro and minimill model as a strategy for managing the New Normal conditions. World Steel Dynamics Managing Partner Peter F. Marcus presented a colorful analysis of the business, technological, and sociological trends shaping the steel economy today. Among these, he predicted a continued decline in the competitiveness of blast furnace-based iron and steel production, and turmoil in production planning as producers try to manage shorter business cycles with wider shifts in supply and demand of finished products. He described the current period as an “age of discontinuity” in which managers will require skill, patience, and humor to survive.

Marcus was joined on the panel by Giacomo Mareschi Danieli, CEO, Danieli Group, Italy, who traced the development of minimill operations in the global steel industry. He explained how the minimills’ successful strategies in past business cycles – including maintaining competitive CapEx and OpEx, fulfilling regional demand for commodity grades, and adopting new and revolutionary technologies — all remain relevant strategies in the New Normal. In particular, Mr. Danieli cited MicroMill Danieli (MI.DA) concept as a new model

for embracing proven management principles.

Horst Wiesinger, of Horst Wiesinger Consulting GmbH, Austria, cited numerous long-term trends in population, raw materials and scrap supply, to explain the strength of the minimill production model versus BF/BOF steelmaking. The minimills remain economically viable because of their flexibility in production volumes, the quality and variety of products, and the high rates of asset utilization. He also noted that minimills show capabilities for become even more competitive in terms of production process time and energy requirements.

Necdet Utkanlar, Board Member, Kroman Çelik Sanayi, Turkey, offered the perspective that rising volumes of scrap worldwide represents an advantage for minimills. Likewise, the emerging possibility of CO2 emissions regulation will benefit minimills in contrast to BF/BOF producers. Further, Mr. Utkanlar predicted that minimills’ flexibility to produce multiple different grades of steel allows them the possibility to shift production programs to address regional market needs.

Alihussain Akberali, Managing Director, BSRM, Bangladesh, offered the perspective that emerging markets need minimill operations to fulfill their potential for economic development. The minimills’ CapEx and OpEx efficiency offer the best opportunity for expansion in regional markets, where working close to the customers’ changing demands is a requirement.

Toshikazu Nishimoto, President, Tokyo Steel, Japan, argued that by 2050 we expect to accumulate 55 billion tons of steel which will

generate 1.5 billion tons of scrap metal; this means that 70% of steel demand can be covered by recycled steel product. Technology development will become more and more important in order to produce high-quality finished products using even low-quality scrap. Tokyo Steel succeeded in running its operations by not relying only on high-quality scrap, even to make high-quality flat products. He believes the EAF will play an important role in achieving a low carbon footprint and a recycling-based society, taking the place of the BOF.

At last, Danieli Group Chairman Gianpietro Benedetti described the minimill concept as the hope for steel industry growth and technological development, with the regional expansion offsetting global consumption forecasts. Benedetti further predicted that the Chinese industry would progressively incorporate more minimill operations, to manage costs, increase production flexibility, and resolve the excess of CO2 emissions characteristic of BF/BOF steelmaking.

The first day of DIM2017 also included presentations on Green Metal concepts, and a detailed presentation on the new Danieli Digi&Met strategy to “simplify metals complexity” by embracing Industry 4.0 capabilities and practices.

The Danieli Innovation Meeting 2017 will continue through Thursday, 5 October, with further discussions of trends in specific product markets, and presentations of new technologies for iron and steelmaking, flat and long products, aluminum and non-ferrous metals, tube, pipe, forging and extrusion, and automation.

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EWM Hightec Welding GmbH

# Joint commitment to the qualification of future welders



*Practical test of augmented reality welding*



*From left: Robert Stöckl, EWM AG; Alejandro Villarán, Seabery*



*From left: Martin Uebeler, Daimler AG Bremen; Markus Leich, Gewerbliche Schule Göppingen; Benedict Menningen, EWM AG; Dr.-Ing. SFI/IWE Johannes Weiser, EWM AG; Alejandro Villarán, Seabery; Anke Richter, WeldPlus GmbH; Robert Stöckl, EWM AG; Wolfgang Hildebrand-Peters, GSI Gesellschaft für Schweißtechnik International mbH; Allan Gray, WeldPlus GmbH; Frank Moll, GSI Gesellschaft für Schweißtechnik International mbH; M.Sc. Ivan Kijatkin, EWM AG*

EWM AG, WeldPlus GmbH and Seabery are working closely together to inspire young people to join the welding profession. The three companies have made a joint commitment to the training of skilled welders. One of the aspects that the experts are focusing on is innovative training concepts with the augmented reality welding training solution Soldamatic from Seabery.

In view of the fact that the groundbreaking themes of Industry 4.0 and digitisation are playing an ever more important role in the qualification of welding experts, EWM is cooperating with WeldPlus and the Spanish startup Seabery. Together the three companies form a team of leading experts for simulation-assisted welding training. WeldPlus sells the high-end welding simulation solution Soldamatic from Seabery and develops customised training concepts for using digital media for training purposes. As one of the technology drivers in the welding sector, EWM is making an important contribution together with these two other companies to the future of welding training. "It is a particular mission of ours to inspire young people to join the welding profession and prepare them for their practical work with state-of-the-art training methods. Together with the WeldPlus specialists and the Soldamatic virtual technology, we are making a vital contribution to future-focused qualification of welders and therefore helping our customers to stay competitive," explains Robert Stöckl, EWM Sales Director.

### **State-of-the-art, practical training**

The welding training tool Soldamatic is an augmented reality solution which modernises both theoretical and practical welding training. Unlike conventional training methods, the simulation training solution teaches the trainees the key welding procedures reliably, safely and in an environmentally sustainable way. "With the Soldamatic concept, we are selling state-of-the-art AR technology for practical training, based on integrated DVS-based learning material. With this concept, we are offering our customers a globally unique solution for customised, digitally based, future-focused qualification of their skilled specialists," explains Anke Richter, Managing Director of WeldPlus GmbH. The cooperation is to continue at this year's Schweißen & Schneiden. The welding training solution fits perfectly with the EWM motto "Welding 4.0". The three companies are also organising joint symposia and information events on the theme of "Future welder qualification".

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EWM Hightec Welding GmbH

## Titan XQ puls increases efficiency and saves money

In keeping with the “Welding 4.0” slogan, EWM will introduce its conclusive answer to the urgent challenge of “Industry 4.0” for the welding industry – the new multiprocess MIG/MAG pulse welding machine series Titan XQ puls. Its key innovation: it has comprehensive digital network capabilities and can therefore unlock significant untapped potential for savings throughout the entire process chain. In addition, it also includes all the efficiency-enhancing, innovative welding processes from EWM as standard in the machines at no extra charge. At the same time, the Titan XQ puls offers the characteristics typical of EWM – durability, robust design and high power reserves.

Digital networking under the Industry 4.0 buzzword will soon be a must for any manufacturing company. EWM makes its customers future-proof with the Titan XQ puls. In addition to many other digital functions, the machines are network-compatible via the Welding 4.0 welding management system ewm Xnet. Welding procedure specifications can be transmitted directly from the planning office to the Titan XQ puls – paperless and including all parameters. At the same time, the ewm Xnet software also takes over the often obligatory bureaucracy – Titan XQ puls is able to deal with a large part of the previously time-consuming welding documentation automatically with ewm Xnet, traceable down to the last detail for each individual run. Thanks to Titan XQ puls, con-

siderable increases in efficiency and quality can be achieved with EWM Xnet throughout the entire added-value process of a welding company.

### Robust for tough applications

EWM has designed its new Titan XQ puls welding machine for tough applications, especially in steel, shipbuilding and vehicle construction. It is splash-proof (IP23) even under extreme conditions in rain, frost and snow in the temperature range from  $-25\text{ °C}$  to  $+40\text{ °C}$ . The 350 A, 400 A, 500 A and 600 A power variants are initially offered as decompact versions with the separate lightweight 13 kg wire feeder, which has also been newly developed.

The inner values of the welding machine additionally attest to the EWM quality at its latest stage of development: the Titan XQ puls inverters are designed for hard continuous operation in 3-shift operation. They guarantee a duty cycle of 80% (Titan XQ puls 350,400 and 500). The generous dimensioning of power semiconductors and cooling, in particular, promises a long service life and no trouble with the heart of the welding machines.

### New welding torches and controls

The user can look forward to innovations in everyday operation. This includes four versions of the brand new PM welding torch to choose from. Control buttons, graphic display and LED illumination of the working area as well as the new, ergonomically shaped grip with rubber insert promise comfortable,



*Titan XQ puls from EWM is the new multiprocess MIG/MAG welding machine with comprehensive digital connectivity.*



*Individual configuration options cover every application-specific requirement: for example, two wire feeders for effortless switching between two different wires and shielding gases.*



Three HP-XQ, LP-XQ and Expert XQ 2.0 controls are available and offer a practical operating concept. Expert XQ 2.0 can also be networked via LAN and WiFi.



The lightweight 13 kg wire feeder can be customised as required – including optional wire spool heating and wire reserve sensor.

fatigue-free welding even in positional welding.

Other innovations come in the form of three controllers to choose from, which EWM is presenting with Titan XQ puls. The premium model is called Expert XQ 2.0. Only welding procedures, material, gas and wire diameter need to be selected via click-wheel operation in the plain text display – the characteristic that exactly matches the welding task automatically follows.

### All welding procedures as standard

All innovative welding procedures from EWM are included in the purchase price of the Titan XQ puls as standard and can be selected via any of the offered controls. Regardless of whether for thin or thick sheet applications, filler, final or root passes, or in positional welding – the Titan XQ puls perfectly fulfils any welding task on low to high-alloy steel and aluminium.

Available as standard are forceArc, forceArc puls, wiredArc, wiredArc puls, coldArc, coldArc puls, rootArc, rootArc puls, positional welding as well as MIG/MAG pulse and standard arc. Not only do they make it easier to produce welding seams of a consistently high quality, they can also save a considerable amount of time and material.

### Individually practice-oriented

The Mündersbach-based premium manufacturer offers a wide range of specifications for every require-

ment with the Titan XQ puls. So, the customer does not have to make any compromises but buys exactly what he really needs. The following options are available: one or two wire feeders, mobile or stationary version with feet, none, one or two gas cylinder holders, gas or water cooled as well as heavy-duty pump. Titan XQ puls is liftable by crane as standard. The wire feeder can also be individually configured: electronic gas flow control, wire spool heating and wire reserve display are available as options.

### Good design for best performance

The completely redesigned housing of the Titan XQ puls features the new ergonomic handles for comfortable operation and for suspending the hose package. The connection panel is tilted downwards to prevent kinking of the cables and the many individual mounting and storage options underline the sophisticated design. The large wheels with locking mechanism ensure that obstacles, such as cables or hoses lying on the ground, can be easily overcome. The inner workings are also impressive. Optimised air ducts ensure less contamination, even when used in a dusty environment. In addition, the modular design considerably reduces maintenance and repair times – so that the Titan XQ can be used for exactly what it is built for. Welding in continuous use.

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EWM Hightec Welding GmbH

## EWM Award for Augmented Reality Assistance System for Welding

Combining augmented reality with the real welding process – this was the idea that Alexander Atzberger used to convince the expert jury of the German Welding Society (DVS) – and EWM AG. The EWM “Physics of Welding Award” was given to a project by the young scientist from Munich at the opening ceremony of SCHWEISSEN & SCHNEIDEN, the world’s leading trade show for welding and cutting. The company promotes the idea and its realisation with its comprehensive know-how as Germany’s largest welding technology manufacturer and a prize of €30,000.

In collaboration with the DVS, EWM called for entries to the contest for the Innovative Approaches Award in welding technology for the fifth time already. This year, Alexander Atzberger is thrilled to receive support for his pioneering project: The 27-year-old junior researcher of the Bundeswehr University Munich plans to make the knowledge transfer in welding easier through his research project. The approach is to exchange movements and process parameters in welding through an augmented reality environment between two users anywhere in the world and in real time. The technology could then be used in many cases in practice: These also include, besides occupational and advanced training, the analysis and optimisation of the welding process with the customers. “Our aim is to record welding in the most realistic way possible and represent the insights in the most precise and simple way possible – like in an assistance system,”



*f. l. t. r.: Prof. Dr. Michael Rethmeier (Federal Institute for Material Research and Testing (BAM)), Robert Stöckl (Sales Management EWM AG), Alexander Atzberger (Winner of the EWM-Award), Rudi Cerne (presenter).*

explains Alexander Atzberger. “By winning the award and cooperating with EWM, we can benefit from the know-how of one of the most important arc welding technology manufacturers. In combination with the prize money, this makes implementing the project simpler and boosts the chances of success significantly.”

### Pioneering research approach

Alexander Atzberger’s idea quickly convinced the independent expert jury because of its viability for the future. “It is important for our industry’s future that we continuously develop the efficiency of our processes further and at the same time, also consider digital change,” explains Michael Szczeny, Vice Chairman of the Board at EWM AG. “The idea of this year’s prize winner to combine the topic of augmented reality with the real welding process aims exactly at this. It is another step into the digital world

of tomorrow. As a future-oriented company and technology driver in the field of Industry 4.0, we are happy to support the project with our know-how and the EWM Award.”

Dr.-Ing. Roland Boecking, Chairman of the German Welding Association (DVS), was also impressed by Alexander Atzberger’s research project: “We support the next generation of joining technology experts and their ideas in a number of ways and Industry 4.0 defines the work within our association, of course. I am, therefore, very happy when promising ideas such as this research project are drafted by young people. Mr. Atzberger picks up on a relevant topic that is particularly useful to our DVS-approved educational institutions in training and instruction. Sharing welding knowledge and information around the world – the world of joining technology lives from ideas like this one.”

Prof Dr.-Ing. Michael Rethmeier of the Federal Institute for Material Research and Testing (BAM) recognised the future-oriented approach of the young scientist during the laudation: "Alexander Atzberger's

idea combines welding technology with state-of-the-art technologies and opens up entirely new possibilities to welders around the world. For many years it has been EWM's approach to already think today

about the solutions of tomorrow and promote their development. This modern orientation makes lasting contributions to the positive future of our industry."

### Huntingdon Fusion Techniques

## Weld Purging for Closing Welds



*Purge Film APF PHO 07C in use*

Weld Purging a variety of pipes of different diameters can prove complex and costly, particularly when having to fill whole pipework systems with expensive argon gas. One solution that welders have traditionally devised has been to construct homemade foam or paper dams that are placed either side of the weld, constricting the purge volume to make weld purging times shorter.

Homemade foam or paper purge dams have severe technical limitations that can lead to loss of welds when they leak or slip from position thus flooding the welding zone with oxygen.

To overcome these challenges Weld Purging Experts Hunting-

don Fusion Techniques HFT® have designed and developed Argweld® Weld Purge Film® Kits to make weld purging affordable and successful.

Georgia Gascoyne, CEO for HFT® said: "Using our low cost Weld Purge Film® Kits can save welders both time and money, ensuring oxide-free welds are achieved time and time again."

"This water-soluble Weld Purge Film® allows dams to be cut easily with the safety knife provided and once they are fixed into position using the water-soluble Weld Purge Super Adhesive® provided, produce an impenetrable purge barrier that can easily be washed away during hydrostatic testing of the pipe or just by normal wash-out."

Weld Purge Film® Kits can be used on pipe diameters up to 900 mm (36") and for temperatures up to 300°C (572°F) without the material burning and losing the weld purge.

These low cost Kits will save operators high costs by minimising gas usage and dramatically reducing the time taken to make a purge. Weld Purge Film® Kits have been designed and developed by HFT®, containing product accessories needed to manufacture dams that will not come loose during welding.

The technical advantages of using water-soluble film instead of other materials include:

- The total transparency of the film dams, allows the welder to see the weld root as it is being laid.
- Vapour pressure of the film is very low and does not outgas harmful elements during welding that can mix with the hot metal and cause metallurgical defects.
- The Argweld® Film does not contain water, like paper and sponge products do.

After welding, the water-soluble film is simply washed away during the standard hydrotest cycle or by flushing of the pipe interior and dissolved down to molecular level, leaving no trace.

Weld Purge Film® Video is available on YouTube at: <https://youtu.be/SbR5W18bzVU>

Huntingdon Fusion Techniques

# Inflatable Stoppers for Petrochemical Applications

Blocking pipes or other orifices to carry out routine maintenance and other applications can prove challenging where hydrocarbons are present in liquid and gas form.

Now, a range of hydrocarbon resistant Inflatable Pipestoppers is available for the Petrochemical and Oil and Gas Industries. Manufactured in cylindrical and spherical formats from 1 – 96" (25 – 2,440 mm) in diameter with a high-grade latex, rubber internal inflatable bag covered with a petrochemical resistant layer, which has a tough, woven impregnated nylon outer cover for use up to 90°C (194°F).

The versatile Inflatable Stoppers are used to service a wide variety of industrial applications. As "overnight stoppers" they provide a strong barrier in pipeline activities, to prevent foreign bodies entering the line during downtime.

In machining applications, they can be inserted below a horizontal flange on a vertical pipe, to prevent machining fluid, swarf and tools from falling into expensive machinery such as pumps and turbines etc.

Inflatable Stoppers are particularly useful when one or more can be inserted into a small opening close to a work location, rather than at

the end of the pipe, tank or vessel. No high-pressure equipment is needed for inflation.

Manufactured by Huntingdon Fusion Techniques HFT® these PetroChem® Stoppers are available with optional heat resistant covers to protect them against high temperatures of up to 300°C (572°F), ensuring the Stopper is not damaged when exposed to high temperatures.

PetroChem® stoppers are light in weight and easy to manipulate and can be shipped anywhere by next day courier at very low cost.

For advice, guidance and recommendations for good pipe stopping, including leak testing, sealing, isolation, stopping, freezing and weld purging, join the Pipestoppers LinkedIn Group at: <https://www.linkedin.com/groups/8552732>.

Inflatable Stoppers Video is available at: <https://youtu.be/tyo-HQ5-EkLY>.



*PetroChem Stoppers PSO PHO 01C Group Cylindrical*



*PetroChem Stoppers PSO PHO 06C Group Spherical*

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Huntingdon Fusion Techniques

# Handy Purge Monitor, now with PurgeNet™



*PurgeEye API200 PHO 13C Demo Fabtech*



*PurgeEye API200 PHO 12C Connected to Pipe*

To remain at the forefront of Weld Purging technology, World leading Weld Purging Experts and inventors of the Weld Purge Monitor®, Huntingdon Fusion Techniques HFT® have launched the updated handheld PurgeEye® 200 Weld Purge Monitor®, now with PurgeNet™.

When welding metals such as stainless steel and titanium, it is essential to measure the oxygen level before, during and after welding using a Weld Purge Monitor®.

Georgia Gascoyne, CEO for HFT® said: "PurgeNet™ allows networking to a range of accessories. Typically, one accessory allows direct interface to an Orbital Welder or any other automatic welding machine, so that the oxygen level in the vicinity of the weld can be monitored and the welding machine can be switched on or off according to pre-set oxygen levels. A second accessory is a warning lamp that can signal when oxygen levels are low and high according to pre-set levels."

The revolutionary portable PurgeEye® 200 is now manufactured with a new OLED (organic light emitting diode) display, which will give brighter, clearer and sharper readings for viewing at greater distances than before and at wider angles. These OLED displays are mainly symbol based rather than text based, making the menus internationally comprehensible.

The PurgeEye® 200 operates either on batteries or mains power. Charging can also be carried out from a dock (optional) and battery life is much longer than its predecessor. Along with louder, pre-settable audio alarms for rising or falling oxygen levels, the PurgeEye® 200 comes complete with a faster response long life sensor.

This updated model has an integral electro-mechanical pump so that it can be used to extract samples from a weld purge zone, in the event that there is insufficient flow rate or positive pressure to activate the sensor correctly.

The PurgeEye® 200 Weld Purge Monitor® reads down to 1 ppm (very accurate to 10 ppm) for the accuracy that other oxygen measuring instruments don't give. The Monitor is IP65 rated, which means it can be used in very demanding areas where instruments are used on site, such as in desert or tropical conditions. PurgeLog™ software also gives Weld Purging results to give quality control documents for each weld. The monitor also has the capability to switch between percentage oxygen and parts per million shown on the display.

Huntingdon Fusion Techniques HFT® have a Worldwide Exclusive Distributor network, which can be found at [www.huntingdonfusion.com](http://www.huntingdonfusion.com).

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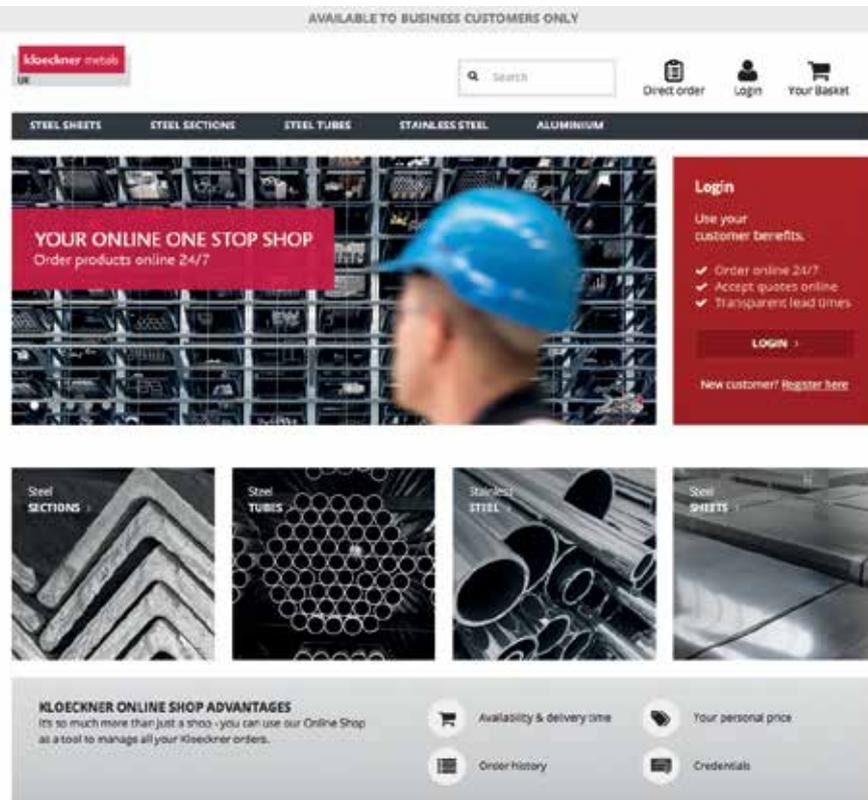
Kloeckner Metals UK

# Kloeckner Metals UK launches Online Shop

Kloeckner Metals UK, the largest mill independent multi-metal stockholder & distributor in the UK is proud to announce the launch of their new Online Shop. It's the start of a new era for Kloeckner as they are implementing a wide range of digital solutions. The new Online Shop follows the launch of the Order Overview Tool and Contract Platform, two digital solutions Kloeckner Metals UK introduced at the beginning of 2017. Digitalisation is very high on the Kloeckner & Co group agenda and the goal is to implement an industry platform that connects buyers and sellers digitally; with the help of new digital solutions to move towards a more connected, smart and efficient supply chain. To assist with this, the group opened kloeckner.i, a Digitalisation unit in Berlin, where a team of more than 60 people work towards a more digitalised future for the company. Kloeckner's Online Shop is a new purchasing channel that was developed with customers in mind by giving them more flexibility and improved transparency throughout their purchasing process. It offers a wide range of products from steel sections, sheets and tubes to stainless steel and aluminium.

The new shop can be accessed at [shop.kloeckner.co.uk](http://shop.kloeckner.co.uk) and brings many advantages to its user:

- Order products online 24/7, 365 days per year
- Simple and easy registration process that allows multiple logins
- Easily order and re-order products online
- Accept quotes online - all cus-



tomers quotations are available in the shop for online ordering

- Access to customer's personal documentation (invoices / statements / delivery notes)
- Extensive product information - prices, availabilities and lead times
- Customer can view their individual prices online
- Direct product search with attribute filters
- Ability to search for customer part numbers
- Product category search
- Amending / adding delivery address
- View into purchasing history
- Available to all Kloeckner Metals UK customers with self-service activation
- Direct ERP connection (Connect the customer's ERP with our

Online Shop – no double input of order data)

Graham Hudson Digitalisation Manager at Kloeckner Metals UK: "During the month August we launched our new online shop with a selected number of customers around the UK, this was primarily to test the functionality of the systems, prior to a full rollout of the shop on the 4th September. The feedback from customers and employees alike have been very positive."

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Gräbener Maschinentechnik GmbH & Co. KG

# Main Supplier Graebener puts into practice highly flexible LSAW Pipe Shop for Cintas (Group) in Turkey



German machine technology by Graebener Maschinentechnik remains the ultimate solution for the global players of the large pipe industry. Following the Mexican global player Tubacero, the internationally successful Cintas Group from Turkey also banks on Graebener for the new LSAW pipe production line.

For the new pipe mill of the subsidiary Cintas Pipe located in Turkey's seaport town, Gemlik, the German machine building company delivered six customized machines between January and July 2017: a pipe forming press, a post-bending press, a long seam milling machine, a continuous root tacking machine, a CNC pipe end beveling machine and a first-time built com-

bined calibration, straightening and crimping press. Thanks to this newly developed 3-in-1 machine technology, Cintas Pipe, as first pipe manufacturer worldwide, will be able to realize the crimping of plates as well as the calibration and straightening of pipes using only one single machine. Considering the ever changing market requirements, Cintas Pipe can manufacture even smallest lot sizes in a highly flexible and economic way in Carbon, Stainless & Alloy Steel– all this of course in adherence to ASME and API requirements. The production range comprises a pipe length between 6 and 12.2 meters, a wall thickness between 8 and 65 mm and pipe diameters between 16 and 60 inches.

From the perspective of the global player Cintas, Graebener Maschinentechnik offered the ideal package of experience, know-how, flexibility and service. "Graebener delivers above standard. That was important to us. From day one, Graebener never approached us as a "mere" machine supplier but as a partner who supported us with vast experience. Both parties benefit from the close professional exchange and we are sure that together we have found the optimum solution for our new production line", Cintas Pipe advised at the grand opening ceremony of the new Cintas Pipe Works in September 2017. As early as during the project and engineering phase, Graebener closely collaborated with Cintas Pipe and supported them with the planning

and realization of the production line, even before the layout of the production halls was finalized.

Graebener is specialized in customized machine concepts. Starting point for each solution is an ambitious challenge far from any standard. For Cintas Pipe, the challenge not only entailed planning a competitive LSAW pipe production line on a brownfield site within a very short time, but also realizing a flexible pipe production customized for small as well as large lot sizes in order to meet the ever increasing market requirements. The parties are also seeking for Industry 4.0 solutions on the path forward.

Graebener Maschinentechnik presented Cintas with a customized overall concept promising short lead times: a convincing package. Only eleven months after concluding the contract, Graebener delivered the first machine on schedule in January of 2017. By the end of August, right on time, the production was launched: a schedule-wise precise landing, thanks to the perfectly organized project leadership of Cintas Pipe and a strong project management between the partners.

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MÜLLER OPLADEN GmbH

# Processing pipes, tanks and dished ends on a single machine

Until now, pipes, connection pieces, tanks and dished ends have been cut on separate machines. But MÜLLER OPLADEN has now developed a hybrid machine on which the various workpieces can be processed with precision. The outcome is huge time savings coupled with high production quality. Field test customers have reported a 10-fold boost to productivity.



To simplify and rationalize production processes, MÜLLER OPLADEN has combined its 3D profile cutting technology for the processing of pipes (connection pieces), tanks and dished ends on a single machine. For this purpose, it has created not only a special cutting head, but also a self-centering, tiltable 3-jaw chuck that receives the very different workpieces in one and the same clamping system. For the processing of pipes, connection pieces and tanks, the chuck is vertically positioned. To cut dished ends, the chuck tilts hydraulically through 90° into the horizontal.

This hybrid system is capable of handling tanks and dished ends with diameters of 500 to 4,000 mm, tank holes with diameters of 50 to 2,000 mm, and pipes (connection pieces) of 50 to 2,000 mm in diameter.



### 6 CNC-controlled axes in motion

The hybrid machine operates with 6 CNC-controlled axes whose motion and speed are mutually adapted during the cutting process. This ensures the accurate positioning of the workpiece in relation to the flame cutter in order to achieve precision cutting results.

The other innovative components of the machine are the robot-like 3-arm cutting head, the tracing system for measuring the various workpieces and the carriages for supporting the tanks and pipes during cutting. In addition, MÜLLER OPLADEN can also offer fully automatic logistics strategies for the automatic supply/removal of workpieces to/from the cutting process and the supporting of tanks and connection pieces during rotation.

When the workpiece has been centrally clamped, a laser measuring system scans the workpiece surface. This is a way of ascertaining the levelness of the workpiece in the area where the contour is to be cut. Differences in surface height are compensated for during the cutting process.

### Macro-based software for online, offline and CAD/CAM data

The data for each cut are generated online at the machine or offline at an external workstation by parameter input with the aid of a macro-based software system developed by MÜLLER OPLADEN. In addition, the cutting curves can be generated by CAD/CAM transformation with direct data transmission to the machine's CNC axes. After preparation of the cutting data, the machine

is capable of executing single cuts as well as multiple cuts on the nesting principle in a sequence (to optimize material usage).

**Oxy-fuel or plasma cutting**

In addition to oxy-fuel, which permits the cutting of wall thicknesses up to 150 mm, MÜLLER OPLADEN also offers plasma as an alternative or in addition for the cutting of maximum wall thicknesses of 80 mm. The oxy-fuel cutting process uses acetylene or natural gas. Bevel angles of up to

70° and tapers up to 80° are then achievable.

**Direct application of inscriptions and markings**

The machine can be equipped with a marker (usually on the inkjet principle) that communicates with the machine's measuring system. Inscriptions or markings can be applied at the cutting positions. Assembly markings, for example, can be very useful for the subsequent welding of pipe connections or other components.

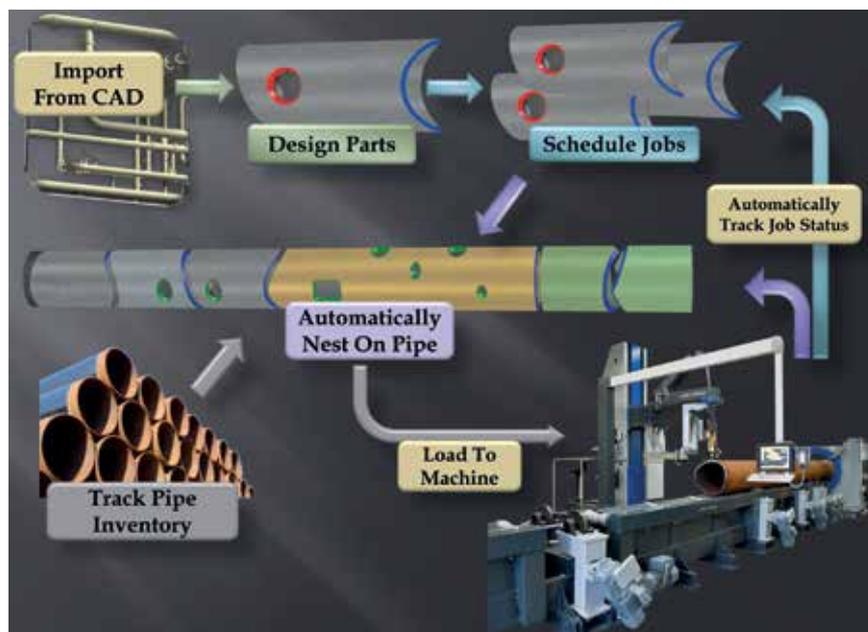


## Software cuts down time, costs and material

MÜLLER OPLADEN's 3D profile cutting machines make customers' production processes more efficient. These machines for the thermal cutting of 3D contours are not therefore isolated elements, but part of an integrated process chain. With the new CAM modules, customers are able to link machines to upstream and downstream workflows to significantly reduce production time, material costs and errors. The software PipeServer® and/or the macro-based Corobs® software are the basis for the MÜLLER OPLADEN RB Compact, RB Watts, RB Classic and RB Heavy-Duty series of machines. The AlmaRobot® software is the basis for the PB Robo series.

PipeServer® CAD/CAM system for the RB Compact, RB Watts, RB Classic and RB Heavy-Duty series of machines

PipeServer® is a comprehensive CAD/CAM system for the purpose of modelling cutting geometries, for nesting numerous parts to be cut on a single pipe, for assigning cutting functions to one or several machines while taking into account their respective capacity, for keeping track of current working process stages at the machines and for cal-



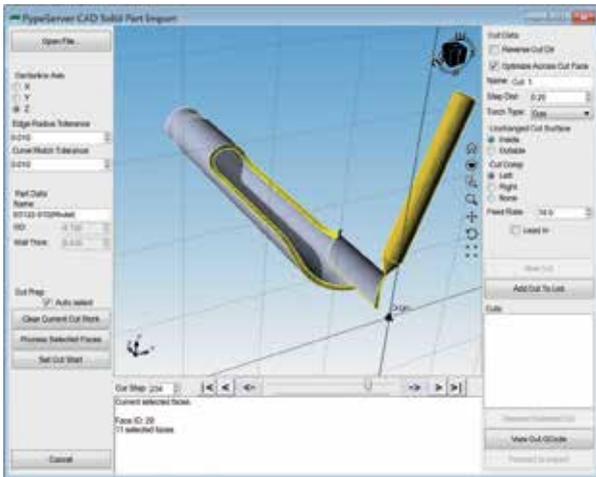
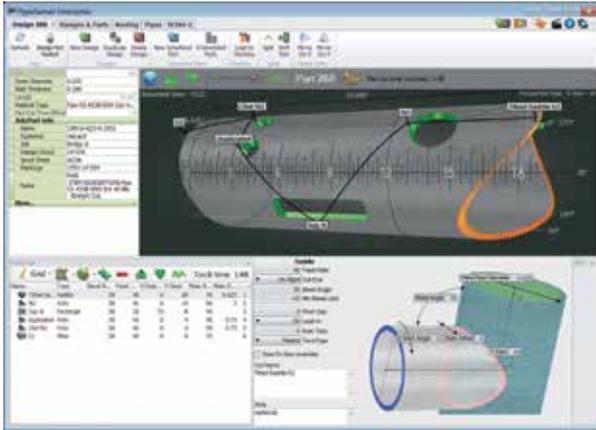
culating and representing cutting times and costs. PipeServer® also provides extensive reporting functions for calculation or documentation purposes. PipeServer® can run standalone as a software system for modelling pipes and the resulting cutting contours or can tightly integrate with company workflows by importing drawings from a variety of CAD software systems.

PipeServer® offers rich data in SQL views that can be pulled into Excel and other tools for reporting, and into ERP systems or other data bases. PipeServer® is typically run

at both the machine and in offices. In offices, CAD designers and detailers import jobs, design parts, and plan work. At the machine, machine operators nest parts on pipe and cut jobs.

**PipeServer® modelling module**

The PipeServer® modelling module permits independent production of pipe cutting contours represented in 3D with dimension contours. To begin with, a cutting contour such as a saddle cut is selected. Then, only a few parameters need be entered into a pre-set mask to allow the cutting contour to develop



automatically. Repetitive contours can simply be duplicated.

**PypeServer® CAD-import module**  
PypeServer® can import parts and complete design spools of most well-known software CAD systems such as Acorn, AutoDesk, Aveva, BoCAD, COMPRESS, Intergraph, Pro CAD, Pro Engineer, Ship Constructor, Solid Works or Tekla Structures. Custom importers can be developed in cooperation with the customers.

**PypeServer® nesting module**  
Once all the parts have either been modelled or alternatively imported, PypeServer, with a single command, automatically nests the parts on a pipe. This algorithm for such optimal nesting can save up to 10 percent in materials. The pipe segments to be cut are then shown in 3D on the monitor. During the cutting process, both the machine operator and those using PypeServer® remotely can see the machine's cutting progress. PypeServer® integrates software that can automatically print labels unique for each part.

**PypeServer® and SQL databases**  
PypeServer® runs on top of SQL databases. These databases expose a rich set of data views for use in ERP, process management, inventory control, and custom reporting. Our customers often integrate PypeServer® data with their ERP system, and also with Microsoft Excel to create custom live reports for job costing, scheduling, tracking, inventory control, and post-job analyses.

**Corobs® Macro-base programming for the RB Compact, RB Watts, RB Classic and RB Heavy-Duty machine series**  
Besides PypeServer®, the machine computer also uses MÜLLER OPLADENs Corobs® software. Through selection of a wide range of cutting macros, this allows quick

preparation at the work station of the various cuts which are then directly performed on the pipe. In addition to this, Corobs® offers various setting options with regard to cutting parameters and other sequential parameters with a view to optimizing the individual steps in each case and also depending on the properties and quality of the pipe. These functions are also provided by Corobs® when PypeServer® is being used since the two software systems are interconnected and adapted to each other.

**AlmaRobo® CAD/CAM system for the PB Robo series of machines**  
AlmaRobo® is a comprehensive CAD/CAM system running on top of Alma software. This latter ranks as the comprehensive and leading CAD/CAM software for companies in the structural steel sector. The cutting contours are generated with the aid of freely programmable software architecture. In AlmaRobo®, data import from a CAD system, preferred from Tekla Structures, is followed by the automatic definition of the cutting curves and the associated creation of a cutting file. AlmaRobo® then sets the start and end points for the cutting task. After this, the overall cutting process of a cutting file is simulated with the depiction of the machine, the robot torch head and the workpiece before the start of cutting proper. The CAM-tools in AlmaRobo® are similar designed as in PypeServer®.

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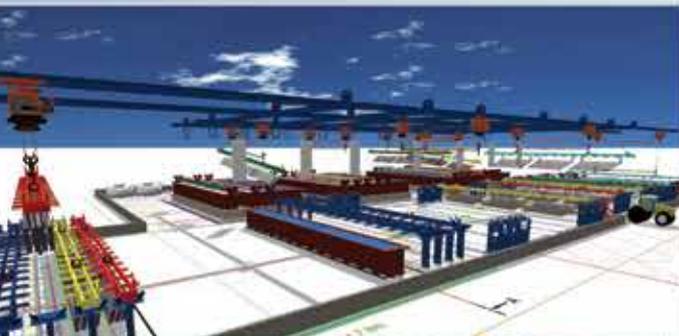
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Reika GmbH & Co KG

## Reika reports strong growth in Automotive Sector

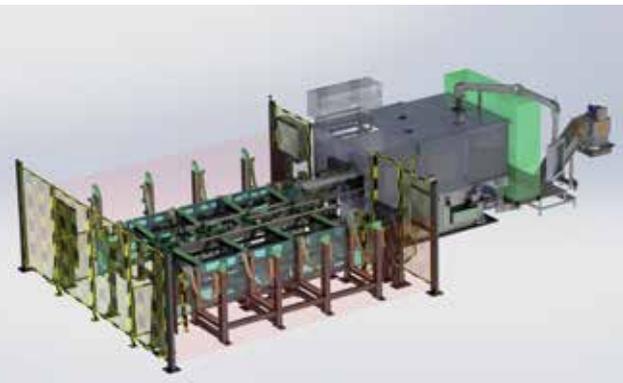


Constant Velocity Joint Cages

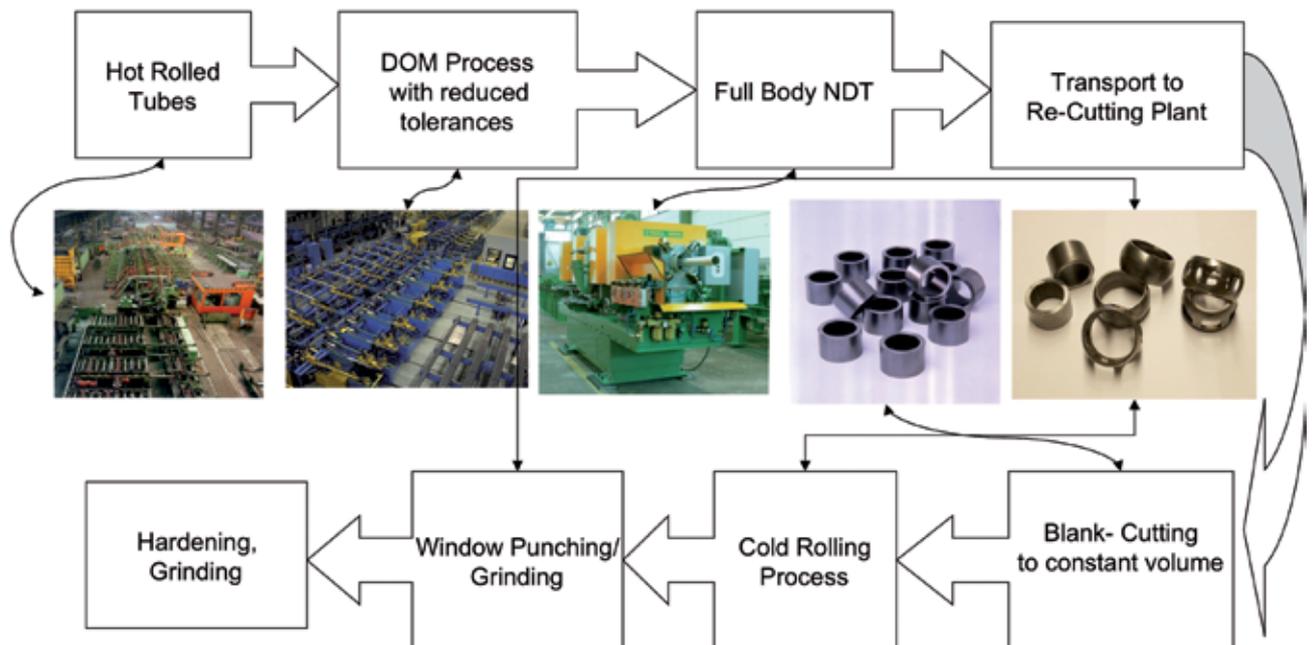
High precision at unbeatable low production costs: With this combination, Reika continues to set standards when cutting precision steel tubes for automotive applications. The two largest German automotive groups and various automotive suppliers benefit from this in many ways. For the new CVJ (Constant Velocity Joints) blank production, the world's largest car manufacturer secured a new Reika high speed cutting line. Four Reika lines are already working successfully for many years now at the customer's premises. With the fifth machine, there will be a total production capacity in Wolfsburg of app. 100.000 pcs /day.

The new compact line 224/324 is a custom-made product, manufacturing the cage blanks precisely to the Micrometer (part standard length

deviation: 2,2 my) with integrated end processing. According to the customer's requirements, the line is tailored to two tube sizes. These different tubes and blank geometries can be switched to two subsequent press lines and processed fully automatically without any operator intervention. Thanks to the automatic tool changer in the finishing process and a tailor-made clamping system, which allows optimum clamping force without any surface scratches of both tube diameters, there are no time and cost-intensive changeover times. Powerful wide range motor spindles are equipped with intelligent process monitoring, so important information, such as tool wear, is transmitted to the operator at an early stage. "We want our customers to be able to act rather than



Compact line 224/324



react. This saves money, in addition to time, and secures a faster return on investment, "explains Reika Managing Director Hans-Jörg Braun.

In any case, process cost of the innovative Reika cutting systems are unbeatably low compared to competing processes. On the one hand, because of the rather low air consumption of the Reika lines -while competing sawing machines must have a 10-bar supply net to remove small chips and quick motion, the Reika cutting lines work with a 6-bar net. Since the precision tubes are processed dry, without any coolant and without any saw chips, cleaning after the cutting process is not necessary. Since the costs of compressed air are still underestimated and not allocated to the individual machine

in the production plants, the automotive industry once again plays a pioneer role in terms of operating cost analysis. On the other hand, the tool cost during cutting, either with carbide inserts or roller blades, are significantly lower than during the sawing process, especially when working with carbide saws. Case studies proof cost advantages during three-shift operation can sum up to € 280.000,-- / year and more.

Reika's high-speed cutting lines offer compelling advantages for the manufacturers of tubular parts in terms of cost and quality. The combination of chip less and chip forming cutting on one machine is unique and the basis for high flexibility at minimum tool cost. Both cutting processes as well as end working in one single machine:

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Anyone who has ever benefited from this efficiency will always return, like many automotive suppliers, in particular those for shock absorbers and gas pressure springs. By the end of this year, a number of new lines are scheduled to start production in time.

Additional Reika lines have already been scheduled for longstanding customers.

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### ROLL KRAFT

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# ROLL KRAFT'S steady growth continues with the addition of 9 team members



*Jeremy Boggs, Vice President of Continuous Improvement*



*Levent Baykut, Continuous Improvement Manager*



*Darien Rampersad, IT Manager*

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Roll-Kraft, a manufacturer of roll tooling for tube and pipe and roll form companies, continues its growth with the addition of 9 team members to its Mentor, Ohio, headquarters facility and Houston, Texas, location.

We are pleased to announce the addition of the following team members:

**Jeremy Boggs** joins Roll-Kraft as the Vice President of Continuous Improvement. Jeremy will oversee areas of improvement for all of the Roll-Kraft locations, as well as integration of future acquisitions. He has extensive training in Lean Manufacturing and is certified in Six Sigma. His experience includes roles as Director CI/Lean and Supply Chain Management and Plant Operations Manager, which resulted in \$750,000 in savings through standardization and streamlining production processes.

**Levent Baykut** will work closely with Jeremy Boggs as the Continuous Improvement Manager, focusing on first-time performance and on-time delivery, as well as cost reductions in all processes throughout the Roll-Kraft family of companies. He has held positions as Lead Engineer, Lean Transformation Project Leader, and instructor at the Fenn College of Engineering at Cleveland State University.

**Darien Rampersad** comes to Roll-Kraft as IT Manager. He holds an Associate's Degree in Applied Business, IT Operations Systems, from Lakeland Community College, where he was on the dean's list. He will

guide the administration and implementation of Roll-Kraft's data network and all IT systems within the company.

Production and other staff additions include:

**Robert Mosakowski** comes to Roll-Kraft in the position of NC Soft Machinist. He has extensive experience as a machinist and foreman/supervisor, as well as operating various types of lathes, mills, and grinders. He attended Mazak CNC Programming School and the U.S. Navy LMET (Leadership and Management Education and Training) school.

**Daniel Hoppert** joins the Maintenance team at Roll-Kraft. He attended the Technical Automotive Program through Mentor High School and holds certifications and training in Lincoln Electric welding, AWS Structural Steel. He also holds a Class B CDL.

**Edwin Lukanc** joins the Engine Lathe Department. He is a graduate of the Willoughby Tech Center. Edwin's experience includes setup and operation of large and small mills, lathes, surface grinders, and engine lathes. He was previously a journeyman machinist at Heisler Tool.

**Eric Adams** joins Roll-Kraft as a CNC Machinist, with experience in CNC mill and lathe operation, setup, and programming in both conventional and G code.

**Tami Golden** joins Roll-Kraft as an Inspector. She has experience as a Quality Inspector, department supervisor, and has operated multiple machines.

**Dan Mahoney** has returned to Roll-Kraft and will be responsible for the company's EDM equipment. His experience includes inspection, setup, and operation of mills and lathes.



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Schuler AG

# Minister President Kretschmann: “New Group HQ offers freedom to think”



*Minister President Kretschmann: prime example of a hidden champion*



### **Official opening ceremony for Schuler Innovation Tower attended by numerous leading figures from business and politics**

With guests of honor from business and politics, as well as representatives from the city of Göppingen and members of its own staff, Schuler today officially inaugurated its new Group headquarters, the Schuler Innovation Tower (S. I. T.). The twelve-story engineering and technology center will provide 750 workspaces with cutting-edge technology, outstanding communication possibilities, and a company restaurant for Schuler employees.

### **Minister President Kretschmann: prime example of a hidden champion**

At the opening ceremony, Baden-Württemberg's Minister President Winfried Kretschmann stated: "From the exceptional quality of their vocational training, to their commitment to inspiring children and teenagers in the region to take an interest in science and technology, to their activities in the field of corporate social responsibility – Schuler has always been an innovator with an eye to the future. This is also borne out by the new Group headquarters, the largest investment in the company's long history. It's a building that provides plenty of space to work and plenty of freedom to think. And these two aspects are what make Schuler a prime example of a hidden champion from Baden-Württemberg."

### **CEO Klebert: driving future topics**

Schuler's CEO Stefan Klebert explained: "As the market leader in metal forming, we need excellent employees. And with our new S. I. T., we can offer outstanding working conditions for such good people. The fact that our innovation center was built here in Göppingen is also further proof of the company's clear commitment to its roots and to Germany as a location for premium technology. From our base in the Schuler Innovation Tower, we will continue to drive the future topics of plant and machine engineering, the digitization of products and company processes, and the field of electromobility."

### **BDI President Kempf: mid-size companies must remain backbone**

At the ceremony in Göppingen, the President of the Federation of German Industries (BDI), Dieter Kempf, demanded more political backing for small and mid-sized companies: "The fact that Germany is one of the few industrialized nations not to give tax breaks for research and not to provide its companies with a competitive infrastructure is illustrated by numerous international comparisons. Although Germany is ranked the fourth most innovative industrialized nation, it still lags a long way behind the leader Switzerland. And when it comes to digitization, we only just manage 17th place. In other words, politicians need to do their homework so that our small and mid-sized industrial companies can remain the backbone of a strong German economy."

### **Mayor Till: Göppingen is a reliable partner**

Göppingen's mayor Guido Till called Schuler a renowned ambassador and first-class figurehead for Göppingen as a business location. He claimed that the city offered everything companies needed for a successful investment. "We are a reliable partner for our businesses," declared Till, also with reference to the city's trade tax rate, which has been unchanged over the last 15 years. "As the mayor of Göppingen, the fact that our ancient city of the Hohenstaufen dynasty is home to such a global player with operations in 40 different countries fills me with pride."

**S. I. T. located at Schuler-Platz 1**

The city of Göppingen's council and administration had previously decided that the future official address for the Schuler Innovation Tower should be "Schuler-Platz 1" (1, Schuler Square), in order to underline the special bond between city and company.

The citizens of Göppingen can experience the Schuler Innovation Tower up close this weekend by registering for a guided tour. The tour will also enable them to enjoy the view from the roof terrace of the 54-meter-tall building. Schuler will also be offering special tours for its own employees on Monday and Tuesday.

Work on the interior fittings of Göppingen's new landmark building, as well as calibration and test runs for its supply systems and amenities (such as the air conditioning



system), will be completed in late summer and fall. After that, staff can begin moving into the Group's new headquarters. The dismantling of Schuler's old Engineering Building and the creation of new outdoor facilities is due to be completed in 2018.

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**First spiral pipe produced on a Schuler plant**

Experts predict that in North America alone, over 10,000 kilometers of new pipeline will be laid per year by 2020. And most of that will be spiral pipes. Tuberías Procarsa, one of the leading manufacturers of steel pipe in Latin America, is equipped for this trend: the company with headquarters in Monclova (Mexico) has put a spiral pipe plant from Schuler into operation and used it to produce large-diameter pipes.

The offline spiral pipe plant can produce large-diameter pipes with a diameter of 508 to 2,235 millimeters (20 to 88 inches) and a length of 12 to 24.4 meters. The raw material up to 25.4 millimeter-thick sheet metal band made of high-quality steel (up to X100) comes on a hot rolled coil (HRC). The spiral mill forms the diameter

and welds the spiral pipe within the first step by tack welding. In a further process, the final pipes will be welded by several final welding stands with a submerged arc welding process.

An innovation from Schuler is the integrated coil preparation stand. It ensures short changeover times, high occupational safety and an exact 90-degree cut of the beginning of the band. A crane transfer is no longer necessary. All relevant work steps on the spiral mill are automated: settings are no longer made manually; instead, setting is done directly on the well-organized control panel and implemented by servo motors. This results in an energy savings of up to 30 percent and short changeover times.

At a length of 285 meters, the pipe plant also includes various equip-



*Tuberías Procarsa recently put a spiral pipe welding system from Schuler into operation and used it to produce the first large-diameter pipe.*

ment for inspecting the large-diameter pipes in accordance with the API 5L standard. Ultrasonics, X-rays and water pressure stands are used here. The production capacity of Tuberías Procarsa will be increased by 200,000 tons a year thanks to the Schuler system.

SMS group GmbH

# Lasting traces in the sand ...



Project progress at Al Gharbia Pipe Company

In the Khalifa Industrial Zone Abu Dhabi (KIZAD), located almost equidistant between Abu Dhabi and Dubai, the SMS group is building a complete large-diameter pipe works for the production of longitudinally welded, heavy-walled large-diameter pipes of quality steel.

Client for the ambitious greenfield project is Al Gharbia Pipe Company (AGPC), a joint venture between Senaat, one of the largest industrial holdings in the United Arab Emirates (UAE), and two leading Japanese companies from the steel sector, JFE Steel Corporation and Marubeni-Itochu Steel Inc. (MISTI). The SMS group together with its consortium partner, Larsen & Toubro Limited, received the order as engineering, procurement and construction contractor (EPC) to supply a turnkey LSAW large-diameter pipe works.

The parties involved have around two years for the construction of the works that will then be one of the world's most modern large-diameter pipe works in the United Arab Emirates able to produce longitudinally welded, heavy-walled large-diameter pipes. Production of 240,000 tonnes per year is scheduled to commission as early as 2018. 40 percent of the production will go to the neighbouring markets in the GCC and the Middle East region, and to North and East Africa

### Production around the globe

Thanks to its international production network, the SMS group is able to produce all the core components

of its plants with its own production engineering know-how and according to uniform global quality standards in close proximity to the design engineering departments and to the important markets. For example, the six frames of the JCO® pipe forming press with part weights of approx. 40 tonnes were completely welded, heat treated, machined, partially assembled and painted to the customer's specification at the workshop in Bhubaneswar Khurda, India, before being shipped via the Indian sea port of Visakhapatnam directly to the site in Abu Dhabi. At the same time, key components such as the frame plate of the tack welding machine, pressure boxes, upper and lower section and base frame of the edge bending press as well as the base frame, booms and tools of the expander were machined and welded at the workshop in Mönchengladbach. Before shipment of the parts, all the plants were fully assembled and extensively commissioned.

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Vallourec Deutschland GmbH

## Contract signature with BAPETCO, a Shell JV in Egypt

Vallourec has signed a contract with Badr El Din Petroleum Company (BAPETCO), a joint venture between Shell and the Egyptian General Petroleum Corporation. This agreement concerns the supply of tubular solutions (OCTG) for 60 to 70 gas wells of an onshore project in the Western Desert of Egypt.

Vallourec will use one of the new production routes created in recent months under its Transformation Plan. Most of the seamless carbon steel tubes will be produced by Tianda, the new plant purchased by the Vallourec Group in 2016 in

Chuzhou, China (North of Shanghai), while the premium VAM TOP® threading will be made at Vallourec's Chinese threading plant in Changzhou.

Additionally, premium tubes made from corrosion-resistant material such as 13%Cr and Super 13%Cr proprietary grades will be produced at Vallourec's European plants in France and Germany.

According to Didier Hornet, SVP of Vallourec's Development and Innovation Department "Our local presence, through Vallourec's Egyptian office, has in recent years been key to understanding our customers'

expectations. We are proud to have won this new contract in a market as competitive as Egypt. Thanks to the efforts we made in the recent months, as part of our Transformation Plan, we are fully able to offer our customers competitive solutions across the range of OCTG products".

## Vallourec Umbilicals installs a new orbital welding line

In July, Vallourec Umbilicals launched a new orbital welding line for Super Duplex stainless-steel tubes in Venarey-Les Laumes (Côte-d'Or).

This line will enable us to increase our production capacity and better meet the growing demand in the offshore umbilicals market by reducing turnaround times.

Umbilicals are a key component in a subsea installation. They are used to connect the equipments on the seabed to a control station at the surface. Made of small-diameter tubes, cables and/or optical fibers, umbilicals are used for transporting fluids, supplying power, and transmitting information.

Our thinner Super Duplex stainless-steel tubes will yield lighter,

more cost-effective umbilicals, that are therefore easier to install at sea. Their strength and mechanical properties, superior to those of other products currently available on the market, improve the overall performance of the umbilicals in operation. These are just a few of the qualities that have made the demand for this new, unique product increase steadily since it was put on the market in 2015.

The growth outlook made it possible to launch an investment project in August 2016 that aimed to increase plant capacity. This involved installing a new orbital line alongside the existing line.

Thanks to the lessons learned from the existing line, the architecture for the new line was redesigned

and a system of intermediary grids was developed to save time when performing operations, to reduce yields and thus to improve productivity for the plant as a whole.

“The project is being completed one week ahead of schedule with no cost overruns, and we have achieved our goals by closely monitoring our suppliers and effectively managing risks. The new line has been certified by Bureau Veritas and has already been approved by our customer TechnipFMC Umbilicals, so we will be able to accelerate our ongoing production and deliver earlier than we initially expected,” explained

Erwan Geoffroy, Project Manager at Vallourec Umbilicals. Stéphane Chrobot, Chief Operating Officer at Vallourec Umbilicals, underscored the value of this investment for the company: “This extra capacity strengthens our position and enables us to keep pace with our growing market while also reducing our turnaround times. With better overall efficiency, we are now able to produce straight tubes with a high throughput, giving us access to new markets, including the one for flying leads\*”.

\*flying leads – flexible connecting pipes

## Open Innovation Challenge

Vallourec is launching its first “Open Innovation Challenge” on the theme of intelligent tubes.

“The Group is consciously embracing Open Innovation to exploit the opportunities allowed by new technologies and thus develop its offer,” explains Director of Innovation Sylvie Dubois Decool.

“Intelligent” tubes could be designed to record and transmit information during their lifecycle: either information about the fluids in contact with the tubes (flow rate, pressure or temperature) or related to changes in the tubes themselves (changes in thickness, or crack detection).

Developments such as high-performance sensors, low data transmission networks, big data, energy harvesting are innovative technologies that open up new opportunities for intelligent tubes.

This Open Innovation challenge enables Vallourec to identify startups, laboratories and companies with expertise in these different

technologies, and to work with selected companies to develop solutions adapted to the Group’s markets.

It comes within the scope of Vallourec’s initiatives in terms of open innovation.

“Through its Open Innovation Challenge, Vallourec is demonstrating its commitment to developing win-win partnerships with agile, leading-edge companies on new technologies. Our goal is to anticipate and take advantage of new technologies to offer differentiating solutions for our customers and consolidate Vallourec’s leadership over the long term,” says Sylvie Dubois Decool.

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MAIR RESEARCH S.P.A.

## Mair Research has supplied a new finishing line for a high productivity CW Mill in the USA

Mair Research has recently supplied an integrated finishing line for processing tubes for an important US supplier of tubes for a wide range of applications such as A53, API, Conduit, Sprinkler pipe, other.

What distinguishes this finishing line is the very high level of productivity it must guarantee as it must follow a CW (Continuous Weld) Mill capable of producing at speeds up to 1000 feet/min (approx. 300 m/min).

The products to process are up to 4 7/8" inch diameter with max 0.375" wall thickness and 25' lengths. They arrive at 105° F.

The line has replaced the previous system based on single processing zones; the integration of the full process placed in line with the mill has allowed to reach a 95% working progress reduction and a significant increase in output.

The layout has been custom designed together with the customer according to the specific processing required as per the destinations of use the tubes. This in accordance also with the available floorspace.

Since all operations are performed automatically, a very limited amount of operators with sole supervisory tasks are sufficient to conduct the line. Consequently all operator hazards have been eliminated providing a constantly safe work environment.

The main processing equipment present in the line is as follows:



Chamfering machine. We employ a special double head chamfering machine to process two tubes at a time (facing, ID and OD bevel plus adaptor for specific angle bevel). The machine is equipped with a quick spindle replacement allowing to reduce the downtimes upon size changeover.

Upon changing tube length the mobile part of the equipment (conveyors and mobile head) will relocate automatically to the new position.

Hydrotester, rotary type. A special high productivity hydrotester allows to test up to 1200 tubes/hour at 3000 psi. The operation is continuous and the tubes perform a rotary movement in which the work cycles take place. Before the actual pressurization all tubes undergo an ID flushout operation to clear of any scale or chips.





Swarf Removal Station. Suitable to flushout loose chips and scale of two tubes at a time in two stages by means of compressed air performed in two stages.

All expelled particles are conveniently collected inside a bin.

Packaging machine. The tubes are automatically packed into hexagonal or square / rectangular bundles and then strapped. Special provisions allow a staggered layer bundle form when stacking threaded tubes equipped with a socket on one end. Bundles will be weighed and placed ready on the storage chains to be picked up by an overhead crane.

A printer produces a customized anti-tear label including the company logo, bar code, weight and other data as required. The line is flexible to allow different routes of work and processing and to conveniently collect tubes for further reprocessing.

Particular attention is given to tube handling in order to avoid denting and scratching.

Mair Research is specialised in the design, manufacture and supply of finishing lines in general (automotive, OCTG, cold drawn DOM, other) having delivered to very important world reference producers in the field of ERW and seamless tubes.

All Mair Research equipment is fully designed, manufactured and assembled in our facilities in Italy. Before dispatch the equipment undergoes strict preshipment tests conducted in the presence of the customer.

Preshipment tests have proved to be beneficial allowing in house optimization thus reducing on site startup and commissioning works.

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Tube Southeast Asia 2017

# wire and Tube Southeast Asia 2017 registered record-breaking visitor count: Delivers in line with strong prospects in the region



- 400 leading exhibitors from 30 countries presented their latest in-demand products and in-trend technologies and innovations
- 8,458 international visitors from 50 countries visited the 3-day exhibition
- Industry-focused concurrent conference and seminar well-attended by members of the industry

wire and Tube Southeast Asia 2017 – the 12th International Wire and Cable Trade Fair for Southeast Asia and the 11th International Tube and Pipe Trade Fair for Southeast Asia came to a successful close on 21 September 2017.

Together, the synergistic, co-located trade fairs unveiled an all-encompassing exhibit range that was presented by 400 leading industry names from 30 countries – of which 95% came from outside Thailand, as well as national pavilions and country groups Austria, China, Germany, Italy, Taiwan, UK and USA. Testament to the trade fairs’

standing as the region’s definitive sourcing and procurement platform for the industry, wire and Tube Southeast Asia 2017 recorded attendance of 8,458 trade visitors from 50 countries, with 39% coming from overseas, including visiting delegations from Vietnam, India, Japan, Thailand and Malaysia. This year’s overall visitorship showed a healthy increase of close to 20% as compared to 2015, with local demand manifested by 65 local group visits from Bangkok Cable, Phelps Dodge International, Thai Wire Products, Thai Yazaki Electric Wire, The Siam Industrial Wire, among others.

In tapping into growth opportunities in Asia, companies need the right ecosystem and framework. Citing Mr Kobchai Sungsitthisawad, Deputy Permanent Secretary, Ministry of Industry at the Opening Ceremony of wire and Tube Southeast Asia 2017, he shared that “the timely staging of exhibitions like wire and Tube Southeast Asia, thus bring forth new ideas,

facilitate business deals and transactions and provide an environment for ideas and creative solutions to propagate, paving the way for product manufacturers, raw material suppliers, components and equipment manufacturers and technology innovators to gain their foothold in Thailand and the region.”

This vote of confidence was extended as participating exhibitors gave their best showing of expertise, technologies, machinery, innovations and know-how in fulfilling procurement and sourcing objectives tailored towards the current industry landscape. As commented by Mr Mauritz Von Reden, CEO of Seuthe GmbH, “We are proud to be here at this trade-focused platform to showcase our products and connect with customers. It is our pleasure to mention that we have made many new business contacts with companies from Thailand, China and India, and hope these will spin off to many fruitful dealings and collaborations.”

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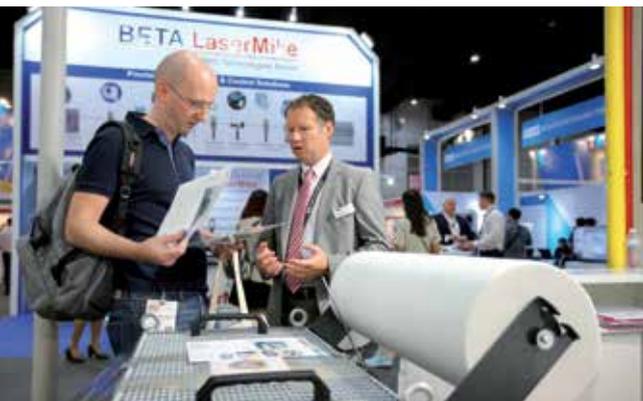
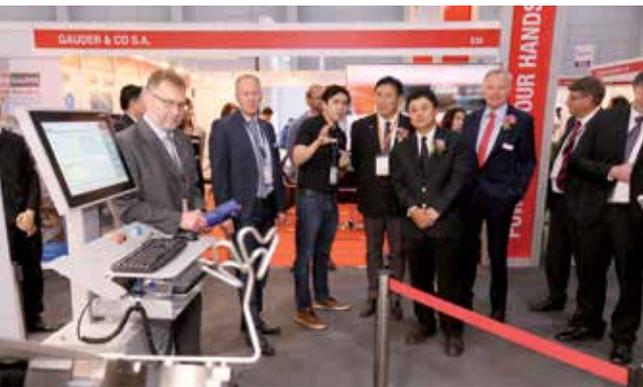
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16 - 20 April 2018  
Düsseldorf, Germany



# Review: Tube Southeast Asia 2017



For SCG Chemicals, one of the largest integrated petrochemical companies in Asia, wire and Tube Southeast Asia 2017 gave the company an expanded channel to promote its businesses to regional visitors. On meeting their participation objectives, Mr Taviphat Konkhum, Sales Manager for SCG Chemicals remarked that, "this is a very good exhibition, as we got to meet with a lot of prospective customers and suppliers for wire and cable. We have had many guests coming to our booth and new customers who are interested in our products, and are already planning to be at the next edition of the trade fair!"

Reiterating wire and Tube Southeast Asia's standing as a business-promoting forum were the sentiments gathered from visitors at the show grounds. For Ir Chang Yew Cheong, Vice President of The Electrical and Electronics Association of Malaysia, he shared that the trade fair brought a great opportunity for wire companies

and manufacturers to be exposed to the latest range of products and technologies available in the market, and he will be bringing home the knowledge gained to his association members and the industry. His thoughts resonated with Mr Naohiro Une, President of Daishin Industrial Co, who commented that he was glad to be able to see new technologies coming into Thailand at the exhibition, which reinforces

"Thailand's draw as a regional hub that will bridge Japan to the Southeast Asian and Middle Eastern markets."

Beyond the strong corroboration by international industry partners towards the trade fairs' dynamic line-up, the three full on days of action was augmented by concurrently held conference, seminar and technical presentations. Led by field experts and participating exhibitors, the concurrent events met with overwhelming response and were well-attended by over 300 trade attendees.



Quoting Mr Friedrich-Georg Kehrer, Global Portfolio Director for Metals and Flow Technologies, Messe Düsseldorf GmbH, "Thailand is considered to be the central springboard to the up-and-coming markets of South-east Asia due to a boom in the building, energy and automotive sector. This quintessentially makes wire and Tube Southeast Asia, the focal platform to information on the latest developments, equipment and machinery, where contacts for future business relations are made and deals are concluded."

With an established history of over two decades in Southeast Asia, and driven by the global credentials of the world's leading trade fairs in the wire and tube sectors, wire Düsseldorf and Tube Düsseldorf, the staging of wire and Tube Southeast Asia 2019 strives to address major, upcoming trends, challenges, and opportunities for companies to consider. Working hand in hand with international industry partners and supporting industry associations, the line-up at the 2019 edition of the world-class trade fairs will showcase one that indicative of the upcoming economic climate and industry progressions.

More information on wire and Tube Southeast Asia 2017 will be released in a post-show report available shortly. wire and Tube Southeast Asia 2019 will take place from 18 – 20 September at BITEC, Bangkok. To exhibit and/or visit, please visit

[www.wire-southeastasia.com](http://www.wire-southeastasia.com)

[www.tube-southeastasia.com](http://www.tube-southeastasia.com)

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Fabtech 2017

## Worldwide tube trade fair program at FABTECH 2017



At FABTECH 2017, Messe Düsseldorf will promote its worldwide program of international tube and pipe trade fairs, organized around the globe. At booth B 16091, visitor and exhibitor information for Tube Düsseldorf 2018 (April 16 – 18, 2018 in Düsseldorf, Germany), Tube China 2018 (September 26 – 29, 2018 in Shanghai) and Tube India 2018 (November 27 – 29, 2018 in Mumbai) and Tube Russia (2019 in Moscow) will be available.

As the No. 1 international trade fair for the sector, Tube Düsseldorf, International Tube and Pipe Trade Fair, is a central international platform for world market leaders, innovators and other industry experts to gather information on current technologies and future trends. The spectrum includes raw materials, pipes, tubes and accessories, machinery for the production of pipes and tubes, pre-owned

machinery as well as process engineering tools, auxiliary materials, pipelines, OCTG technology, profiles, measuring, control and test engineering.

At the show's last staging in 2016, 1,277 exhibitors from 51 countries and 31,304 visitors from 134 nations took part. About 75% of the Tube exhibitors usually come from outside Germany, including 40 companies from the U.S. As in the past, Messe Düsseldorf North America will again organize a North American Pavilion, together with the Fabricators & Manufacturers Association, International (FMA) and the Society of Manufacturing Engineers (SME) as co-sponsors.

For information on visiting or exhibiting at Tube Düsseldorf 2018 or any other tube trade fair in Messe Düsseldorf's worldwide program, visit booth B 16091 at FABTECH 2017 or contact Messe Düsseldorf North America, 150 North Michigan Avenue, Suite 2920, Chicago, IL 60601. Telephone: (312) 781-5180; Fax: (312) 781-5188; E-mail: [info@mdna.com](mailto:info@mdna.com); Visit our web site <http://www.mdna.com>; Subscribe to our blog at <http://blog.mdna.com>; Follow us on twitter at [http://twitter.com/WireTube\\_MDNA](http://twitter.com/WireTube_MDNA)



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ITA Conference 2017

## Tube industry – How to stay competitive in difficult times



**CONFERENCE**  
**ITA**  
International Tube Association

**DÜSSELDORF 7 - 8 NOV. 2017**  
CCD EAST Messe Düsseldorf

Organised by International Tube Association in cooperation with Cabwire 2017 world technical conference, by the leading wire and cable industry associations

**ASMAG**  
asmag group

**REIKA**

**SCHULER**  
Member of the ANDRITZ GROUP

**Quaker**

**SMS group**

Tube industry is facing currently difficult times. In order to address current challenges this year's international ITA Conference will focus how to stay competitive in this situation.

Participants will enjoy the following benefits:

- Market overviews of pipe and tube sectors
- Presentations by producers and equipment suppliers
- Latest technological developments
- Optional plant tours
- Table top exhibits
- Excellent networking opportunities incl. networking evening event
- Reduced fees for early bookers, ITA members and students
- Concurrent wire conference and table top exhibition
- World class venue in the spiritual home of Tube
- Special room rates at nearby hotels (subject to availability)

## Programme

### topic – market

- 09:15 - 09:35  
**Steel Tube Industry in challenging markets**  
Frank Harms, Managing Director, German Steel Tube Association
- 09:40 - 10:00  
**Russian steel pipe and tube market in 2017-2018**  
Bulba Viktoriya, Steel market specialist, Metal Expert LLC
- 10:05 - 10:25  
**Iran Piping systems – A blunt view of the market**  
Volker Klosowski, Managing Partner, WB & K Iran Consulting

- 10:30 - 11:00 – COFFEE BREAK

### topic – seamless

- 11:00 - 11:20  
**Future-oriented solutions for competitive tube plants**  
Stephan Hüllstrunk, Technical Sales Manager Seamless Tube Plants, SMS group GmbH

- 11:20 - 11:40  
**The New 3 Roll Type Elongator**  
Ettore Cernuschi, Chief Technical Officer,  
Danieli Centro Tube
- 11:40 - 12:00  
**Kocks Microstructure Simulator – not a toy, but a tool ...**  
Jörg Surmund, Area Sales Manager,  
Friedrich Kocks GmbH & Co KG

■ 12:00 - 13:30 – LUNCH BREAK

- 13:30 - 14:00 – PODIUMS DISCUSSION  
**How to stay competitive in difficult times**

topic – welding

- 14:15 - 14:35  
**Spiral Pipe Plants in new Dimensions**  
Hartmut Kussmaul, Director Sales and Product  
Management Large Pipes, Schuler Pressen GmbH
- 14:35 - 14:55  
**Fives technologies: OTO Hollow Shape Forming Mill**  
Andrea Anesi, Operation Director, Fives OTO S.P.A.
- 15:00 - 15:20  
**Fiber Laser Tube Welding System**  
Alberto Cavallini, Product Manager TPS Systems,  
IPG Photonics
- 15:20 - 15:40  
**Laser Welding – An Innovative Production Technology for welded Stainless Steel Tubes and Profiles**  
Daniel Rujanowski, Branchenmanagement Rohr & Profil, Trumpf GmbH

■ 15:40 - 16:00 – COFFEE BREAK

- 16:00 - 16:20  
**Tube Design Technology – first steps to Industry 4.0**  
Stefan Freitag, Managing Director, data M Sheet  
Metal Solutions GmbH
- 16:20 - 16:40  
**Reliable Ultrasonic Tube Testing For Highest Grades**  
Klaus Dickmann, NDT Engineering Manager,  
Slickers Technology GmbH & Co. KG
- 16:40 - 17:00  
**Novel signal processing of on-line wall thickness gauge profiles for production monitoring of hot seamless steel tube plants**  
Marc Choquet, Vice-President Laser NDE,  
Tecnar Automation Ltée

■ 17:00 - 17:15 – COFFEE BREAK

- 17:15 - 17:35  
**High-Performance Production Cell for Premium Coupling Blanks**  
Hans-Joerg Braun, Managing Director,  
Reika GmbH & Co.Kg
- 17:35 - 17:55  
**Environmental friendly pretreatment lines for tube pickling and phosphating**  
Fritz Nerat, Managing Director, Koerner  
Chemieanlagenbau Ges.m.b.H.
- 17:55 - 18:15  
**In-line Tube Measurement for the smart tube mill**  
Dean Durbic, System Development, LIMAB AB

## ■ 7 November 2017 - Networking Event

On 7 November ITA and leading wire and cable industry associations have chartered a ship for a rhine river tour including dinner and drinks. This event is free of charge for registered delegates but as capacities are limited delegates need to register in advance (first come, first serve).

## ■ 8 November 2017 - Plant tours

We have organized the following plant tours for conference visitors. Participation is optional and free of charge but a booking is required and once booked, attendance is viewed as compulsory except under exceptional circumstances. Places are limited so bookings are taken on a first-come-first-served basis.

### Vallourec, Düsseldorf Rath

A world leader in its markets, Vallourec provides tubular solutions that are the benchmark reference for the energy sector and other applications that present the most demanding challenges. Its tubes, connections and innovative services make the most complex projects possible, from oil and gas wells in extreme environments to next-generation power plants to bold architecture and high-performance mechanical engineering.

### Europipe, Mühlheim

The EUROPIPE Group is the world's leading manufacturer of large-diameter pipes with an annual production of 3000 km resp. 1 million tons. Its SAWL and SAWH welded large-diameter steel pipes for the oil, gas and water industry withstands even extreme applications such as the desert heat, the extreme temperatures of the Arctic or the highest pressure of the deep sea.

# Preview: ITA Conference

For their customers the EUROPIPE Group with production sites in Germany and the USA is worldwide in the market. The headquarters, the EUROPIPE GmbH, is situated in Mülheim an der Ruhr, Germany. Its shareholders are Aktien-Gesellschaft der Dillinger Hüttenwerke and Salzgitter Mannesmann GmbH, each holding a 50% stake.

EUROPIPE Group's expertise:

- High-strength pipe: Steel grades X80 to X100
- HIC-resistant pipe: all grades up to X70
- Collapse-resistant pipe: optimisation of geometry and steel grade
- Arctic grade pipes: up to X80

The pipe mill in Mülheim an der Ruhr is one of the most productive mills world wide. On an area of 80.000 m2 Europipe produced hundredth of large diameter pipes per day.

## Registration procedure

Delegate entitlement for the conference:

- Documentation
- Refreshment breaks and lunch
- Delegate list (supplied after the conference)
- Attendance for all conference sessions
- Networking event on 7 November 2017
- Reduced fees for ITA members and students
- Optional plant tours (but numbers are limited)

	Member	Non-member	Student
Early bird	150 €	200 €	40 €
later	175 €	225 €	50 €



The ITA is the sole world wide acting membership association

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## Exhibitors



# Fascination with Tubes



**Prinz-Mayweg Gruppe**  
Präzisionsstahlrohre

## Versatility from Cutting-Edge Technology

Unifying competence and state-of-the-art technology

The Prinz-Mayweg Gruppe is a medium-sized company specialized on the production of high-precision steel tubes. The production chain always starts with the manufacturing of steel tubes by using high-frequency welding. The focus lies on customized forming operations using specific tools to provide customer orientated solutions. Highly innovative forming operations are the main key-notes of the Prinz-Mayweg Gruppe and therefore strongly focused at all times. More than 100 years of experience in tube production meet innovative processing and customer orientated mindset.

## High-Performance Technology

- Tube welding systems
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- Straightening machines
- Sawing centres
- Deburring units
- Washing systems
- Vibratory finishing systems
- Metal-cutting finishing
- Non-cutting finishing
- CNC bending machines
- Bending, stamping presses
- Welding robots
- Special machines



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ITA – Indian Chapter

# Conclave on emerging trends in tubes & pipes for oil and gas – New Dehli, 15 November 2017



International Tube Association (ITA) ([www.itatube.org](http://www.itatube.org)) is the world's largest and most influential personal membership association for the tube & pipe industries and offers a unique range of benefits, services and events to promote new technology and growth within our industry. Individuals in more than 70 countries worldwide have already discovered the world of difference ITA membership can make to them personally and to their business. ITA in India is based in Chennai and is involved in training and education of its members on manufacturing and technology for Tubes and Pipes.

Many of the world's economies are suffering directly or indirectly from the economic slowdown and a slump in oil and gas prices. However the Indian economy is in a growth cycle and commodities – especially oil – will fuel an increased internal demand for tubular products and the upstream supporting supply chain services. The Government of India is also promoting the MAKE IN INDIA programme by which India will emerge as the next manufacturing hub, competitively, for which a number of measures to improve the ease of doing business in India is also being addressed.

The ITA will be holding a one day Conference at Hotel Hyatt Regency, New Delhi on 15th November 2017 and will be focussed on Tubes and Pipes for the Oil and Gas Industry. This is probably a first of its kind in India where user and producer groups are expected to together discuss the emerging trends and what kind of technology, materials science, Quality standards, Capacities and Capabilities we need to create in India for the country to be in the forefront and help it achieve self sufficiency in the area. Oil and Gas Sector is perhaps one of the largest sectors as a market for Tube and Pipe and in some ways for the steel and other metals industries as well.

The Conference will showcase the relevant State of the Art Technologies, Demand and Supply for Tube and Pipe, and the emerging scenario of off shore and on shore extraction methodologies, refining and distribution and their impact and demands on Tubes and Pipes manufacturers. It is a great opportunity for the stake holders in the Industry be they Researchers, Consultants/Advisors, suppliers of raw materials or manufacturers of Tube and Pipe or the End users involved in Exploration, Refining and Distribution, to present their innovative ideas to an audience of highly professional and capable industry managers and researchers involved in the Oil and Gas Industries.

The conference is planned as a judicious mix of paper presentations and podium discussions. Why not be at the centre of this by par-

ticipating in presenting a paper or in a podium discussion on topics concerning technology, future prospects, commerce, or operational excellence that highlights your particular area of expertise and whilst confirming your professional commitment to the development of this sector.

We will keep you up to date with the organisational details of the conference. This letter is to give you the 'heads up' that it is coming and it would be appreciated if you could come back as soon as possible with 'an expression of interest'.

### **International Tube Association India Chapter**

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Iran Wire 2017

## Relocation to new, state-of-the-art exhibition centre in Tehran

The relocation of Iran Wire to the state-of-the-art exhibition centre EXHIBIRAN INTERNATIONAL Fair-ground – currently under construction – has now been decided. The Aria Group, the owners and organisers of Iran Wire, will be holding this high-profile technology trade fair for the first time at the new exhibition centre. 15 exhibition halls are being created in Tehran, of which three have already been completed: A6, A5 and A4.

Relocation of the trade fair to the new hall, A6, will mean a postponement, so that Iran Wire will now be held from 6 to 9 December 2017. It is the only Iranian trade fair on wire, cables, pipes, tubes, profiles and accessories.

Any European and other international companies wanting to sell their wire and tube products on the Iranian market will find Iran Wire an attractive entry point into the markets of the Middle East. They will be given professional support by the Messe Düsseldorf exhibition professionals.

Acting under a joint contract, Messe Düsseldorf GmbH will be the

first and only sales partner of Iran Wire with responsibility for organising all German and international participations of companies. This makes it a single point of contact for all businesses in the wire, cable, pipe and tube industries seeking to access the promising Iranian market. Messe Düsseldorf is handling a wide range of organisational areas, from registration to stand design, ensuring smooth operations at the exhibition centre.

Demand from companies has been enormous, and the exhibition space reserved so far (1,500 sqm) in Hall A6 is almost fully booked. Interested companies are therefore advised to talk to the relevant contacts at Messe Düsseldorf as soon as possible. Cem Bağcı and Cordula Link look forward to hearing from you: [BagciC@messe-duesseldorf.de](mailto:BagciC@messe-duesseldorf.de) and [LinkC@messe-duesseldorf.de](mailto:LinkC@messe-duesseldorf.de).



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Steelfab 2018

## Steelfab 2018 promises a fab show

### Expectations soar as region's premier metal working event gets ready for its 14th edition

Regional metal working industry can expect much more from SteelFab 2018, which is set to pack a bigger punch for its upcoming edition scheduled for early next year.

Leveraging on the success of the previous edition held earlier this year, the 14th edition of SteelFab will look to strengthen its position as the region's largest and longest running trade fair dedicated to the metal working industry.

Besides, for the first time, SteelFab will be bringing the renowned German excellence in technology, engineering and innovation to the region through its tie-up with Messe Essen and International Tube Association (ITA).

"Foreign partnerships have always been the mainstay of SteelFab. In our latest endeavour, the tie-up with Messe Essen will see the launch of a special pavilion -- Essen Welding & Cutting Pavilion, while the partnership with ITA will help us focus more on pipes and tubes machinery & tools. Both the tie-ups are important to us since they underscore our commitment to introduce better technology and machinery to the region," said H.E. Saif Mohammed Al Midfa, CEO, Expo Centre Sharjah.

SteelFab 2018 will be organised and hosted by Expo Centre Sharjah from January 15 to 18, 2018.

Messe Essen and ITA join the list of supporting foreign industry associations such as Ucima Sistemi Per Produrre (Association of Italian Manufacturers of Machine Tools, Robots, Automation Systems and

Ancillary Products), DVS and Auma for the official German pavilion, Taiwan Association of Machinery Industry and UAE Contractors Association.

"Messe Essen organises the Schweissen & Schneiden fair, one of Europe's largest gatherings of welding, cutting, and finishing industry professionals, while the ITA is the world's largest and most influential association for the tube & pipe industries. They are names to reckon with globally and add great value to SteelFab," added H.E. Al Midfa.

"The deals with Messe and ITA will go a long way in helping us attract bigger names in the industry not only from Germany but also from across Europe," added H.E. Al Midfa.

The association with ITA is expected to elicit a good response, with the Pipe & Tube Machinery segment showcasing a wider spectrum of international suppliers and machinery makers for visitors from industries such as oil & gas, pipeline, power & water, MEP, food manufacturing, electrical, marine & offshore, furniture, construction & infrastructure, heavy industries and manufacturing.

The continuing tie-up with ITA will help the association's 900 members from more than 70 countries to present equipment, innovations, machines and technology for the regional tubes and pipes industry.

The increasing foreign support will also boost participation from countries such as Italy, Taiwan, Turkey, India and China, apart from Germany.

Apart from these, SteelFab will also feature special segments such as

Wear Resistant, Welding & Cutting and Machine Tools, seminars & technical presentations, live displays and the 3rd Fasteners World Middle East, a dedicated vertical for the complete range of industrial fasteners and fixings, assembly and installation systems, fastener manufacturing technology as well as storage and logistics services.

SteelFab 2018 will look to build on the impressive performance of its previous edition, which featured 342 exhibitors from nearly 30 countries and attracted 7,950 visitors from 83 countries during its four-day run.

Besides, the show has a lot to gain from strong economic tailwinds that include a projected jump of 14% in non-oil contribution to its GDP in four years due to rapid diversification of its economy, the UAE remaining the most competitive economy in the region and 17th most competitive economy globally, and increasing spending on mega events like the World Expo 2020.

According to the International Monetary Fund, the UAE's economic growth is set accelerate to 4.4% in 2018, driven by rebound in investment, manufacturing and trade, the fastest in the region.

### Expo Centre Sharjah

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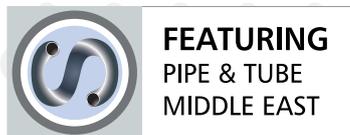
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Messe Düsseldorf GmbH

## Messe Düsseldorf to step up activities in Iran

**KISH ENEX 2018**  
چهاردهمین نمایشگاه بین المللی نفت و انرژی

14<sup>th</sup> INTERNATIONAL PETRO ENERGY EXHIBITION  
22 - 25 January, 2018  
Kish International Exhibitions Center  
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### Agreed partnership on KISH ENEX, International Petro Energy Exhibition

Messe Düsseldorf, successful organiser of international trade shows, has added a promising event in the Near East to its portfolio. Recently, it signed an agreement and entered into a far-reaching partnership with the Iranian organiser of KISH ENEX, International Petro Energy Exhibition. Starting with the upcoming event, which will take place from 22 to the 25 January 2018 in the free-trade zone of Kish Island, Messe Düsseldorf will assume exclusive responsibility for organising and implementing the participation of international exhibitors. KISH ENEX, an annual trade show since 2005, is co-hosted by the Iranian Ministry for Oil, the Kish Investment & Development Company and the Kish Free Zone Organization. The most recent event in January 2017 was attended by about 6,500 visitors with a keen interest in the services and products of 180 exhibitors, which included equipment for the oil, gas and chemical industries as well as energy generation, storage and distribution technologies.

Iran, a country with a population of 75 million, has a massive oil and gas industry, which contributes more than 50% of the country's total export revenue. The island of Kish, about 18 kilometres from the southern coast of Iran in the Persian Gulf, is a free-trade zone with an airport and plays a special role as a major hub for Iran, the Gulf and CIS countries. In close proximity to the Iranian oil and gas fields and the subsequent pro-

cessing industries, the geographic location of Kish has been a major advantage for KISH ENEX from the very beginning.

Messe Düsseldorf has acquired international competency in the organisation of specialised trade shows, particularly in the area of investment goods. With almost 50 special trade fairs, 23 of which are global flagship fairs at the Düsseldorf venue, 70 proprietary events, co-operations and international contract events, Messe Düsseldorf has become established as one of the leading export platforms. The hosted events include the international portfolio of ten wire, cable and pipe trade shows, among them the wire & Tube Düsseldorf; the NEFTEGAZ Moscow, International trade show for the oil and gas industry and the World of Energy Storage – five trade shows and conferences in Germany, China, India, Japan and the US with a focus on energy storage. The Messe Düsseldorf team enhances the new partnership with its extensive expertise and access to its many contacts in all industries that were acquired in the course of these events, which will advance the international status of KISH ENEX and consolidate its position – to the benefit of both exhibitors and visitors.

For more information on KISH ENEX 2018, please visit <http://kishenex.ir/en/> or contact Messe Düsseldorf GmbH, Miriam Schellkes, Tel. 0211/4560-7733, Email: SchellkesM@messe-duesseldorf.de

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Messe Düsseldorf GmbH

## wire India, Tube India and Metallurgy India are joining forces for the seventh time in India

This is now the seventh time that the Indian metal trade fair trio will be held at the Bombay Convention & Exhibition Centre in Mumbai, comprising wire India, Tube India and metallurgy India, from 27 to 28 November 2018.

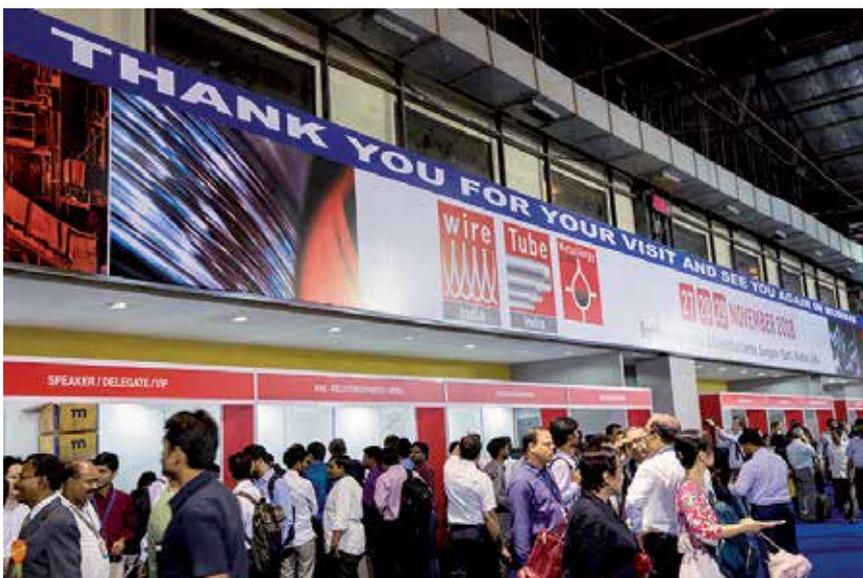
The three-day presentation will cover plants and machinery, the latest technologies and services from the various segments of the wire and cable industry as well as pipe and tube processing and the pipe and tube trade.

The previous event in 2016 already featured not only many national group stands from Germany, Austria, Italy, the United States and China, but also a large number of Indian companies as well as firms from India's immediate neighbours. The parallel character of the three trade fairs produces valuable synergies for exhibitors and visitors.

The forthcoming event will be the first one in India to include exhibitors from the area of fastener technology with a dedicated show, the Fastener Special Zone. wire, one of the world's leading trade fairs in this segment, is thus meeting growing interest from industry.

As the numbers of visitors had risen substantially at the previous events in 2015, next year, too, is expected to attract over 12,000 trade visitors to the Bombay Convention & Exhibition.

Further details about the two trade fairs can be found on their respective websites: [www.wire-india.com](http://www.wire-india.com), [www.tube-india.com](http://www.tube-india.com), [www.metallurgy-india.com](http://www.metallurgy-india.com) and also from Messe Düsseldorf, Marcus Müllers, [MuellersM@messe-duesseldorf.de](mailto:MuellersM@messe-duesseldorf.de) or phone: +49 (0) 211 4560 579.



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Events for Business, Technology, Education and Networking

## Diary of world class tube events 2017 – 2018

### November

06-09 FABTECH  
Chicago, USA  
Exhibition

American Welding Society  
Chemical Coaters Association International  
Fabricators & Manufacturers Association  
International Precision Metalforming  
Association  
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07-08 ITA Conference  
Düsseldorf, Germany  
Conference

International Tube Association e.V.  
Fax: +49 211 947-3938  
jennifer.kranz@itatube.org  
www.conference.itatube.org



15 ITA India Conference  
New Dehli, India  
Conference

International Tube Association – India Chapter  
5, Brindavan Street, Mylapore,  
CHENNAI 600 004  
Tel +91-44-400 0217  
ita.lakshmi@yahoo.com

07-08 Iran Wire  
Teheran, Iran  
Exhibition

Aria Group Conference  
Exhibition Development Company  
Overseas Associate: Messe Düsseldorf  
Fax: +49 211 4560 8529  
RyfischD@messe-duesseldorf.de

## 2018

### January

15-18 SteelFab  
Sharjah, United Arab Emirates  
Exhibition

Expo Centre Sharjah



### April

16-20 Tube Düsseldorf  
Düsseldorf, Germany  
Exhibition

Messe Düsseldorf GmbH  
Fax: +49 211 4560 8540  
AhrensG@messe-duesseldorf.de  
www.tube.de



## September

26-29 Tube China  
Shanghai, China  
Exhibition

Messe Düsseldorf GmbH  
Fax: +49 (0) 211 4560 579  
MuellersM@messe-duesseldorf.dee  
www.tubechina.net



## November

27-29 Tube India  
Mumbai, India  
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## New members

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Bjornar Grande	EFD Induction a.s	Norway
Jan-Arve Fuglass	EFD Induction a.s	Norway
John Inge Asperheim	EFD Induction a.s	Norway
Leif Markegard	EFD Induction a.s	Norway
Michael Karlsson	LIMAB AB	Sweden
Dean Durbic	LIMAB AB	Sweden
Lars Granlund	LIMAB AB	Sweden
Bo Johansson	LIMAB AB	Sweden
Sofia Hansson	Sandvik Materials Technology	Sweden
Christofer Hedvall	Sandvik Materials Technology	Sweden
Stanislav Riljak	Sandvik Materials Technology	Sweden
Anders Ulfvin	Sandvik Materials Technology	Sweden
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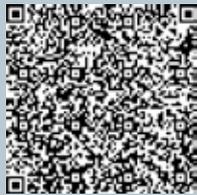
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