

Dr. Gunther Voswinckel, VOSCO GmbH

World Pipe & Tube Market: Current factors influencing the present situation

Dr. Gunther Voswinckel – Update as per May 2019

Welcome once more to our regular presentation in which we discuss some of the worldwide economic factors influencing the pipe and tube industry.

Analysts will have once again realized that forecasts on oil price levels may be completely overthrown by political intervention on the part of stakeholders. The figures show that US tube and pipe producers in particular were greatly advantaged by the resulting business trends on the oil and gas market. Increased pumping and exploration activities in that part of the world are currently primary driving forces. And if we are to believe the US experts, this will remain a constant all the way through 2019. Russian and European tube and pipe producers were also able to profit, to a lesser degree, from this positive trend.

Several other economic factors affecting the tube and pipe industry are discussed here. Other tube and pipe markets such as the automotive (15%), mechanical engineering (9%) and building and construction industries (5%) are also attractive market segments for our sector.

Despite current turbulences, the world automotive market is characterized by steady growth of about 2% p.a. At the same time, the proportion of tubes used in auto design is steadily on the rise, meaning this market segment is becoming increasingly attractive.

The building and construction industry market is doing even better, growing by about 4% p.a. Here we see increasing competition between steel and tube structures and concrete elements. Lobbying activities may help to further enlarge the steel/pipe penetration for skyscrapers and bridges.

World production of steel tubes and pipes in 2018 evidenced a slight increase of 3% as markets stabilized further. In detail, growth of 13% is reported for the US, supported by political trade barriers for tubular products and the strong growth of the shale gas exploration industry.

For welded tubes below 406 mm diameter, figures showed a production increase of 5% in 2018; the US reported growth of 11% after exceptional gains in 2017 (+30%). For welded tubes of 406 mm or larger,

production figures in 2018 experienced an overall drop of 5%. The US bucked this trend with a remarkable production upkick of 19%.

In seamless tubes, 2018 saw production grow overall by 4%. The US – following a boom year 2017 (+69%) – reported continued growth at the lesser rate of 17%. Even India, with its smaller production capacity, was able to report notable production gains of 32%.

This is a remarkable trend change, with US tube production experiencing impressive growth for the second time in several years. It would appear that the US trade barriers policy is having an impact. However, it should be noted experts are cautioning that this effect may not be sustainable, since some of the tube production plants taken back online to serve the increased demand are most but obsolete.

Pipe prices meanwhile continue to climb, as reflected in the pipe price index which showed an increase of 25% in 2018. Competition in saturated markets is prompting minor investment in those tube markets that display growth. However, overall plant utilization is at a low level. Demanding high-tech products are the strategic targets rather than commodity-grade tubes. Limiting factors are sometimes the available steel quality for strip, plate and billets, as well as tube plant infrastructure in terms of both machines and the applied quality standards.

Tube suppliers located in high-cost countries have successfully taken 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 demands, and streamlining productivity to reduce the costs of production. Agile digital solutions in the sense of “Industry 4.0” offer further opportunities to maintain success.

Finally, we also discuss the impact of currency exchange rates on the pipe market. A strong euro throughout 2017 and early 2018 was seen to cause export disadvantages. As the euro is currently falling again, markets should be able to compensate suppliers for some of the disadvantages.

The main and dominant market segment for steel tube and pipe suppliers is the OCTG industry with a 51% market share. Besides this, the automotive (15%), mechanical engineering (9%) and construction industries (5%) are also strong market segments for the sector. (Fig.1)

Let's take a look first of all at the OCTG, oil and gas, as the largest target market of steel tube and pipe suppliers. This market is subdivided into pipes used for oil and gas rigs, such as drill pipes, joints, tubing and casings and, further downstream, line pipes to transport oil and gas.

The number of oil and gas rigs is heavily dependent on the price of oil. There is a strong correlation between the oil price and the number of oil and gas rigs in operation (see also ITA Tube Journal 2019/1). And of course, OCTG tube and pipe consumption depends on the number of rigs, as well as the depth of drilling and the capacity of the rigs.

After an extended period of steadily climbing oil prices – from early 2016 (US\$30 /barrel) to October 2018 (US\$85 /barrel) – the oil price fell back to US\$52 /barrel in only 2 months, only to recover to about US\$62 /barrel by April 2019. (Fig.2) This price volatility is quite striking and a consequence of nervous reactions to the political measures taken. Without the current political interventions, the world would be facing an oversupply of oil and gas, a situation which in early 2018 caused some US experts to warn that prices could plummet, much as they did in 2014 following the first shale gas boom.

The International Energy Agency (IEA) sounded a warning note

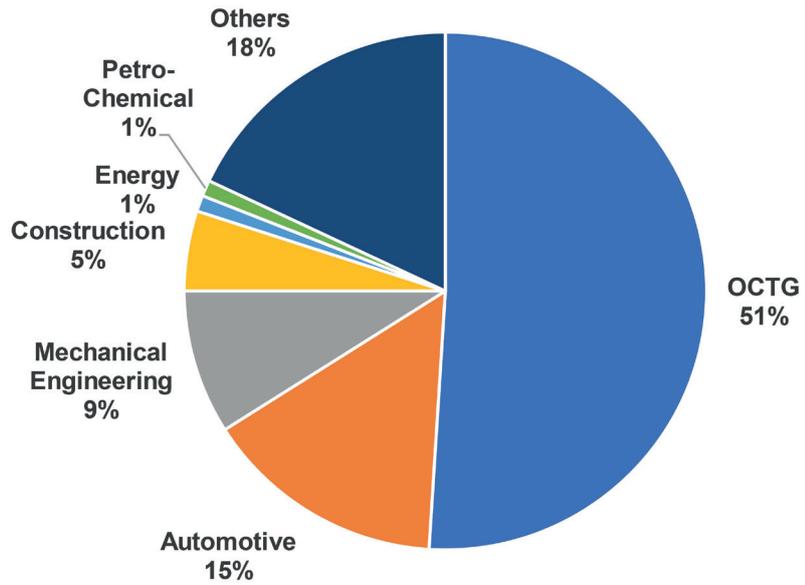


Figure 1: Markets for Steel Tube and Pipes
Source: ITATube Journal/Wirtschaftsvereinigung Stahlrohr



Figure 2: Oil Price Development 2014 to 2019
Source: Nasdaq

and backed up its warnings with figures. The organization expected growth in oil consumption in 2018 of about 1.4 million barrels/day. At the same time non-OPEC countries, particularly the US, were expected to raise their pumping levels by about 1.7 million barrels/day.

Citigroup analysts went even further and predicted a hike in output by non-OPEC producers of about 2.2 million barrels/day.

If the IEA and Citigroup predictions had been proven correct,

the world would have been faced with an oversupply situation. As it is, political intervention by the US government, i.e. the sanctions imposed on Iran and Venezuela's oil exports, created an artificial mood of supply shortages, which in turn prompted the oil price rally through 2018.

In 2019, following a sharp dip in outgoing 2018 back to US\$52/barrel, oil prices recovered again, possibly due to potential political conflict in Iraq. (Fig.3)

With oil prices currently so heavily



Figure 3: Oil Price Development in 2019 - Source: Nasdaq



Figure 4: Pipeline Project Nord Stream 2 - Source: Nord Stream AG



Figure 5: Pipeline Project Keystone XL Source: CTV News

dependant on political intervention, it has become very difficult to give reliable forecasts for the consumption of steel tubes and pipes for this important market segment. Only agile management strategies can counter such challenges.

The second OCTG market is represented by oil and gas pipelines. The line pipe market is a project-based business with long planning periods and strong political determining factors. Several such projects are currently being planned in Europe, the US and Asia.

In Europe, gas pipelines are mainly built to carry gas from gas and oil fields in Russia. A major US project, the new "Keystone XL" pipeline, is planned to transport oil from Canada to US petrochemical centres. In Asia, pipelines are needed to serve the new petrochemical complexes in Malaysia and Indonesia. All these projects are intensively discussed on political and environmental platforms.

The European project "Nord Stream 2" is a good example (Fig.4), since US president Donald Trump and the Polish government are using all their influence to ban this project. The US administration is even trying to threaten the international companies involved with trade sanctions.

On the other hand, the US pipeline project "Keystone XL" (Fig.5) is supported by Mr. Trump, although environmental activists continue to fiercely oppose the project.

Again, the political issues at play make it more and more difficult to predict pipeline project developments in the oil and gas business. Since January 2018, pipe prices have risen, as reflected in the climb of the pipe price index by about

23% from 288 to 353. (Fig.6) The positive signals throughout 2018 have also resulted in cautious optimism, with traders beginning to restock in expectation of a further price rally.

Nonetheless, it must be noted that tube producers are still facing relatively low plant utilisation, at levels of about 62% for welded tubes and pipes < 16-inch diameter as well as seamless tubes and pipes. For welded pipes ≥ 16-inch diameter, utilisation levels are even lower, at about 35%. Here we certainly find regional variations, but the overall picture is quite alarming.

Thanks to trade sanctions and support of the local oil and gas sector, the US tube and pipe industry is recovering. (Fig.7)

US tube production has increased by a massive 4 000 ktons, meaning that even previously decommissioned tube plants have resumed production. This trend may only be sustainable if US-based tube producers make good use of this growth trend and invest in productivity and product quality, otherwise the fallout may be severe once trade barriers fall again. However, some 7 000 ktons of steel tubes and pipes are still imported into the US (Fig.8), which is on average a high import volume.

On the other hand, Europe and other regions also impose trade barriers to secure the national industry against imports from other parts of the world. So the tube and pipe market does need to cope with various political interventions, a circumstance which sometimes hinders strategic management measures. At the last ITA conference in Düsseldorf, Frank Harms from the "Wirtschaftsvereinigung Stahlrohre" reported

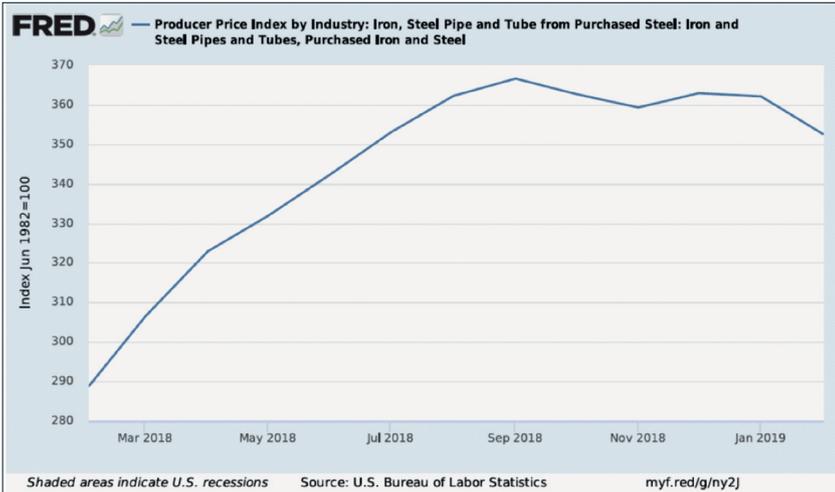


Figure 6: Producer Price Index
Source: FRED US Bureau of Labor Statistics

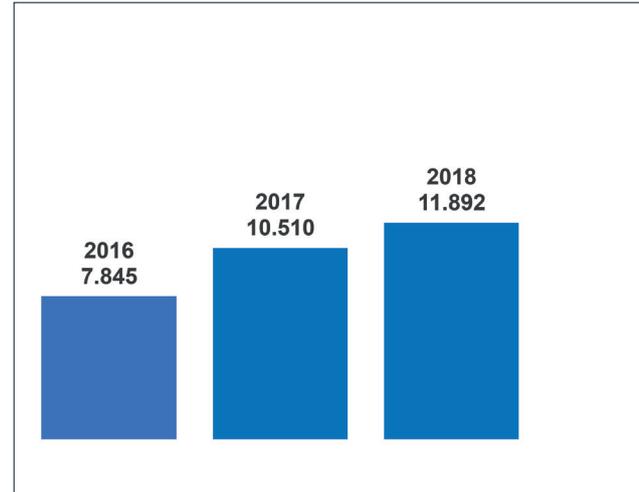


Figure 7: US Tube and Pipe Production 2016 – 2018 (ktons) - Source: ITATube Journal/Wirtschaftsvereinigung Stahlrohre e.V.

on such challenges imposed on tube producers.

The second important market with a market share of 15% is the automotive market. Tubes and pipes with a diameter up to 90 mm are the main consideration here.

Despite some weakness in 2018 and 2019, this market is characterized by relative stability and high demand growth of 2%. (Fig.9) Due to weight-saving requirements for cars, it can realistically be expected that tubes may even see their implementation share in car production increase.

The present trend towards electro-mobility may have a negative impact on pipe supplies utilized for combustion engines. As yet, alternative drive systems represent a minor percentage of new-bought vehicles, but ongoing developments should be closely observed.

As demonstrated here in the last (2019/1) edition of the ITATube Journal, regional sales figures are quite inhomogeneous. Countries like Russia (+15%), Brazil (+13%) and India (+7%) show continued growth, whereas Japan offsets these growth trends and shows a decline in car sales of 11%. The

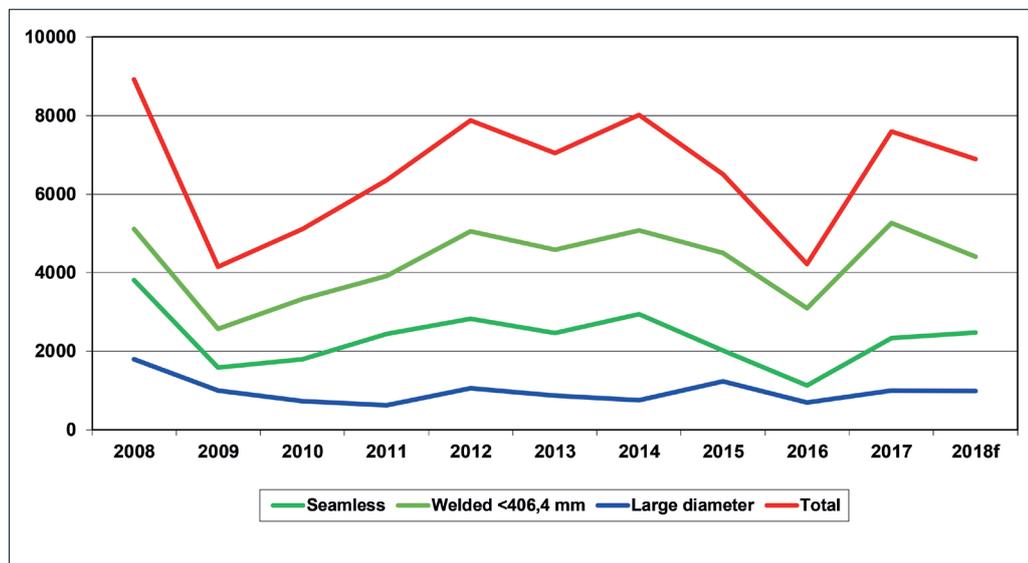


Figure 8: Tube and Pipe Imports into the US (ktons)
Source: Wirtschaftsvereinigung Stahlrohre e.V.

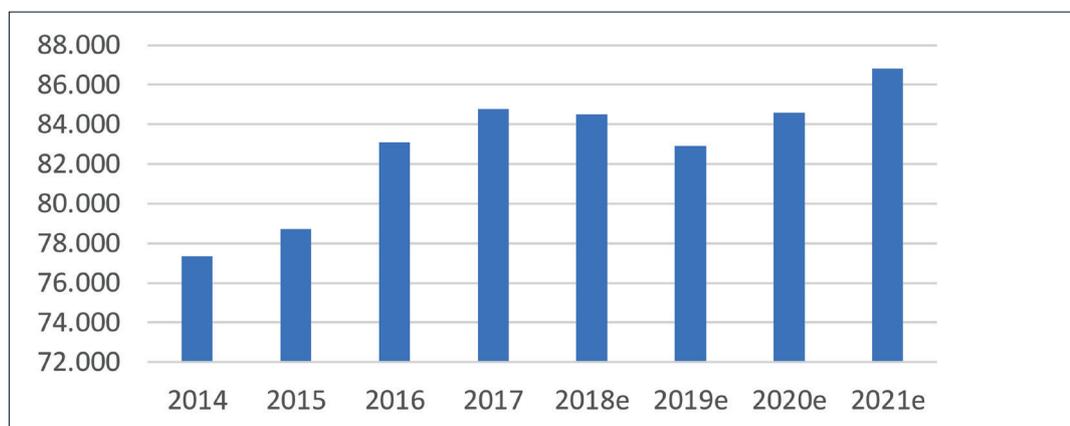


Figure 9: World Car Production (1000 units)
Source: Statista

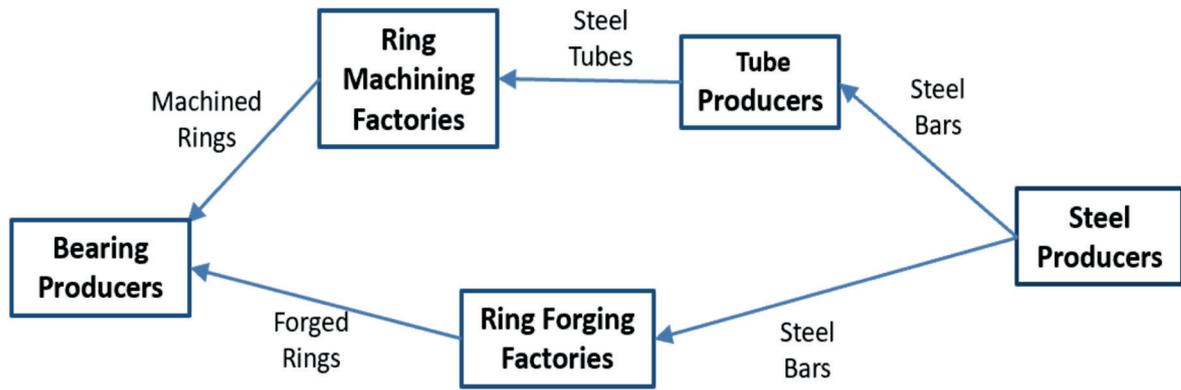


Figure 10: Bearing Industry Supply Chain - Tube vs Forging Process
Source: Sanji Steel

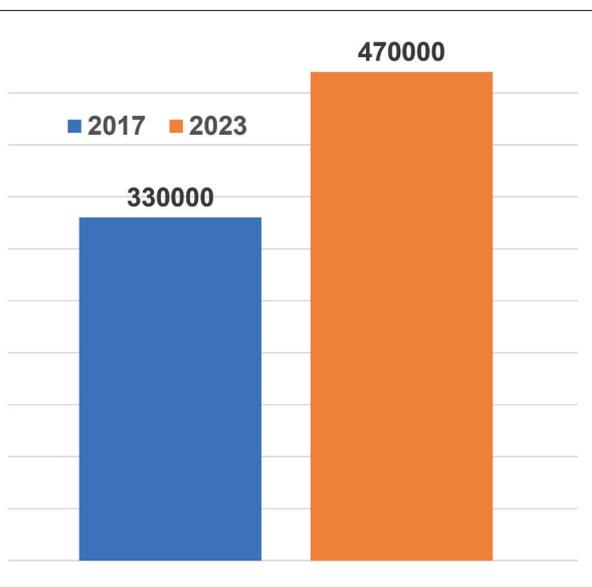


Figure 11: World Bearing Production Growth (1000 tons) - Source: IMARC

largest world car markets, China, the US and Europe, are consolidating at almost “zero” growth. Nonetheless, the automotive market, due to its technological requirements, remains an interesting one for tube producers and tube processors.

The market segment mechanical engineering, representing 9% of the total tube and pipe market, is highly diverse due to an almost endless number of potential applications. In my last article (Journal I’19) I highlighted the fast-growing hydraulic cylinder tube market. This time I would like to highlight the ball bearing market. To produce bearing rings,

two competing process routes are applied: forged rings or machined rings from seamless tubes. (Fig.10) Therefore, ball bearing tube producers need to emphasise the advantages of the production process via tubes.

According to IMARC, in 2017 the global ball bearing market had a volume of 33 billion tons. This market is projected to attain a volume of 47 billion tons by 2023, exhibiting a CAGR of 6.2% during the years 2018-2023. (Fig.11)

Such substantial growth potential means the ball bearing industry market represents an attractive volume market for tubes as well. Tube producers, processors and service providers who identify the customer needs and serve best value to their customers have the best potential to maintain sustainable business. At the recent ITA conference this year in Düsseldorf, Mr. Vincent Yang from SANJI Steel reported on their strategic 4-Value Model, illustrating how they serve their bearing industry customers with optimum sensibility to customer requirements.

Another attractive market for tube producers is the construction market, representing about 5% of world tube production. The global construction market is growing in tandem with global GDP growth,

as we discussed in the ITAtube Journal in October 2018. Primary market applications for tubes in the construction market are skyscrapers and bridges. Here we find significant competition between steel/tube structures on the one hand, and concrete elements on the other. With regard to skyscrapers, the trend in emerging economies to build high-rise towers is favorable toward the application of steel/tube structures. (Fig.12) The same strong competition between steel/pipe structures and concrete elements applies for bridges. (Fig.13) The Izmit bay crossing bridge, as the 4th longest bridge in the world, is made of steel and pipe structures. Steel and pipe structure bridges such as this are characterized by a long lifetime and better maintainability compared to bridges built from concrete structures.

Both of these important segments of the construction market require major lobbying efforts on the part of the tube producing industry to further convince regulation authorities and project stakeholders about the advantages of steel/tube structures as cost effective, aesthetic and sustainable alternatives to concrete elements.

All these steel tube and pipe markets can be subdivided into

commodity volume, and high-tech requirements. For the high-tech requirements, the decisive factors are the steel quality and the tube plant infrastructure. The steel quality for many high-tech steel tube applications is demanding with regard to chemistry and homogeneity.

The availability of such quality steel – with the required uniformity for welded tubes and pipes – in the form of steel strip and plates as well as billets for seamless tubes is limited and can create a significant hurdle to the supply of tubes and pipes to such high-tech markets.

In addition, tube plant infrastructure, i.e. tube mills and finishing lines, as well as applied quality assurance is also of significant importance. And growing importance is given to agile management strategies regarding customer benefit, process and product quality enhancement by applying “Industry 4.0” measures. First interesting applications of “Industry 4.0” in the tube and pipe industry were presented by various speakers at the ITA Conference in Düsseldorf this April 2019.

Taking all of the abovementioned into consideration, it is remarkable how these industry developments make their mark on world steel tube production.

Steel tube and pipe production was characterized by steady growth until 2015 when it topped a volume of more than 171 000 tons p.a. (Fig.14) The downturn in 2016 to 167 000 tons p.a. was mainly reflected in the US, CIS and ROW (rest of world). In 2017 the market turned around again, but China as the main tube and pipe producer lost about 6000 tons p.a., whilst all other coun-

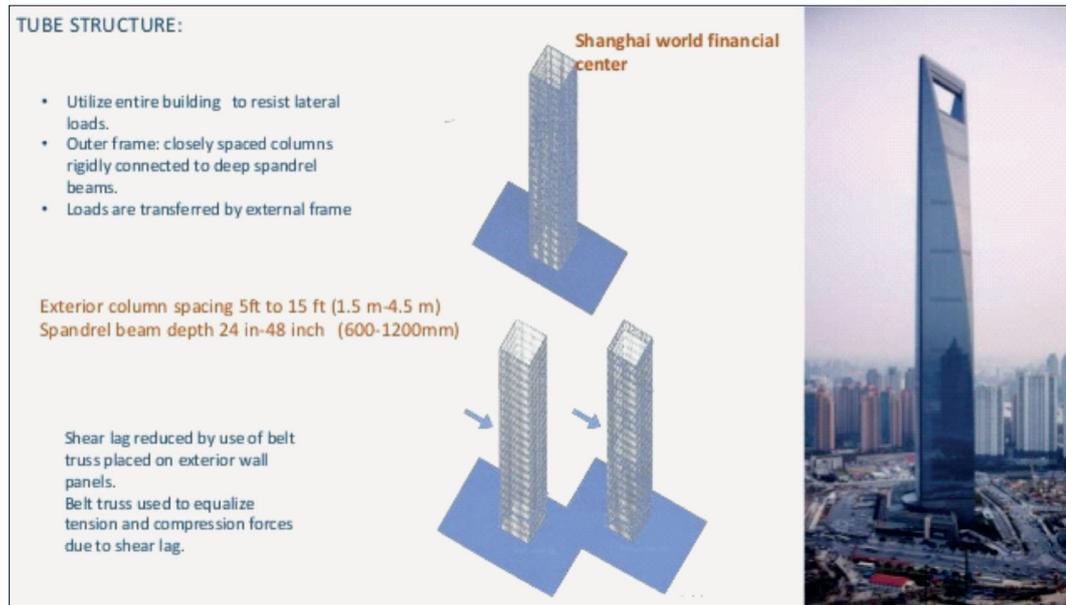


Figure 12: Steel and Pipe Structures applied at the Shanghai World Financial Centre - Source: Applied steel structures

tries, especially the US, increased their production, thus offsetting China’s shortfall.

Fig 15 shows the breakdown for the relevant regions in more detail. The US in particular, helped by the trade policy offensive of President Trump, seized the advantage and grew production by about 4000 tons p.a. (+51% since 2016). In 2018, world steel tube production was on the up once more, dominated by a fast-recovering China (+2500 tons p.a. or +3%) and, again, the US (+1350 tons p.a. or +13%). All other countries evidenced little or no growth.

More significant variations were again displayed by the market segment seamless pipes and tubes (Fig.16). This product segment is quite volatile. In just the two-year period from 2014 to 2016, global production volumes fell by about 10 000 tons (-20%). There was a modest recovery in 2018, when production increased by 4%. However, the severity of the previous decline has meant that the industry has still not managed to reach 2012 production levels.

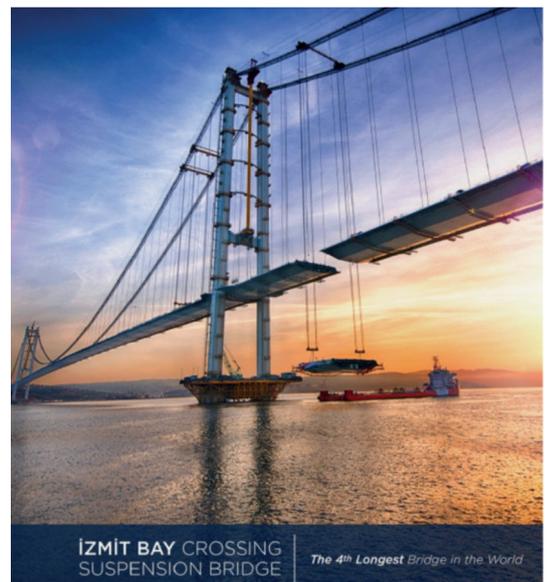


Figure 13: Izmit Bay Bridge
Source: CIMTAS

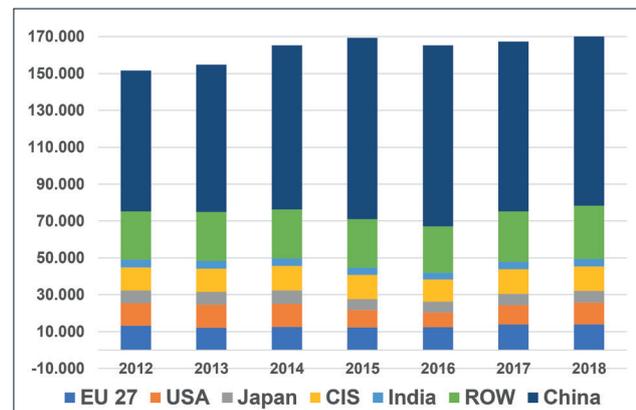


Figure 14: World Steel Tube and Pipe Production (ktons) - Source: ITATube Journal/Wirtschaftsvereinigung Stahlrohre e.V.

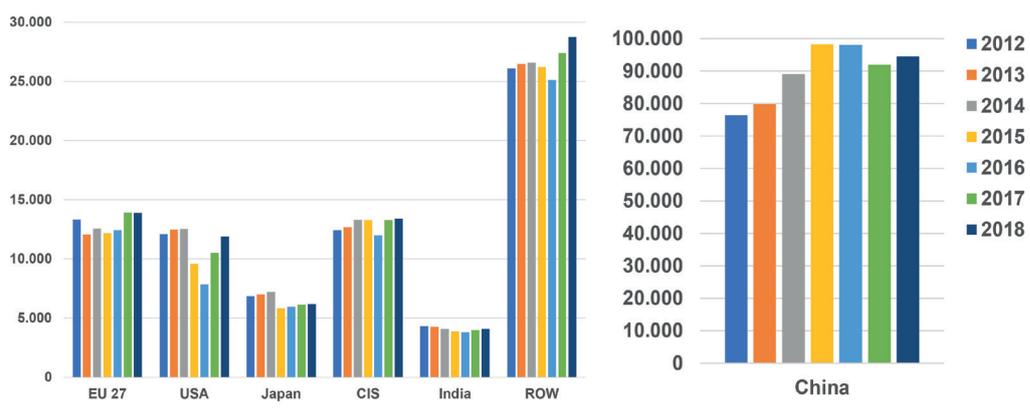


Figure 15: World Steel Tube and Pipe Production (regional) Total (ktons)
Source: ITATube Journal/Wirtschaftsvereinigung Stahlrohre e.V.

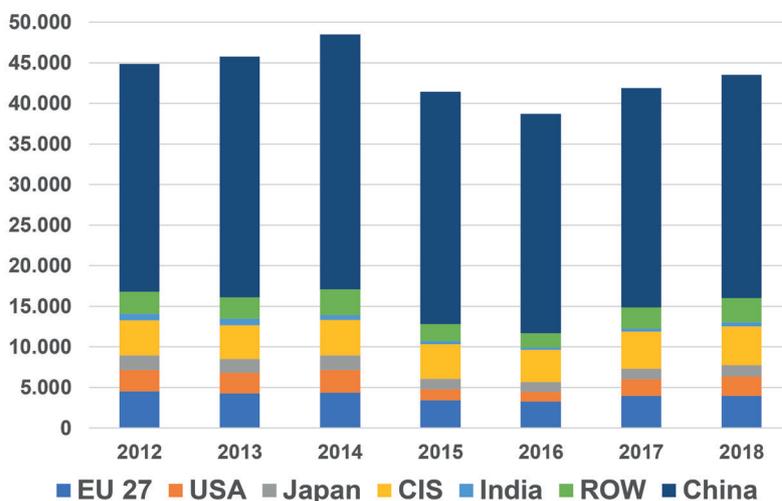


Figure 16: World Steel Tube and Pipe Production Seamless (ktons)
Source: ITATube Journal/Wirtschaftsvereinigung Stahlrohre e.V.

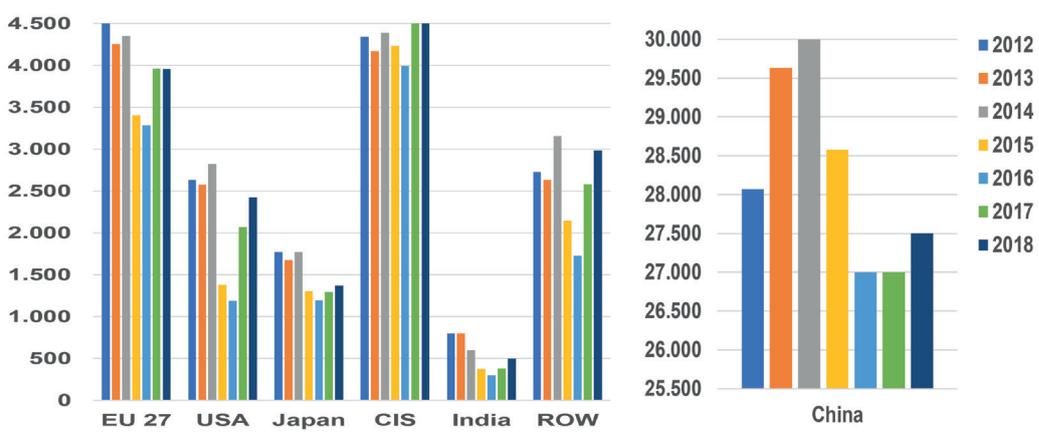


Figure 17: Regional Steel Tube and Pipe Production Seamless (ktons)
Source: ITATube Journal/Wirtschaftsvereinigung Stahlrohre e.V.

Growth in 2018 was dominated by volume gains in China (+2%), the US (+17%), India (+32%), ROW (+15%), CIS (+4%) and Japan (+6%). (Fig.17) What is remarkable is that US administration measures have meant even obsolete seamless tube and pipe mills are now back in operation. However, economists can't see such outdated plant remaining online for long, since their economic performance remains questionable without major investment

The production of welded pipes < 406 mm OD (Fig.18) saw a global production volume increase in 2018 (+5%). China, after a series of weak results, was able to report an increase (+6%). It's the US once more that has the most significant production increase to report (+11%). This tube and pipe dimension range represents by far the largest product segment, with average global growth of about 5 to 10%. Even the downturn of 2017 (-2%) was nowhere near as significant as the production volatility of other tube and pipe dimension segments. It also has the advantage of being able to serve a number of growing markets, allowing producers to capitalize on a broader range of market prospects, as we've noted in previous reports. The production of welded pipes ≥ 406 mm OD, at about 22 000 tons p.a. (± 5%), is by far the smallest product segment. (Fig.19) Its main application is large diameter line pipe projects. As we said earlier, such projects often depend on powerful stakeholder interventions and the capability of relevant pipe producers to qualify for them. The current US government, for example, has recently begun to impose import duties on line pipe imports to protect US line pipe producers. Either way, the

average world pipe-producing plant utilization is at a very low level of only about 30%.

This political signal seems to have had the desired effect on US pipe production. The 2018 production figures (Fig.20) reflect this impressively, showing that only US tube and pipe producers have been able to increase their production by 19%. All other countries/regions reduced their production, with the most significant losses in China (-15%) and Japan (-7%). Europe (-2%), CIS and ROW (-1%) show more moderate production decline.

This trend reflects the decreased demand for pipelines in these regions and political measures, such as recent import duties, taken by the US legislation. Some of the technologically advanced producers of large diameter line pipe tubes can still succeed on their unique selling points.

In this entire scenario, currency exchange rates have also had a notable impact on the trading of international pipe and pipe production equipment throughout the world.

In 2017 the euro (EUR) gained about 20% against the US dollar (USD). (Fig.21) In the months since April 2018, it fell again by about 10%, down to 1.13 in October 2018. This does, of course, lessen pressure on exports into the US.

Since early 2019, the exchange rate of the euro to the US dollar has stabilized at a rate of 1.13. It remains to be seen how and if the Brexit confusion and the European parliamentary elections will influence developments in the course of this year.

The exchange rate of the euro to the Chinese yuan (CYN) developed parallel to that of the US dollar

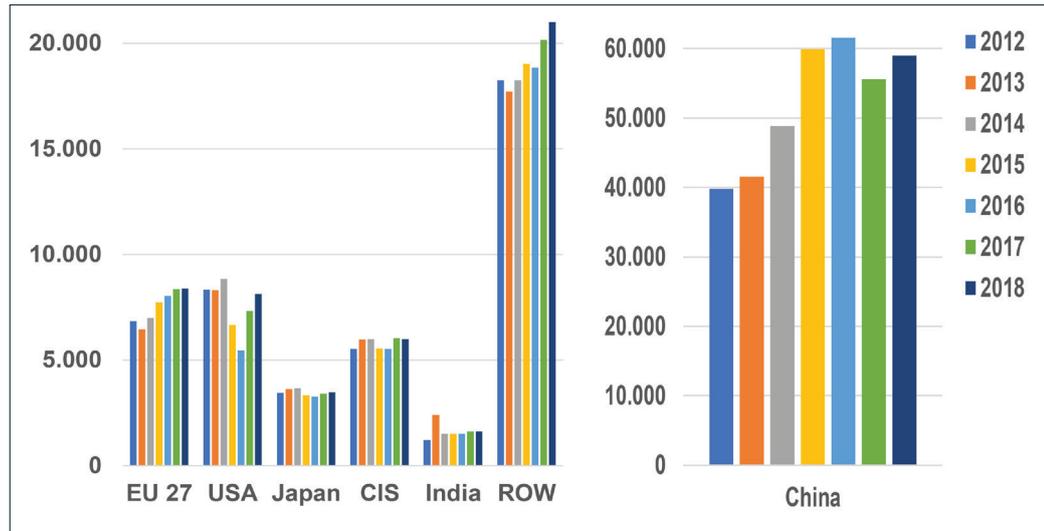


Figure 18: Regional Steel Tube and Pipe Production Welded < 406 mm (ktons)
Source: ITATube Journal/Wirtschaftsvereinigung Stahlrohre e.V.

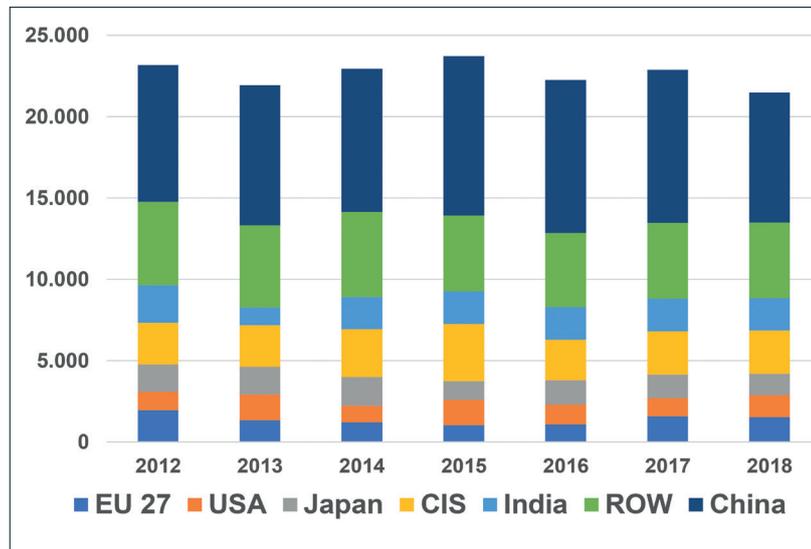


Figure 19: World Steel Tube and Pipe Production Welded > 406 mm (ktons)
Source: ITATube Journal/Wirtschaftsvereinigung Stahlrohre e.V.

and the euro gained about 21% in 2017. In 2018 the euro lost twice as much against the yuan (-22%) compared to the loss against the US dollar in the same year, encouraging imports into China. Then in 2019, the euro regained 13% against the Chinese yuan, with the result that the overall exchange rates EUR/USD/CYN are once again at the levels of early 2017. Market watchers should keep a close eye here on how the trade conflict between the US and China develops and to what extent this is reflected in the relevant

exchange rates. There can be little doubt that the exchange rates of these lead currencies do impact the international trade and challenge our industry as well.

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

The global increase in tube and pipe demand is leading to regionally improved plant utilization in the steel tube industry. Some pipe producing companies in the USA are even reactivating obsolete

Market information

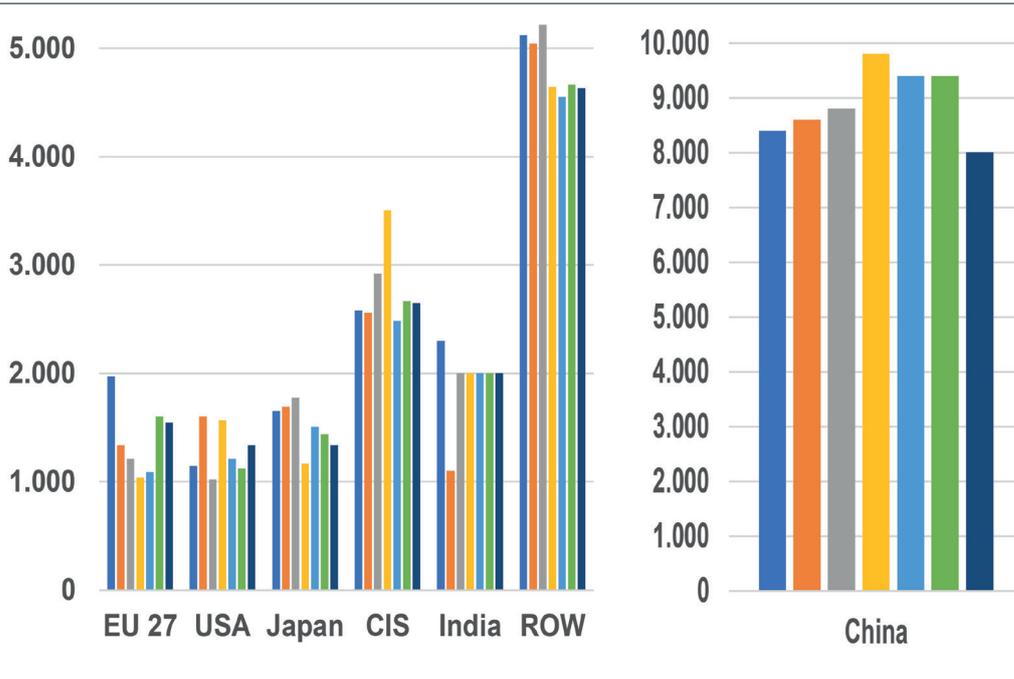


Figure 20: Regional Steel Tube and Pipe Production > 406 mm (ktons)
Source: ITATube Journal/Wirtschaftsvereinigung Stahlrohre e.V.

production facilities with a questionable economic future.

Still, despite the remarkable boom in the US, globalization into markets with increased demand remains one of the key answers. The Middle East and locations with major oil and gas exploration as well as automotive production, mechanical engineering and construction industries 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 low cost countries demands further specialization in high-tech products for higher cost countries. Producers seem to have evaluated their market approach and decided to specialize and serve commodities or high-tech products even if they only represent niches, depending on their capabilities. Some countries/regions have also installed trade barriers to control imports from other countries.

Finally, every producer should make permanent improvements to satisfy customer needs, increase

productivity and reduce production costs. New information technologies, such as “Industry 4.0”, also known as the “Internet of Things”, can provide interesting opportunities for the establishment of sustainable future business. Such agile optimization processes may even open up new ways of dealing with the fast-varying demands tube producers are facing.

Plant builders as well as technology suppliers may find interesting business opportunities in this new market segment. Some technology suppliers have already reacted and expanded their product portfolio to include digital solutions.



VOSCO Management Consultancy

Dr. Gunther Voswinckel

Scharnhorststrasse 45
41063 Mönchengladbach
Germany

Tel.: +49 2161 309 255

Fax: +49 2161 912 520

contact@vosco.net

www.vosco.net



Figure 21: Currency Exchange Rates as per 14th April 2019
Source: Finance.net