

Pigging Industry News

the newsletter of the Pigging Products & Services Association

THE PRESIDENT'S LETTER

By Felix Schmidt, 3P Services, Germany

A very special year has come to an end in which so many things have changed. 2020 has disabled many personal contacts, which affects both our personal and professional lives. For an association like ours, which depends so much on interactions and networking between their members and others in our industry, this seems like a horrible scenario. It does however not necessarily need to be one. While getting together physically is still hardly possible in many areas of the world, meeting up with colleagues, clients or friends abroad in a "digital face to face" is easier than ever before. 2020 has been an enormous boost for the digitalization of our communications, which can also be of great advantage.

The PPSA held its first virtual seminar in November with the theme 'Challenges in day to day pigging' and I think it was a very successful. Eight papers were presented across two days and the fact that the seminar was held virtually and without a registration fee enabled us to reach more people from more diverse geographical areas than ever before. The seminar papers are meanwhile on our website at <https://ppsa-online.com/papers.php>.

Of course we missed seeing everyone this year, and virtual gatherings will never be the same as normal ones, but they are way cheaper, ecologically worthwhile and obviously so much easier to get to. Various platforms are also trying to strengthen the networking aspect of virtual seminars or conferences and I am quite sure that

we will see more of those events in future, even when the Covid-19 pandemic gets under better control.

The upcoming conferences in which the PPSA usually exhibits, namely the PPIM in February and the ptc in March, will both be held virtually this year too. We are taking part in the PPIM 2021 Virtual Event and are listed in the Interactive Product & Services Directory and we will be virtually exhibiting at the online ptc conference. The PPSA events that usually taking place prior to the PPIM conference in Houston are consequently also affected. The PPSA Golf Tournament is unfortunately cancelled this year, but we look forward to it hopefully returning next year on Monday 14th February 2022.

Our Annual General Meeting will take place online on Tuesday 23rd February at 15:00 GMT (UK time). Please contact diane@ppsa-online.com for a link to the zoom meeting. As all members are welcome to join the AGM, we might be able to get more people involved again in the online event. The AGM is an opportunity to help guide the future direction of the Association and find out what has been happening this year. We will be announcing two new Directors from the Western Hemisphere and will be welcoming our incoming President Dr. Mike Kirkwood who will take over Presidency at the AGM. We'll also be looking for ideas for a new 'theme for the year' that we can add

to our repository alongside the 'Challenges in day-to-day Pigging'.

Continuing with PPSA's mission of knowledge sharing in the industry we've put together a repository of papers and articles on last year's topic of 'Challenges in day to day pigging' Difficult to pig lines, unusual products (for example ammonia, ethylene, hydrogen, high H₂S etc.), lodged pigs, pig tracking etc.' are now on the PPSA website <https://ppsa-online.com/technical-topics>.

We will see whether vaccines will allow us to return to some sort of normal working as the year progresses and if we can consider holding our seminar in November in Aberdeen again, for which we will be calling for papers soon. In any case, we are looking forward to meeting up with members and operators in the industry again at events through the world or online.

As this is my last President's Letter, I would like to thank everybody for the support given to our association during the past year. It's been a great help. The last year has certainly been completely different from what I had expected for the time during my Presidency, but it has been a great honor to serve the PPSA as President during this difficult year. I wish Mike Kirkwood all the best for the next year which will certainly also be exciting. ●

NEW Members

Full

**Xingke Small-medium
Enterprise Service Center of
Shenyang University
of Technology, China**

CDI names Joe Sloan as North American Sales Director

Joe Sloan to help lead CDI into the future with new, high-tech Pig tracking products and services

Control Devices Inc. (CDI), premier North American pipeline pig tracking manufacturing and company has announced the appointment of Joe Sloan as North American Sales Director. In his new role, Mr. Sloan will be responsible for developing American and Canadian sales and assisting in launching CDI's newest product lines as well as growing the company's overall footprint across the United States and the world.

Mr. Sloan brings more than 20 years of oil and gas pipeline pigging and tracking experience to CDI with 18 years spearheading sales at **T.D. Williamson**. Most recently, he was North American Sales Manager at **EnviroCal**. While at **EnviroCal**, Mr. Sloan worked to expand sales throughout the United States.

"Joe is an innovator in oil and gas pipeline pigging sales and has worked with some of the most well-known pipeline companies throughout the world," said Eric Farqué, owner and VP of Sales at CDI. "His experience is aligned with CDI's shared values, and we see countless opportunities for development into our upcoming new product lines. We look forward to Joe's leadership as we continue to innovate and grow."

"I am very excited for this new opportunity with CDI, a company that has dominated and thrived for many years in the oil and gas pipeline pigging arena," said Mr. Sloan. "I am looking forward to nurturing current relationships and developing new relationships with customers across the country and globally in order to grow CDI's current and newest product lines."

Coming Up In 2021

CDI is expanding its product line and service in 2021 with cutting-edge pipeline pig tracking equipment that virtualizes the pig tracking experience into a browser or a smart phone with Internet of Things (IoT) technology. Field operators and managers alike will have the ability to track their devices from anywhere in the world in a standard web browser. An innovative UI will make scheduling, organizing and tracking your pipeline pigs a powerful and intuitive experience. This new line of products from CDI aims to revolutionize pig tracking, as well as to increase the efficiency of pig runs, add better data collection and more reliable and sustainable solutions to match our ever-changing global environment. ●

Engineering innovation solves unknown cause of damaged Pigs, ETO design strengthens Pig bodies

When an operator began to experience tool breakdown during routine pigging, determining the cause was a challenge. The operator contacted global pipeline services provider **T.D. Williamson (TDW)** to use finite element analysis (FEA) to determine the unknown issue.

In addition, TDW developed an engineered-to-order (ETO) solution to strengthen critical elements of the pigs' design. This enabled them to withstand conditions above and beyond what would be considered normal use over an extended period of time.

This two-pronged approach helped the operator extend the useful life of its pigs, continue a safe, efficient cleaning regimen and maintain pipeline integrity.

A Seamless Response

The operator had been pigging its 583-mile (928-kilometer) pipeline, which has both 22-inch and

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24-inch sections, without incident for years. Most of the 120 cleaning pigs in their fleet had been in service for more than a decade, running through check valves and other mechanical devices during the course of normal operations.

In other words, they were dependable workhorses. However, they weren't immune to wear and tear — or even failure — especially after so many years of constant use. No pig would be.

Still, the operator was surprised to find that during regular cleaning operations one of the pigs had come apart. Upon inspection, the operator discovered the other pigs showed similar signs of fatigue.

To uncover the cause of the failure, verify the extent of the damage and estimate the pigs' remaining service life, the operator turned to TDW. Working with a single-source provider known for their expertise made the comprehensive process seamless and easier for the operator to manage.

Modeling Pigs' Passage

TDW theorized that the failures were caused by the pigs being exposed to impact when they traveled over girth welds and through check and mainline valves. FEA proved their hypothesis was correct.

TDW has a dedicated department that provides structural assessment of its own products and customer pipelines, performing FEA in accordance with ISO 9001:2008 and best practices in numerical modeling.

FEA is used primarily in new product design and to identify defects and deformations within buried pipelines. In this case, though, TDW simulated what was happening inside the pipeline as the pig traveled through it. This included using computational fluid dynamics (CFD) to model the pig's passage through the pipeline and understand how it was making contact with the valves.

By simulating the pig hitting the welds and valves, both independently and in combination, engineers ultimately determined the problem: The pressure required for the pig to pass the one-directional valve installed at the pump station was causing the pig to hit the valve door with too much force. After years of being subjected to this stress, it was no wonder the pigs finally began to show damage.

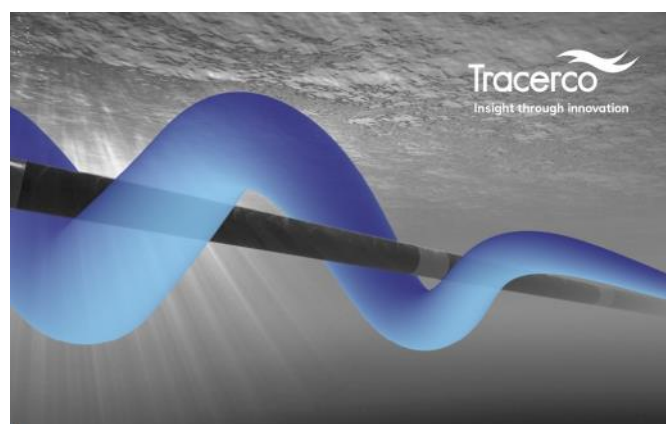
A Robust Solution

Reducing operating pressure was not an option. The only choice was to modify the cleaning pigs to make them more robust than test the changes to ensure they helped avoid further damage. TDW suggested a design change based on FEA to strengthen the pigs' bodies, enabling them to withstand excessive use over an extended period of time.

By adding ETO design features that strengthened performance under specific conditions, TDW reduced the risk of pig failure, extended tool service life and helped the operator avoid the capital expense associated with buying new pigs. And by working with a services provider steeped in knowledge and innovation, the operator was able to solve a critical pigging challenge readily and with greater confidence.



Example of a typical style of cleaning pig with a mandrel body and four cups.”



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Launch of online pipeline cleaning shop in the USA

The **ROSEN Group** has officially launched its online store for pipeline cleaning pigs, spare parts and associated instruments on the US market.

Cleaning pigs are needed throughout the lifecycle of oil and gas pipelines, from pre-commissioning to operations and, ultimately through to decommissioning. We recognize that each pipeline is unique and that cleaning needs may vary depending on its operational purpose and lifecycle stage. Failure to clean your pipeline at regular intervals leads to reduced efficiency and may result in damages that impact its integrity.

Whether you need a complete 4” to 12” fleet of PU cleaning pigs or just a single 6” sealing disc, whether you are working on site in or in your maintenance shop – ordering through the ROSEN Pipeline Cleaning Shop means getting exactly what you need when you need it.

Standard Cleaning Pigs

In its initial phase, the ROSEN Pipeline Cleaning Shop will offer standard 4” to 12” cleaning pigs for batching, dewatering and general cleaning. The pipeline cleaning pigs are designed, engineered, and manufactured in-house. Their slender multi-bolt design ensures excellent pipe passage. All of the cleaning tools in our online shop are steel mandrel pigs equipped with components made of highly wear-resistant RoPlasthan polyurethane.

Additionally, customers will also be able to order spare parts such as discs, cups and brushes. An expansion to a more varied product range, including more specialized cleaning pigs and further equipment such as tracking instruments, is in the planning.

Tailored Solutions

In addition to the standard solutions which can be directly ordered through the online shop and in order to fully meet individual needs, we offer customized pigs. Those tailored solutions can also be requested through our new sales platform and include, among others, cleaning pigs with cups of special geometries or scraper cups, with spider noses or bypass nozzles, equipped with magnets, brushes, bend or gauge plates – there are many options for the best fitting pig configuration for a pipeline.

ROSEN’s tailored solutions upon individual request



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can cover a variety of operational needs: minimum 1,5 diameter bends, multi-diameter pipelines, high pressure / high velocity, gauging and tracking, routine cleaning (programs), pre-commissioning, decommissioning, batching, debris, paraffin and wax removal, water removal, black powder removal and inhibitor application.

Uncomplicated Ordering Process

The company introduces the new digital sales platform in an effort to provide a simple and expedited purchasing experience for its customers. The challenges of these recent times have shown that availability and flexibility are more relevant now than ever. The ROSEN Pipeline Cleaning Shop facilitates 24/7 access and an uncomplicated ordering process. All products are shipped directly to the customer from a warehouse in the USA.

As of now, only customers from the US can order through the fully automated system. Inquiries by customers from other regions will be directed to their respective regional sales expert.

Please follow this link to visit the [ROSEN Pipeline Cleaning Shop](#). ●

STATS Group named company of the year in EIC Awards

STATS Group have been named Company of the Year in the Energy Industries Council Awards 2020 and also placed in top spot in two categories.

The Aberdeenshire-based pipeline technology specialist picked up the top accolade in the Export category and also shared the Service Solutions award with Aquaterra Energy.

STATS also picked up the biggest award of the night, the EIC Company of the Year, with its winning submission in the 2020 EIC Survive and Thrive Insight Report, highlighting the success of their patented BISEP® technology.

Established in 1943, the EIC is a trade association of 650 companies who deliver goods and services to the global energy sector. It is supported by major operators, contractors and SMEs and its prestigious national awards have been running for more than 75 years.

The Export Award highlights the development of new business by focussing on international growth in new countries and regions, while the Services Solutions Award is for companies which have added value to customers in their OPEX and O&M value chain and broadened the scope of work to provide a one-stop or customer-centric approach.

EIC Chief Executive Officer, Stuart Broadley, said: “We were delighted to recognise the inspiring achievements of business leaders from all energy sectors, with many frankly astonishing success stories shared with the industry.

All the winners have successfully demonstrated how they have adapted and sometimes completely transformed, by implementing survive and thrive strategies to remain competitive and grow in the current, unprecedented trading environment.

Each of the awards highlight the real and amazing work that business leaders are focussing on now and

demonstrate the return of widespread and responsive entrepreneurial leadership.”

Judging the Export award, Richard Simon-Lewis, Director of Business Development, Marketing and Communications at UK Export Finance, said: “The high quality of nominees for this award is testament to the strength and ingenuity of the UK energy sector. STATS Group stood out as a company whose problem-solving culture and high-tech innovation is a marker to which all its competitors should be striving to reach.”

STATS Group Chief Executive Officer, Leigh Howarth, said the awards recognised the company’s ongoing investment in technology and an export strategy which has resulted in international sales accounting for 85% of group revenues.

Mr Howarth said: “We are delighted to have been named EIC Company of the Year in what has been an extremely challenging period for all businesses in the energy industries supply chain.” ●

Mechanical cleaning of Barite

Reinhart Hydrocleaning SA (RHC SA) was asked to clean a DN150PN100 wet gas pipeline connecting 2 fields with a total length of 1,137 m. The pipeline material was Duplex 1.4462.

RHC was required to remove a build-up of Barite scale to mitigate crevice corrosion and to ensure pipeline cleanliness as part of the client's integrity and corrosion management strategy.

Scope of work and pipeline history

Previous inspection carried out by the client identified a scale layer of approximately 1 - 1.5 mm. Physical tests revealed that the Barite layer was very hard, difficult to break and remove from the internal pipeline surface. The pipeline was previously pigged with a combination of foam and BiDi pigs. These proved to be in-effective and failed to remove any of the Barite scale build up.

Besides the difficulty to remove the layer of scale, the operation had to be executed with extreme caution. The presence of NORM, Benzene and Mercury was a known hazard.

The pipeline was stated as piggable. However, RHC SA was required to design, fabricate and supply a temporary launcher and receiver in accordance with the pipeline specification and operating parameters.



Removal of mechanical cleaning tool (MCT)

Enduro Links

Both flexible and versatile, Enduro's Pig Link concept allows many varied configurations. The flexibility of the polyurethane body link allows the pig to pass bend radii as small as one diameter when attached to additional sections.

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As part of the project work scope, once the cleaning operation was complete, RHC SA was required to dewater the pipeline. TÜV Nord GmbH & Co KG would then carry out a General Visual Inspection (GVI) to confirm that the required level of pipeline cleaning had been achieved in line with the client requirements.

The scale build up was caused by liquid drop out along the line. (produced water) The methodology, de-scaling tool configuration and subsequent cleaning strategy determined by RHC SA to ensure successful scale removal was verified and approved by TÜV NORD GmbH & Co. KG.

The choice of the right cleaning applications

On the basis of previous discussions and a site survey, RHC SA proposed a cleaning campaign consisting of 5 Mechanical Cleaning Tools (MCT).

The tools were selected to effectively break down and remove the barite scale layer without damaging the Duplex pipe wall.

To maximize scale removal with the least number of runs, Rotating Tool (ROT) and Scraper Tool (SCT) configurations were selected for this application.



Example of combined ROT/SCT mechanical cleaning tool

The following cleaning runs and cleaning tool configurations were selected:

- Run 1: Rotating Tool
- Run 2: Combined Rotating and Scraping Tool
- Run 3: Combined Rotating and Scraping Tool
- Run 4: Combined Rotating and Scraping Tool
- Run 5: Combined Rotating and Scraping Tool

The Rotating Tool is designed to penetrate and break down the hard Barite deposit layers using shock and vibration to remove it from the pipewall. Remaining hard deposits are left fractured with a rough surface finish and are then efficiently removed by the Scraping Tool.

Materials used for tool manufacture had to be compatible with the pipeline. Components in direct contact with the pipewall were manufactured from Duplex 1.4462.

In agreement with the client and TÜV NORD GmbH & Co. KG, it was not necessary for the tool bodies to be manufactured fully from Duplex.



Example of partly stainless steel MCT

The MCT's were equipped with a transmitter set to a 22Hz pulsing frequency in order to confirm cleaning tool passage at certain checkpoints along the 1,137 m pipeline route. It was also used to confirm launch and receipt. The MCT's needed an average launch pressure of approximately 4 bar and were driven with an average of approximately 3 bar during the run. The average velocity was approximately 1.3 m/s throughout the 5 runs.

Cleaning progression throughout the campaign

Both pipeline ends were inspected by TÜV in terms of cleaning quality progression and potential damage between the individual runs.

The first cleaning tool brought out approximately 20 KG of Mercury. In addition, small barite chips were present upon tool retrieval.



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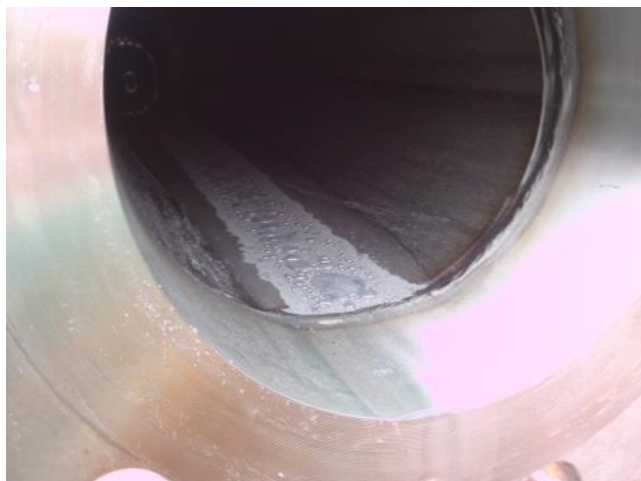


Hire / Rental



Solutions

The cleaning tool was equipped with 3 Rotating Tool Modules, which, in combination with the tool velocity penetrated and partly removed the hard barite layer.



Example of received mercury

Cleaning runs 2-5 were equipped with a combination of ROT and SCT modules. The spring arms of the SCT were manufactured from stainless steel. With a profiled leading edge and in direct contact with the pipewall they were designed to remove the remaining Barite scale and effectively polish the internal pipewall without damaging the surface.

From the initial MCT run the amount of mercury received dropped over each subsequent cleaning run to zero on the fifth run.

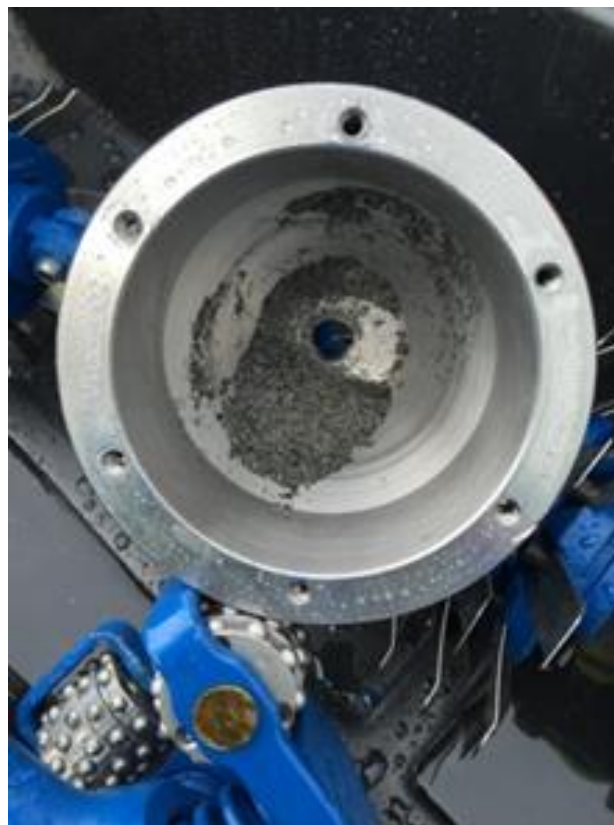
The amount of Barite scale removed increased progressively over the first two runs where it peaked and then decreased over the next two runs. On the receipt of the final cleaning tool, a ROT/ SCT combination, no Barite scale was received.



Received mercury during cleaning campaign

During cleaning with combined ROT/SCT cleaning tools, the size of the Barite scale deposits removed decreased from significant chippings to much finer sand like granules as they were ground down by the cleaning tool.

The amount of crushed Barite deposit removed decreased with each individual run until a negligible volume, amounting to only a few grams was received on the fifth and final run.

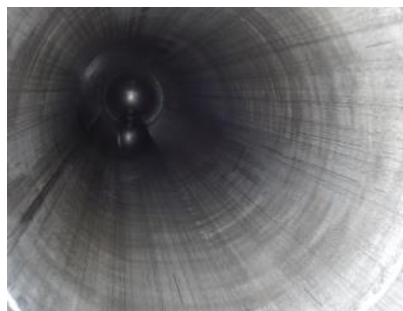


Example of crushed barite layer

TÜV Nord cleanliness verification by GVI

The Pig launcher and receiver design was such that when loading and removing the mechanical cleaning tools, TÜV Nord were able to inspect the internal condition of the original pipeline at each end.

After completion of run #4, the pipeline at the receiving end was already polished with no Barite layer left attached to the pipe wall.



Pipeline inspection after completion of MCT #4 at the end of the line

Upon completion of run #5, the internal condition at the launch end was again inspected by TÜV Nord. The pipewall was also nicely polished with no Barite deposit present. Cleanliness of the circumferential welds was also checked and confirmed to be polished with no remaining Barite deposit.



Pipeline inspection after completion of MCT #5 at the start of the line

When the cleaning operation was completed, the pipeline was dewatered using a hi-seal bidi disc pig. The GVI was then carried out by TÜV Nord. The survey extended 25m into the pipeline at each end.

The TÜV Nord GmbH & Co. KG inspection confirmed that the pipeline internal surface was cleaned to a polished finish with no evidence of any remaining Barite scale or damage to the pipewall or circumferential welds. ●

NDT Global completes the integration of Halfwave to its Inspection Services Business

In February 2020, both **NDT Global** and **Halfwave** were purchased by **EddyFi/NDT** and for the past 11 months have remained separate organizations. That changed on 19th January 2021 when NDT Global, the leading supplier of ultrasonic inline inspection and advanced data analytics, announced the completion of the integration of Halfwave, the leading supplier of acoustic resonance technology (ART) inspection services, into the NDT Global business.

Halfwave's acoustic resonance technology and expertise represent an ideal accompaniment to NDT Global's portfolio of ultrasonic inspection tools. Whether onshore or offshore, the patented acoustic resonance technology (ART) delivers exceptional

versatility: capable of operating in liquids or gas; offering superior multi diameter capabilities and an unparalleled ability to measure through paraffins, to name just a few of ART's notable attributes.

Andy Bain, Senior Vice-President, NDT Global commented in the integration, "We truly believe this integration marks the start of a new chapter of what has already been a great story for NDT Global and Halfwave. We are excited about adding ART to our portfolio as it perfectly complements NDT Global's Ultrasonic Technology (UT) solutions. NDT Global is now a single supplier of gas and liquid pipeline inspections and integrity management services.

This integration brings many opportunities for our combined organizations, in terms of services and technological advancements that we will be able to provide pipeline operators - helping them operate their pipelines safely and efficiently." ●

Vitrocell awarded Asia's Best Under A Billion 2020 by Forbes

Vitrocell, manufacturer and distributor of Lithium Metal Batteries, are pleased and proud to announce that Vitrocell has been selected and awarded as Asia's Best Under A Billion 2020 by Forbes. This list spotlights 200 top performing publicly listed small and mid-sized companies in the Asia-Pacific region with annual revenue above \$10 million and below \$1 billion. Companies on the list were selected based on a composite score that includes sales and profit growth, low debt levels and robust governance. Aside from quantitative criteria, qualitative screens were used as well, such as excluding companies with questionable accounting, environmental concerns, management issues or legal troubles. This list is meant to identify companies with long-term sustainable performance across a variety of metrics.

You can find Vitrocell on the list via <https://www.forbes.com/companies/vitrocell/?list=asia200&sh=1828afd12494>

"We pride ourselves that we have shown exceptional corporate performance amid the pandemic-led downturn and our efforts are recognized and rewarded. We dedicate this award to all our customers, stakeholders and staff who made this possible." ●

ROSEN joins European Clean Hydrogen Alliance

The **ROSEN Group** has joined the **European Clean Hydrogen Alliance**. With this membership, the company underlines its commitment to support asset operators in the transition towards a carbon-neutral future.

The European Clean Hydrogen Alliance was newly launched in July of last year by the European Commission as part of the EU strategies for energy system integration and hydrogen. The institution explores the potential of clean hydrogen to help the process of decarbonising the EU economy in a cost effective way, in line with the 2050 climate-neutrality goal set out in the European Green Deal. One of the alliance's goals are the deployment of effective hydrogen technologies by 2030, bringing together

renewable and low-carbon hydrogen production, transmission and distribution, and high-energy consuming industry sectors.

As a company committed to helping operators of industrial assets prepare for the future, ROSEN supports engaged stakeholders of the European Clean Hydrogen Alliance in managing the safe introduction of hydrogen into Europe's transmission and distribution network. Subject matter expertise in asset integrity and appropriate inspection technologies make the company an ideal partner for asset operators across the hydrogen value chain. The ROSEN Group contributes a holistic hydrogen integrity framework to the alliance to provide a roadmap for the safe and efficient conversion of existing gas infrastructure to hydrogen in order to extend the lifetime of valuable assets into a carbon neutral future. ●

YPPE 2021 Committee and New Organisation

Founded in 2018, **Young Pipeline Professionals Europe (YPPE)** has grown to over 300 members and 2000 LinkedIn followers, with the aim of knowledge sharing and building networks, to ensure the longevity of the pipeline industry and addressing the industry's skill shortage.

After an amazing 2 years journey chaired by Danny Molyneux, Technical Advisor at **Quest Integrity**, the YPPE is now excited to push its boundaries further with a new committee of motivated young pipeline professionals, led by Marguerite Forde, Senior Corrosion Engineer at **Rosen Group**. To be more efficient and provide more value to our members, YPPE has followed the example of our International YP community, and re-structured our activities into

four work groups:

- Communication, Marketing & Engagement
- Impact on Industry
- Value to Young Pipeliners
- Organization Success

Keep an eye out for our 2021 initiatives coming soon, with a series focused on sharing the valuable industry experience of some of our senior pipeliners, as well as technical webinars. If you have interesting lessons learned, or real world application of essential pipeliner skills, please contact us at contact@yppeurope.org.

If you want to join or support our community, or learn more about our working group activities, please visit our website <http://www.ypppeurope.org/> or our LinkedIn page.



YPPE stand and members at PPSA 2019 seminar ●

ptc 2021 moves to fully virtual with strong participation from pipeline operators

Given the medical imperatives of our time, the 16th **Pipeline Technology Conference**, initially planned as a hybrid event, will morph into an online-only event.

"We had already anticipated this scenario at the beginning of our planning and are now well prepared to provide the participants and exhibitors with an online opportunity that will emulate the success factors of the ptc in Berlin, only virtually," says **EITEP Institute** President Dr. Klaus Ritter.

The virtual ptc will take place from March 15-18, 2021, and will once again feature an exhibition with virtual booths and sponsors in addition to the extensive conference program with approximately 100 presentations in Keynote Speeches, Panel Discussions, Plenary Sessions and Technical Presentations. Networking among participants and with speakers and exhibitors will be possible at various levels.

"Over the past 6 months we have gained invaluable experience with our newly launched 'Virtual Pipeline Summit' event series regarding the many benefits that an online-only format can offer. With this wealth of experience, we will transform the ptc 2021 into a unique event that participants will remember for a long time to come," said Dennis Fandrich, Chairman of the Pipeline Technology Conference.

In light of the participating delegations from 80 different pipeline operating companies, the ptc has always been a unique meeting place for the exchange of operator knowledge across national borders and continents. This defining characteristic of the ptc will be enhanced this year by offering free tickets for pipeline operators for the online-only event.

"The incredible diversity of pipeline operators from all over the world has always been a special incentive for the sponsors and exhibitors of the ptc. By offering a free operator ticket, we expect more operators to attend this year than ever before," said Marian Ritter, Director Exhibitions at the EITEP Institute.



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Based on a review by the ptc Advisory Committee, the conference program will be published online soon. Exhibitors and sponsors can still register. More information about the virtual ptc 2021 is available online at <https://www.pipeline-conference.com/>.

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3X Engineering provide pipe and supports protection

The client had some problems of deterioration between the 6 inch crude oil pipeline and its supports. The objective of the test required in December 2017 was to evaluate **3X Engineering's** solution to solve this problem. The test performed by 3X specialists, in collaboration with **PEC** (3X Distributor in Qatar), was to install their **ROLLERKiT®** (product specifically dedicated to protect the area between the pipe and the support) on the line in 5 different configurations to test the effectiveness and reliability of this solution.

ROLLERKiT® can be installed both on pipe or on support without shutdown.

According to the client's requirements and after calculations, see below the 5 various configurations performed for the test.

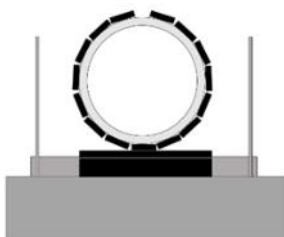
- Location 1 → 9 pads were installed on the pipe + 3 pads on the support (both pipe and support were blasted)
- Location 2 → 15 pads were installed on the pipe to protect the whole outside surface of the pipe (pipe was blasted)
- Location 3 → 15 pads were installed on the pipe + 3 pads on the support (application without blasting)
- Location 4 → 6 pads were installed on the support (application without blasting)
- Location 5 → 3x9 pads were installed on the pipe (application without blasting)



ROLLERKiT® installation on location 1



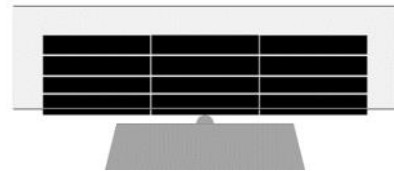
ROLLERKiT® installation on location 2



ROLLERKiT® installation on location 3



ROLLERKiT® installation on location 4



ROLLERKiT® installation on location 5

The 5 repairs were performed following the same stages:

Pipe or support surface preparation (depending on the configuration and where the pads were applied) using sandblasting in order to get a surface roughness $Rz > 60\mu\text{m}$. Degreasing and cleaning using acetone to ensure that the prepared surface is completely free from residue.

ROLLERKiT® preparation. Cutting of the necessary number of pads to be installed. Mixing and application of F3X8 filler on the pipe/support previously prepared and on the **ROLLERKiT®** (fiber glass side).

ROLLERKiT® application. **ROLLERKiT®** was then fixed on the pipe/support. For the configurations with pads installed on the pipe, ratchet belts and air bubble system were used to control the positioning.

Repair finalization and validation. When curing time was over, ratchet belts were removed and hardness measurements were performed to confirm the good polymerization of the filler.

The test was successfully managed by 3X specialists. **ROLLERKiT®** was installed in 5 various configurations as required by the client (with/without blasting, on pipe only, on support only, both on pipe and support).

In June 2020 (more than 2 years and half after installation), inspection was carried out and concluded the big success of the test and the efficiency of the **ROLLERKiT®**. Conclusion was transmitted by the client:

- **ROLLERKiT®** application on flowline support contact area found intact
- No wear and tear observed on **ROLLERKiT®**
- Flowline is protected at support contact point efficiently