July 2011

NEW Members

Full
LTS, Inc, USA

Apache Pipeline Products, Canada

STATS Group, UK

Pipelines 2 Data (P2D) Ltd, UK

PolyEurope International Ltd, UK

Associate
Fiberbuilt® Manufacturing, Inc Canada

Saft America, Inc USA

Individual
Eri Rabian King, UK

Andrew Storz, Poland

Pigging Products & Services Association

PO Box 30, Kesgrave,
Ipswich, Suffolk,
IP5 2WY UK

Tel: +44 1473 635863
Fax: +44 1473 353597
ppsa@ppsa-online.com
www.ppsa-online.com

Pigging Industry News

the newsletter of the Pigging Products & Services Association

THE PRESIDENT'S LETTER

by Alan Sweeney, Weatherford P&SS

I am deeply honored to have been elected as President of the PPSA. There has been a legacy of industry leaders that have held this office in the past and I only hope that I can emulate their past contributions. I would like to start by thanking my predecessor Peter Fretwell, Inpipe Products Ltd., for his past and continued support of the association. Peter will remain on the board of directors. I would also like to thank Lloyd Pirtle, who was President in 2009, Troy Edge and Simon Bell for their work as directors who stepped down this year. Following our AGM we welcome Jason Reid, Inline Services, Terry Delasalle, Greene's Energy Group, and Paul Birkinshaw, Penspen to the Board. Our congratulations also go to Basil Hostage, 3P Services, who was appointed Vice President for 2011.

I am pleased to report that despite the current economy the PPSA has continued to flourish and our membership today now exceeds 100. This is a great metric to gauge the value that the association brings to its membership.

The key topic arising from the AGM held at the Marriot Westchase on 15th February 2011 related to a third PPSA event. We currently host two annual events which are held in Houston and Aberdeen. The board felt that in pursuing a third floating event this year that the membership would benefit from additional exposure around the globe. After many discussions and consultation with the members, we are pleased to announce that PPSA will be exhibiting at PPIM Europe in October 2011 and PPIM Houston and Kuala Lumpur in 2012.

The Golf Tournament continues to be a success and I would like to extend our thanks to Gerri Ayers for organizing this event as well as to all our sponsors. This event has and continues to be well attended providing a relaxing forum for PPSA members, customers and PPIM delegates to meet for an informal day of golf.

Our annual seminar will be held on the 16th November 2011 in Aberdeen, UK, and the next post AGM will be held in Houston on 7th February 2012.

In closing I would like to thank the Executive Secretary Diane Cordell for her hard work and dedication and would like to encourage our members to become more active in the association.

PPSA Golf tournament results:

1st Place with 56 points
John Hartley, Mike Lam,
Chris Melber, Ryan Cook

2nd place with 59 points
Rick Odegard, Rob Squair,
Richard Prior, Kevin Maloney

3rd place with 60 points
Clay Jordan, Matt Hughes, Scott Pearce

Closest to the Hole
Rick Odegard

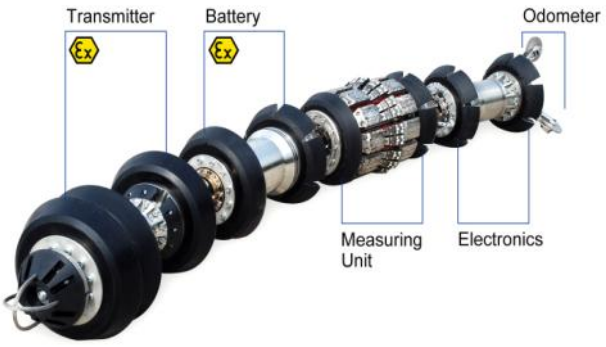
Longest Drive
Kevin Maloney

PPSA Golf Tournament, Houston, 2011

ATEX-Compliant In-Line Inspection Services

With the introduction of the CE device Directive ATEX 94/4/EC (ATEX 95) and the Occupational Health and Safety Directive ATEX 1999/92/EC (ATEX 137), a uniform legal basis was established for explosion protection within the European Union. The CE directives were completely harmonized and transposed into national law without any modifications. Whereas the occupational health and safety directives lay down minimum standards, regulations within individual countries may be more stringent. These discrepancies must always be borne in mind when applying directives and taking explosion protection measures. It is the responsibility of the operator to coordinate all activities in potentially explosive areas of their facilities (Ex zones), a task of fundamental importance that includes identifying and defining hazardous zones in the first place. Devices and protection systems for the operator's own employees and external services providers are selected in accordance with ATEX 95. Similarly, ATEX 137 and/or the applicable national laws provide the framework for determining threats and risks as well as specific protection and monitoring measures, for coordinating all employees in the Ex zones and, finally, for drawing up an explosion protection document.

In-line inspection tools are brought into the pipeline and out again through launcher and receiver facilities. These installations are typically situated in an Ex zone, meaning that the ATEX directives are fully applicable here. Nevertheless, according to ATEX 137, operators are at liberty in their risk assessments to define the most suitable measures for an in-line inspection and to use, for example through zone shifting, special inspection tools which do not comply with ATEX 95. Successful inspections in conformity with the explosion protection regulations are not achieved merely by providing the relevant certified equipment. They require the concerted action of all those involved.



Ex-protected segments of a multipart inspection tool

How can the operationally necessary flexibility be reconciled with the regulatory requirements of ATEX 95? **ROSEN's** response is an ATEX safety concept comprising the entire tool fleet from 6" to 56" which makes possible a high degree of flexibility through individual configurations. A modular system is separating the active elements required in the EX zone from the inactive modules (figure). When the tool is in the Ex zone during launching and /or receiving, the entire electronic inspection measurement technology is turned off. The power supply from batteries and the tool status transmitter continue to be electronically active devices and are therefore Ex-protected by a type of ignition protection which complies with a harmonized ATEX standard. This concept can be applied both in small multi-body and large single-body tools.

The ROSEN safety concept also complies with the requirement of the POF specifications which lay down that the non-atmospheric conditions must be taken into account when launching and receiving tools. Since explosion protection transcends mere compliance with the ATEX directives, operators must take a holistic view of asset integrity. Operation of equipment in potentially explosive environment requires adequate personnel training, judicious selection of devices and work tools, consistent implementation of specific procedural steps in launching and receiving tools and, last but not least, transparent communication between all parties involved.

Choosing Battery Technology for Smart Pigs

Although they may often be an afterthought, batteries play a critical role in the reliability of in-line inspection (ILI) tools, or smart pipeline inspection gauges (PIGs). Smart PIGs using Magnetic Flux Leakage and Ultrasonic technologies, rely intensively on battery power to provide long run times for the continuous task of maintaining oil and gas pipelines. Some ILI jobs can involve checking over 70 km of continuous pipeline. Batteries powering data collection devices must function fully and reliably, ensuring a constant flow of energy to ensure accurate operation. A smart PIG battery has to operate in a wide temperature range. Therefore, choosing the appropriate battery technology is crucial for the success of the project.

Saft America, Inc., produces three different families of battery technologies for PIGs: Primary Lithium, Rechargeable Lithium-ion (Li-ion), and Nickel-based, including Nickel Metal Hydride (Ni-MH) and Nickel Cadmium (Ni-Cd). As the goal of each ILI project is different, several considerations must be made when weighing the pros and cons of each type of technology.

Primary Lithium technology provides the highest energy density, and therefore the longest run times, of any battery technology available for smart PIGs. A primary lithium battery can run continuously for several days before needing to be replaced, providing twice the run time of Li-iontechnology. Primary batteries also have a wide operating temperature range (-40°to +85°C), which is important in the extreme environments of ILI projects, and they have no noticeable self-discharge during and between partial jobs, meaning greater autonomy in the field. Two of the main advantages include enhanced safety against short circuit at the cell level, and the ability to operate safely in temperatures of 85°C and above.

Saft Li-ion batteries offer many of the same benefits of primary lithium technology, such as high cell voltage and wide operating temperature range, but with some differences. Li-ion technology yields a shorter run time because it is less energy dense, thus the operation must be stopped in order to re-charge the battery. On the other hand, because the battery can be charged multiple times, there is an added benefit of a significantly reduced life cycle cost compared to primary batteries. Although primary batteries are less costly up front, acquisition costs over time can add up, which is why it is important to assess which is more important in the ILI project; sustained run time per job, or overall acquisition cost. As an example, at 85°C a Saft li-ion battery can provide 50 times the cumulative quantity of energy as a comparatively sized primary battery. In terms of safety and operating temperature, Saft has set an industry standard by introducing the first Li-ion cell capable of safe operation in temperatures up to 125°C. In addition, each cell is protected by electronic circuitry for outstanding safety and optimum performance. Another advantage is that state-of-charge and state-of-health of the battery can be easily measured during its life so that the ILI tool operator knows when to charge or replace the battery.

Similar to primary and recharge-able lithium, nickel-based batteries such as Ni-MH offer a wide operating temperature range (-20°C to +85°C), but there are additional trade-offs. Nickel technologies cost less than lithium, but for similar volumetric dimensions the energy provided is lower and consequently the run time is also less. One main advantage is that they are not subject to transport regulations, meaning there is no need for special packaging and carrier or HAZ-MAT certified handlers.

It is necessary to understand the costs and benefits of each battery technology available for smart PIGs in order to make an optimal choice for each project as each one has its own set of requirements, which necessitates a custom designed solution. Saft's extensive program experience, electrochemical expertise, world class manufacturing, and close working relationships with its customers, enables them to design each energy storage system to handle the most stringent requirements.

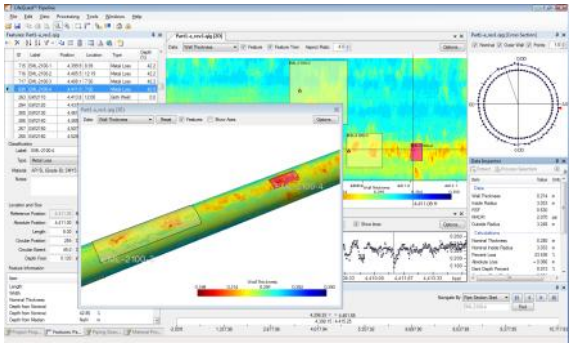
Saft is already supplying the Pigging industry with all three battery technologies. Both standard and custom made designs are considered.

Wharf Line Inspection Using InVista™

Wharf lines are a growing concern for operators because a leak in these lines can be highly consequential. This concern is compounded by the fact that wharf lines generally have limited accessibility and/or operational constraints, making inspection difficult. Thus wharf line operators have historically faced limited and complicated inspection options.

Quest Integrity Group recently inspected a 6" wharf line in North America using its innovative InVista™ inline inspection technology. This tool was developed to overcome challenges associated with traditionally difficult or unpiggable pipelines. Following inspection, the data set was analyzed for general wall thinning and other anomalies including generalized and localized corrosion, denting and ovality. Actionable information such as Remaining Strength Factor (RSF) and Reduced Maximum Allowable Operating Pressure (MAOPr) was then provided to the operator.

All internal and external metal loss areas were identified and individually sized utilizing the tool's superior UT flaw detection capabilities. No immediately actionable anomalies were revealed. As a result, the final report was issued to the operator within the standard thirty days. In addition, geometry deformations and dents≥ 1.0% were assessed and reported. No dents with metal loss were detected.



The customizable LifeQuest Pipeline viewer provides actionable information, enabling timely and confident decisions.

Industry standard Modified B31G calculations were applied using 100% of the collected inspection data. In addition, a comprehensive API 579-1/ASME FFS-1 Part 5 Level 2 Fitness-for-Service assessment was performed to determine the safe MAOPr of the pipeline in its current condition, indexed by individual pipe joint.

The solution set consists of the InVista inspection technology and the LifeQuest Pipeline visualization and assessment software. The operator experienced the advantages associated with this solution set. The inspection was performed with no modifications to the pipeline and the significantly reduced line pressure was sufficient for inspection. The tool was launched and received by hand directly into nominal pipe. Inspection resolution and coverage was not affected or diminished by pipe supports or any other metal-to-metal contact. InVista fully inspected the pipeline, even where it was supported on the wharf.

Weatherford receives Eni Contract Award

Weatherford Pipeline & Specialty Services (P&SS) group has been awarded a contract by Eni Refining and Marketing to clean and inspect their pipelines.

The contract is for a period of 3 years and will cover the inspection of over 30 pipelines ranging in diameter from 6 to 40inch and from 450m to 140km in length.

The scope of work includes:

- Cleaning, Caliper, XYZ Mapping and inline inspection of piggable pipelines using Magnetic Flux Leakage (MFL) and Ultrasonic Wall Measurement (UTWM) technology.
- Circa 10 inspections a year

P&SS will utilize its existing facility in Ortona, Italy, to refurbish the tools in preparation for further inspection runs.

With almost 40 years of experience, Weatherford offers services used throughout the lifecycle of pipelines and process facilities. Programs are custom tailored and fully suported by their in-house chemical manufacturing, R&D and supply capabilities.

Cleaning pig received in Pantelleria

Inline Services completes runs of new SPC Pig

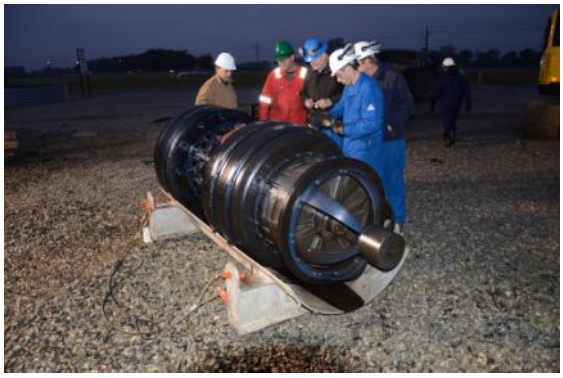
Inline Services Inc has recently successfully completed runs of their newly designed Speed Control Pig (SCP). The pig is designed to be run in high velocity pipelines where pigging speeds need to be reduced. The reduction of pig speeds can be required either for safety, cleaning efficiency or to maintain normal pipeline flow rates without having to reduce line volumes when pigged.

Gas or fluids bypass through the annulus of the pig's body and through variable ports in the front and sides of the pig's nose. The on board computer, reacting to input from odometers wheels, regulates vane position and therefore the amount of bypass. As more bypass occurs, speed is controlled relative to line velocity, within pre-determined parameters.

The electronics package includes a **Pipelines 2 Data (P2D)** P.E.T. data logger, which records vane position, differential pressure, temperature, X,Y,Z orientation and other vital data that demonstrates the behavior of the pig.

Inline recently ran their 42" and 36" tools in 5 sections of high velocity gas lines. These lines operate under a special 80% SMYS rule and slowing down throughput to perform required maintenance cleaning costs the operator a substantial loss of revenue. On a recent 56 mile, 36" run, gas flow averaged 12 mph and the SCP maintained a speed of 5 – 6 mph with the bypass vane system opened at 50%.

The SCP also has the ability to tow ILI tools at speeds that will allow more reliable data to be recorded. The pig can also be used as an enhanced cleaning tool on lines that have black powder. The bypass moving through the pig exceeds the entrainment velocity of the debris, and assists in suspending the material out in front of the pig.



Inline Services' Speed Control Pig

Safe and secure sealing in less than 90 seconds

R&M Energy Systems extends its line of field-proven pipeline and vessel closures with the Yale SafeClamp Closure. Featuring **a** patent pending, innovative external clamp ring design, the closure features notable safety, sealing and operational advantages for the operator.

The operation of the SafeClamp closure is accomplished with the operator standing at the side of the pipeline or vessel closure. The opening and closing operation does not require the operator to stand or walk in front of the closure at any time until the closure door is fully disengaged from the closure hub. To further ensure safety, the Yale SafeClamp closure features a triple redundancy latching system. This safety system utilizes:

- An external clamp ring
- External bolts
- A proprietary pressure alert device (PAD) with actuator disk

The Safeclamp closure raises the level of operator safety without increasing the effort or the amount of time required to operate the closure. It is designed to allow quick access to the pipeline or vessel. In fact, in most applications, it typically takes operators less than 90 seconds to open or close the closure door. Operation of the SafeClamp closure does not require special tools or heavy equipment. The system is safe, reliable, easy to operate and cost effective with the same reliable performance its customers have come to expect with its Yale® and Sentry® closures.

R&M Energy Systems' Yale Safeclamp

Vietnam Water Main Relocated Without Restricting Supply

T.D. Williamson Asia Pacific Pte. Ltd. (TDW), completed a challenging hot tap and folding STOPPLE® plugging operation on a critical water main in Ho Chi Minh City, Vietnam. The operation, carried out for engineering design, construction and supervision consultants CDM International on behalf of Saigon Water Corporation (SAWACO), is the largest STOPPLE plugging operation TDW has performed in the Far East – Asia Pacific region.

The STOPPLE plugging operation was carried out in conjunction with the Ho Chi Minh Environmental Sanitation Project. The objective was to install a storm water and sewage collector system to alleviate flooding and to correspondingly improve the water quality of one of the city's primary canals by diverting sewage flows to a pumped collector system and by dredging the canal to promote natural tidal flushing. To achieve this, one million cubic meters of material was removed from the canal.

Installation of blind flange on the gland fitting for hydro testing

Crossing the canal, and laid within the canal bed some 50 years ago, was a primary water supply pipeline that supplies a daily average of 160,000,000 gallons (610,000 cubic meters) to 5,000,000 residents. This pipeline was, however, located within the dredging zone and it had to be removed and reprovided, but without interruption in supply.

North of the canal, the main is a 2m diameter pre-stressed concrete cylinder pipe (PCCP), while to the south it divides into two 1.5m and 1.2m PCCP pipes. CDM proposed sinking two shafts either side of the canal to install a carrier pipe by pipe-jacking it between the shafts. A permanent diversion could then be installed, allowing the existing main to be removed.

The challenge came in maintaining water supply while works were carried out. "There was much at stake," said Vo Quang Chau, Technical Deputy General Director for SAWACO. "It was the *only* source of water to the city." Since the main could not be shut down, CDM recommended that SAWACO engage TDW to isolate it while a temporary bypass was installed. This involved inserting folding STOPPLE plugging heads into the three lines to stop the flow through the canal section and diverting it to a temporary bypass pipe on the bridge. The 2m pipeline across the canal could then be isolated for cutting, and new connections made, facilitating the permanent diversion. Supply could thus flow while the permanent main was brought on-stream.

PPSA's Annual Seminar—16th November 2011 Aberdeen, UK

PPSA's One Day Annual Seminar on Meeting the Challenges of Pipeline Pigging will be held on Wednesday 16th November 2011. The day will include presentations of technical papers and an exhibition. There will also be a Question and Answer Forum with the chance to have your questions answered by a panel of experts. If you would like more details about the seminar please see our website at http://www.ppsa-online.com or email us at ppsa@ppsa-online.com.

iNPIPE Management Buy-Out supported by Meridian Equity

International Pipeline Products Ltd has been acquired as part of a Management Buy-Out supported by private equity investor, Meridian Equity.

The North Yorkshire based company, which is known internationally under the brand name, **iNPIPE PRODUCTS™**, has been acquired from parent company, Pan-Atlanta Developments Limited to accelerate the growth of the business into new premises required for rapid expansion.

iNPIPE PRODUCTS™ has been a supplier to major operators and international contractors for over 25 years and continues to grow. The company has increased worldwide turnover and profits year on year and has significant development and further recruitment planned.

iNPIPE PRODUCTS™ designs, manufactures and hires 'pigging' pipeline maintenance and testing equipment and services.

They have a reputation for designing and patenting innovative products that have become industry standards. The Pig Signaller, its first patent, is one such product which was developed with omni-directional properties. This is of particular importance when orientating the signaller on the pipeline because unlike other triggers, it is impossible to install the trigger unit incorrectly.

In addition, the company is able to work with clients to produce tailor-made products alongside its standardised range. Bespoke manufacture accounts for approximately 25 per cent of business.

Andrew Clarfield, co-founder of London-based Meridian Equity, which specialises in backing proven management teams running businesses with strong long-term growth prospects, said: "We are delighted to be backing Simon Bell and his management team. iNPIPE PRODUCTS™ is a worldwide leader in its field, and Meridian will support the development of the business within this exciting sector."

Innospection's new subsea self-crawling pipe scanner for structural inspection

As a customised solution for one of its clients, **Innospection Ltd** developed a subsea self-crawling pipe scanner in combination with a hydraulic motor drive to carry out the wall thickness inspection of a platform's structural legs.

This inspection system supports the lifetime assessment with valuable data of internal and external wall loss by being able to detect localized defects and general wall thinning. The design of this inspection system can also be applied to smaller diameter structures such as risers to flat surfaces like ship hulls.

Due to the platform design, a work class Remote Operated Vehicle operated from a support vessel is required to deploy the inspection tool to all areas of the platform structure.

Innospection Ltd's SLOFEC™ Subsea Pipescanner has been adapted to enable the deployment from a ROV. When the scanner has been brought into position by the ROV, the hydraulic powered drive unit enables the scanner to self crawl along the structural legs to carry out the inspection. Additionally, the scanner has been fitted with a camera and light system to support a visualisation of the scan, a subsea Ultrasonic sensor to support the general wall thickness information along the scanned sections and a position encoder system to determine its location on the structural legs. Due to the buoyancy of the scanner and its magnetic force, the scanner can crawl up the legs through the splash zone.

The scanner is capable of external and internal corrosion detection with penetration of up to 40mm wall thickness and is splash zone area focused. Due to the electromagnetic principle of the SLOFEC™ technique, the surface preparation is less critical and at the same time the magnetic system holds the scanner firmly in place along the inspection area despite the waves.

The required inspection of the platform's structural legs was successfully completed in June 2011.

TDW facilitiates New Steam Line at Refinery

T.D. Williamson SA (TDW) performed its first series of hot tap operations using specialist high temperature hot tapping equipment in Europe. The operations took place in The Netherlands at the Rotterdam Refinery, and were associated with a project that required a tie-in to a high pressure steam line. Hot tapping is a procedure for cutting or drilling an opening into a pipeline that is carrying product under pressure. It allows access to the inside of an operating pipeline without shutting it down or spilling the product. The TDW team carried out 10 hot tap procedures, five of which were "high temperature".

Using its Model 760 high temperature tapping machine, which is designed to perform at temperatures of up to 700°C and pressures up to 100 bar, TDW completed all hot tap interventions in 10 days.

Of particular note is that the operations were carried out with the hot tapping machine positioned upside down to prevent debris from falling into the pipe during the process. TDW also modified the pilots so that the coupons would be safely caught after they were cut. This approach proved to be successful, with TDW completing the five high temperature hot taps on the steam line at 40 bar and 400°C. All operations were executed while the refinery remained fully operational, without disruption.