Weld Purging World

2021 ISSUE 09: SEPTEMBER

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THE LATEST NEWS FROM OUR UK HQ

TECHNICAL ARTICLE: FREEZER SOLUTIONS TO PIPE REPAIRS

WELD PURGING PRODUCTS INNOVATORS, MANUFACTURERS AND INTERNATIONALLY RENOWNED SPECIALISTS
Dear Reader,

Welcome to the September issue of Weld Purging World 2021.

This month we welcome two new members to the HFT® team, John and Kurtis. We’d also like to say a huge congratulations to Sue Davies on her recent promotion. Read more on this on page 3.

On page 10 you will find our Technical Article regarding Freezing Solutions for Pipe Repairs where we investigate the problems faced by pipework users having to repair or replace pipe sections or change in-line components such as valves and instrumentation.

If you have any information that you would like to be featured in future issues of this publication, please contact me.

As always, we hope you enjoy the issue.

Best wishes,

Michaela
Marketing and Social Media Manager
michaelahess@huntingdonfusion.com
We are pleased to announce that Suzanne Davies has been promoted to Finance Manager with immediate effect.

Sue has been with us for a number of years now working as Distributor Support: Orders and Accounts. The promotion reflects Sue’s loyalty and hard work over the years.

We’d like to welcome John Page (pictured left below) who will be stepping into Sue’s shoes in Sales Order Processing and also Kurtis Russ who has joined us as an Engineering Apprentice.

Unfortunately, we were not able to make it over to Chicago for this year’s Fabtech, but our US Exclusive Partner COB Industries were there providing information, advice and guidance on all the latest Weld Purging and Pipe Stopping innovations.

Their booth featured all the latest Inflatable Tube and Pipe Purging Systems, Weld Purge Monitors, Pipestoppers and a small Flexible Welding Enclosure.

The four-day event is North America’s largest metal forming, fabricating, welding and finishing event, attended by thousands of industry personnel worldwide. We look forward to supporting COB Industries again next year.
Argweld Weld Trailing Shields® provide an additional inert gas coverage during stainless steel and titanium pipe and sheet metal welding.

The addition of a low cost, reusable Argweld Weld Trailing Shield® can produce cost saving results.

Here at HFT®, we pride ourselves on product development and with the support of our scientific knowledge and over 45 years of experience we have recently launched our NEW DESIGN Argweld Weld Trailing Shield®.

What’s new?

Along with the new sleek design, our Argweld Weld Trailing Shields® have a NEW Unique clip design, which means the welder can interchange different shield sizes without having to change the welding torch.

With our name and logo stamped onto every new Argweld Weld Trailing Shield®, you can be sure the Shield you are using is a HFT design, we guarantee quality and 100% craftsmanship. They are built to last.

Each Argweld Weld Trailing Shield® produces perfect gas coverage, smooth gas movement and no leaking with every model carefully and individually tested to ensure quality performance every time. Made in the UK to European Standards and Quality Control Procedures.

View our NEW demonstration video on our YouTube Channel:
www.youtube.com/huntingdonfusion

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**CALENDAR: EVENTS IN THE INDUSTRY**

**WIN EURASIA**
10 - 13 November 2021
ISTANBUL, TURKEY

**ADIPEC**
8 - 11 November 2021
ABU DHABI, UAE

**STEEL FAB**
10 - 13 January 2022
DUBAI

**TECHNI SHOW**
15 - 18 March 2022
NETHERLANDS

**TUBE 2022**
9 - 13 May 2022
DÜSSELDORF
ON-SITE
WELD PURGE
MONITORING

PURGEYE® SITE
WELD PURGE MONITOR®

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Internationally Renowned Specialists

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For many years, oxygen monitors and gas analysers have been used for weld purging. They are specifically designed and calibrated for accuracy at atmospheric oxygen level but not for weld purging where accuracy is required when reading much lower oxygen levels.

Using the latest scientific knowledge and innovation, Huntingdon Fusion Techniques HFT® have designed and manufactured the PurgEye® Nano, the World’s first and only low cost, no frills, Weld Purge Monitor® that measures accurately down to 10 parts per million (ppm).

Ron Sewell, Chairman for HFT® said: “A Weld Purge Monitor® is essential to monitor oxygen levels when welding metals such as stainless steels, titanium and nickel alloys where a high quality, non-oxidised, zero colour weld is required. The PurgEye® Nano has been developed for weld purging where data logging, alarms and welder control are not necessarily required. It is small, lightweight and inexpensive. There are no knobs, no switches, no controls, making this a really simple, ‘plug and play’ monitor.”

With its leak tight connectors for weld purge hoses, the PurgEye® Nano can be used with optional accessory hand pump and gas sampling probe. The monitor can be used to check purge gas quality from the main source and at the exhaust end of a purging system as well as to find air leaks in purging hose connections anywhere in a system.

HFT® has a Family Range of PurgEye® Weld Purge Monitors® for every application. The range includes hand held, battery operated monitors and mains powered monitors, which can read oxygen levels from atmospheric concentrate, right down to 1 ppm.
Large Inflatable Rubber Plugs have been in use in large-scale infrastructure projects since at least the early 1920’s, when they were used in large cities to isolate and empty sewer sections to enable repairs avoiding excavation. Storm drainage pipelines, sanitary sewer lines and low-pressure underground pipelines do not have valves or spectacle flanges to block fluid flow in the line. Blocking these lines and permitting access to them without the need for expensive, maintenance-intensive valves and flanges so that the pipeline becomes accessible for inspection, maintenance, or modification proved somewhat difficult.

Now, one century later, such systems, i.e. collapsible bladders or plugs inserted into sewer or industrial pipelines and inflated to create a dam or a block, are used in nearly all infrastructure sectors, from deep sea platforms to hydroelectric facilities, to overflow and miscellaneous sewers, as well as the whole land based petrochemical sector.

One company providing plugging systems is the Pipestoppers® Division of Huntingdon Fusion Techniques HFT®. As well as their Mechanical and Freeze Range of plugging systems, HFT® are providing a wide range of Inflatable Plugs and Bladders, which are no longer regarded as expensive as they were traditionally in the past.

In addition to the standard range of Inflatable Plugs, HFT® can deliver purpose designed models. Examples include plugs working in high-pressure applications for pipelines in the Oil and Gas industry plus those that are needed for very high temperatures and others needed for caustic environments.

Pipe Plug Models:

HFT® manufactures Inflatable Pipe Plugs in sizes 35mm (1.5”) to 2,000mm (78”) in diameter.

Their customer base has grown considerably in the nearly 46 years that they have been serving the infrastructure industry and now represents many of its sectors including Energy, Water and Sewer, Construction, Repair and Testing, Petrochemical and Chemical for example. They continue to grow year-on-year adding new customers in new markets and developing new plug designs and products to their overall range.

HFT® exports to over 40 countries on five continents. They have Distributors and resellers in most countries and their shipping department has global experience and will deliver orders to the project site in accordance with the needs and time lines.
Freezing your Pipes

Pipework users across the entire industrial spectrum occasionally face the problem of having to repair or replace pipe sections or change in-line components such as valves and instrumentation.

Isolating and exposing sections for attention can be very expensive

- Pipelines need to be emptied of contents be they solid, liquid or gaseous.
- The contents need to be disposed of or stored.
- Systems need to be re-filled following any work.
- Production needs to be interrupted.

An attractive and economical solution is to freeze the pipe either side of the repair or replacement zone. Only the volume between freezing points requires emptying. Two solutions are available, the first covering pipe diameters from 9 – 200 mm (3/8” – 8”) and the second up to 300 mm (12”).

Qwik-Freezer™ System

The Qwik-Freezer™ jackets based on cooling with liquid carbon dioxide can be used for pipes up to 200 mm diameter. This diameter range has become the preferred solution for a very wide range of water-carrying pipework in industry sectors such as;

- Building services
- Petrochemical
- Food & Beverage
- Hospitals
- Water Treatment
- Shipping
- Aerospace
The Qwik-Freezer™ System is easy to use. A specially designed jacket is wrapped around the pipe at the point where the freeze is required. A nozzle in the jacket is then coupled to a cylinder of liquid carbon dioxide by means of a high pressure hose. When the CO2 is injected into the space between the jacket and pipe at a temperature of -78°C the pipe contents freeze and a secure “ice plug” is formed which seals the pipe.

The ice plug forms only in a section of pipe covered by the jacket so the resulting rise in pressure is very small and there is no damage to the pipe. The technique can be used safely on iron, lead, stainless steel, copper, brass and plastic pipe.

**Case Study: low-cost accessory obviates power station shut down**

A new compressor installation, to be completed within a short window of time, was going well until a problem was discovered. The design drawings failed to show that a cold water valve extension handle clashed with the air inlet pipe of the compressor.

Critically, this was the only isolating valve from the cooling water main header and could not be moved without closing the cooling water system. This would have also meant shutting down the whole power station. Not an option.

Potential solutions included re-routing the inlet pipework of the compressor and contracting in a specialist pipe freezing company to enable the valve to be moved.

All initial potential solutions would have taken time to organise, which could have affected the timely completion of the project.
Installation was easy and CO2 bottles were obtained from the local BOC gas supplier. The freeze worked well taking around an hour to freeze the pipe. During this time, the welded valve was ground out and a new one installed. The job took around two hours to complete in total and at a cost of around one quarter of that by a specialist contractor.

Derek Halsall – ECS Engineer, Slough Heat and Power, UK

**Accu-Freeze™ System**

The Accu-Freeze™ System is the most advanced pipe freezing system in the world. It utilises liquid nitrogen in a controlled and automated system to safely and reliably freeze static liquids in a selected section of pipe or tubing.

The procedure creates an in-line ice plug capable of withstanding 140 bar (2000 psi) in pipes up to 300 mm in diameter and can be modified to handle even larger diameter jobs. Ice plugs temporarily isolate sections of pipe for as long as necessary, allowing repairs or modifications to be made without shutting off or draining down the entire system.

Either Copper coil is wrapped around the pipe or a specially designed insulated jacket is fitted around the required section of pipe to be frozen.

A temperature monitoring unit controls the surface wall temperature of the pipe to accurately and safely create an ice plug inside the pipe. The ice plug is formed in the section below the Accu-Freeze® coil wrap or jacket, and does not extend outside the coil or jacket dimensions.

The Accu-Freeze™ System is automatic and can be remotely operated. This makes it attractive for use in nuclear applications and locations where engineer access is restricted.
Case History: Space Shuttle Problem solved by Pipe Freezing

With the space shuttle Atlantis on the launch pad ready to go on mission ST-101. A last minute systems check revealed a fault in the power drive unit. The PDU is an hydraulic power pump which controls the shuttles’ rear rudder or air brake so failure of this unit during flight could be catastrophic.

Repairing this sensitive system conventionally meant suspending the launch, rolling the shuttle back to the vehicle assembly building and draining out the hydraulic lines to undertake repairs. This would delay the launch for several weeks and be extremely costly.

An engineer from United Space Alliance suggested the idea of freezing the hydraulic lines feeding the PDU while the shuttle was still in the launch position. This would enable the repairs to be made without draining out the entire system and in turn keeping the launch on schedule.

The job was to freeze six 16 mm hydraulic fluid lines. There were three demanding requirements;

- The lines were nested in the base of the tail of the shuttle and physical access was very restricted.
- The freezing point of the hydraulic fluid was below -100°C.
- Shuttle engineers needed to be able to monitor and control the temperature of the pipes in order to ensure that the freeze was being safely and consistently controlled.

Because this kind of repair had never been attempted by shuttle engineers tests had to be made to ensure it would in fact work. An Accu-Freeze® system was selected as the freezing technique.

Three days of testing commenced. After multiple successful trial freezes the procedure was approved. In drenching rain the six hydraulic lines were frozen simultaneously but the inclement weather caused the operation to be delayed and this required the freeze to be held in place for over 24 hrs. The Accu-freeze system performed without a hitch.

The final work was completed quickly and successfully.

Conclusions

Pipe freezer technology from Huntingdon Fusion Techniques allows fluids to be frozen below -150°C using liquid carbon dioxide or nitrogen. Specially designed insulation and feeder hoses are used to deliver coolants and continuous temperature control during the freeze operation can be incorporated.

The use of freeze technology affords the opportunity to isolate sections of pipework for maintenance, repair and replacement of valves, couplings and instrumentation and thus obviates any need to drain the system. There is no need to disrupt production beyond the time needed to freeze and undertake changes.
Effective Sealing is Simple!

Aluminium Plugs

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