

## Halifax Fan Ltd Reports Two Record Years

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Calibration Feature

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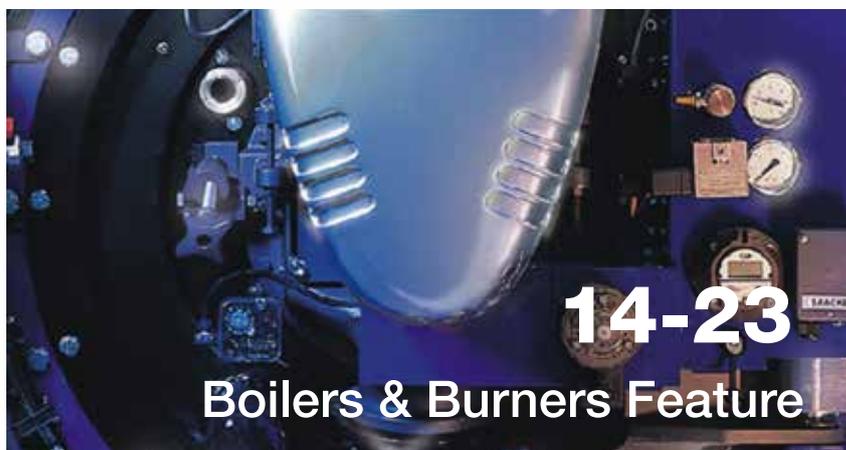
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## Arco Offers World Class Products And Demonstrates Safety In Confined Spaces At This Year's Safety & Health Expo (14-16Th May, Nec Birmingham)

Arco, the UK's leading safety company, will unveil its state-of-the-art mobile confined space training unit to visitors at this year's Safety and Health Expo.

The mobile confined space training unit incorporates the latest technologies to simulate a variety of industrial confined space working scenarios. Visitors will be able to see inside the tunnel network and witness live demonstrations throughout the show (Hall 1, Stand: I90).



The popular hard wearing Trojan Tradesman range of workwear will be on display together with the Trojan Baselayer products.

Other PPE features from Arco include a comprehensive range of head to toe protective products for the welding industry, respiratory protection including the Sundstrom SR700 powered air respirator and a range of disposable respirators ideally suited to short duration use and offering protection from particulate hazards.

The full programme of events is available from website:  
[www.safety-health-expo.co.uk](http://www.safety-health-expo.co.uk).

# The Essential Elements of Reliability and Maintenance Management. – Part III

## Execute them and you will get guaranteed results.

**Christer Idhammar**

**Founder and Executive Vice President**

**IDCON INC, Raleigh NC, USA**

**www.idcon.com**

First I like to tell you about myself and from what perspective I write this article. My world is process industries such as Iron, Steel, Pulp, Power and Wood based industries such as Oriented Strand Board (OSB), medium Density Fiber (MDF), Chemical, Oil and Gas, Food and Beverage etc. In short all industries where a break down of critical equipment assets results in risk for environmental damage, personal injury, lost quality and volume in throughput or high costs for maintenance. I lose some of my important arguments if reliability is not important because then the maintenance organization has no "revenue". If reliability is not important the sense of urgency and importance in the work we do, as a maintenance organization is not there.

When I was a very young man I signed on a big oil tanker as an apprentice in the engine room. After nine years of maintaining and operating huge powerful diesel engines that were 33 feet (10 meters tall), pumps, compressors, lubrication oil and fuel separators, hydraulic stabilizers, heat exchangers, fans, sewage systems, boilers etc. I had also graduated as an engineer.

When I first came to work in a big industrial plant in 1968 to train people in preventive maintenance and help set up a computerized maintenance management system I wondered how I would manage to do that with my marine background.

My first reaction was that equipment is equipment and it was not much different than what I had operated and maintained at sea. The difference was more that in an industry I could call for help if needed. Onboard a ship you had no one to call, you operated and maintained with a very limited crew. Another difference was that onboard a ship it was a way of life to constantly inspect equipment and to keep your area of responsibility very clean and organized. You also had to get all work planned for execution in next port.

I realized later in life that this was a very good background because you managed a crew, operated equipment, planned work, scheduled work and also executed work. Reliability was very important to everybody because it was obvious that you did not want to have unreliable equipment operating a fully loaded tanker in a storm or entering through the Suez Canal and other critical passages.

### 3. Planning and Scheduling of work

It is important to understand the difference between planning and scheduling. These two elements of maintenance management are essential and are very often mixed up. Most organizations, where scheduled shutdowns of the manufacturing process are common, plan and schedule work quite good because there is a consequence if they do not.

Planning and scheduling of weekly/daily On-The-Run work is often very poor.

Perhaps this is because of more lax expectations on performance than during a shutdown?

The short definitions used here are:

Planning of work = Deciding What, How and Time to do work.

Scheduling of work = Deciding When and by Who work will be done.

Planning of work is to prepare everything needed to do the work. E.g. Scope and description of work, any safety requirements, tools, parts and material, documentation, need for scaffolding, skills required, shut down required or can be done without interference with production etc.

Scheduling of work is to first decide when job shall be done by date/time and who will do the work.

A best practice is to plan work before work is scheduled for execution and to schedule to the work that need to be done and then schedule people to the work.

All work can be planned but all work cannot be scheduled.

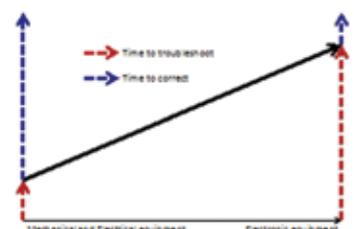
To plan work is the easy part if you have dedicated people who are allowed to focus on planning. Even correction of a break down can in theory be planned because you know it can and most probably will happen, but you cannot schedule all work because you do not always know when the break down will occur.

Most breakdowns can be prevented but all failures cannot be prevented. This is because all failures do not have a long enough failure developing period. The failure developing period is the period in time that lapses from the point in time you discovered a failure until the break down occurs. If this time is too short the failure will develop into a breakdown before the corrective action can be planned. This is common for electronic components. Before problems in systems with electronic equipment can be corrected troubleshooting has to be done. Breakdowns can still be prevented with redundant components.

Figure 8. In general most mechanical and electrical equipment demands less trouble shooting time and more time repair. The opposite pertain to Electronic equipment and control systems. To troubleshoot takes in general much longer time than to correct the problem. This has to be considered for example when setting goals for volume of work that can be planned before it is scheduled. For many years the trend is that industrial plants have more complex control systems and more electronic equipment.

### Work Management Process

It is necessary to document and reinforce the process defining how work is managed. If this is not done you will surely end up in the "Circle of Despair" (Figure 1. Part 1). My intention in this article is to discuss the basics and an overview, not a complete article about planning

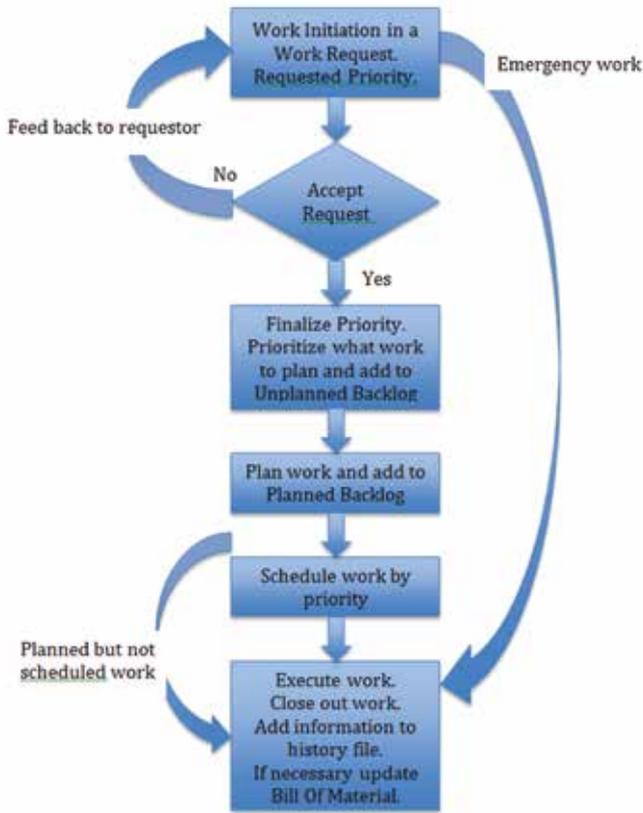


and scheduling. The essential steps in a work management process are:

Figure 9. This example describes work that is requested and approved to be executed and where planning and scheduling can be done without any other steps. When work is planned it is common that the work has to be placed in hold codes such as:

- Waiting material
- Waiting approval
- Waiting Opportunity, E.g. unscheduled shutdown. This work is planned but not scheduled

These hold codes has to be cleared before the work shall be added to planned



backlog where all work that is planned and ready to be schedule is held.

Emergency work will go direct from work initiation to execution and planned as good as it can be in the given situation. Too much of emergency work will trigger the "Circle of Despair". The more work done as reactive, the less work will be done as managed work (planned and scheduled work.)

Rules for prioritization, approval levels etc. and the roles of people involved must be clearly defined.

## Front Line Management

Execution of the work management process has to occur with the front line organization. It is at this level of the organization results will be delivered or not delivered. The front line organization consists the following functions. In bigger organizations each of these functions are full time employees. In smaller organizations employees have to do all or some of these functions:

Figure 10.

Planning of work is always done by someone but often in the wrong order. Best practice is that planning of work is done before work is scheduled and executed. Most successful organizations have full time planners and the planners use more than 70% of their time to professionally plan work. One point of contact between operations and maintenance.

A Maintenance and Operations Coordinator should coordinate work requests from operations. The coordinator will screen work and reject or validate work



to be done. The coordinator should also set the requested priority based on an objective guideline. He/she is the person leading weekly and daily planning and scheduling meetings.

Scheduling of work.

Supervisors or team leaders in most successful organizations do scheduling of work. They are the best to assign people to work schedules, as they know the capabilities of the crafts people they manage. They will also follow up on progress of work.

Execution of work.

Crafts people and operators execute work and can do that much safer and more efficient than if work is not planned and schedule before the work is executed.

## Justification for planners

I have worked with many plants where they have no planners because the maintenance organization said they needed them but was not able to justify planner(s) position(s). I like to offer some ideas on how we successfully have helped maintenance organizations justify more efficient planning with planners.

With or without planners somebody always does planning of work otherwise the work could not be done. In an organization without planners the following is a typical situation:

(Working hours 07:00 – 15:30)

- 07:00 – 07:30 Crew arrives and meet with supervisor.
- 07:30 All have been assigned what to do today.  
E.g. "Pump 20-439 does not pump"
- 07:30 – 08:45 Two mechanics troubleshoot and find that bearing, seal and impeller unit must be changed.
- 8:45 – 09:00 get rigging tools.
- 09:00 – 09:15 Morning break.
- 09:15 – 10:30 Finding parts.
- 10:30 – 11:30 Arrange rigging.
- 11:30 – 12:00 Lunch break.
- 12:00 – 14:00 Disassemble bearing, seal and impeller unit.
- 14:00 – 15:30 Impeller too big. Machine down to right diameter.
- 15:30 – 17:00 Install, test and start pump.

In summary the scope of work had to be decided by the mechanics, tools,

## TouchStar Technologies launch another 'military specification' field tablet with 4G support

CA10, a semi-rugged tablet PC, is designed specifically for mobile workers in the field service, logistics, retail and hospitality sectors.

The CA10 runs the Genuine Windows 7 Professional operating system, and at its heart is the Intel Atom Processor N2600 running at 1.6GHz, supported by 2GB of DDRIII memory and an mSATA SSD of 64GB or 128GB.

Some of the many other key features of the CA10 include:

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- Ambient Light Sensor
- 1D/2D Barcode Scanner
- Payment Terminal Solutions through Smart Card Reader, Pin-Pad, Magnetic Stripe Reader
- RFID Reader
- Dual-Camera
- Besides standard WLAN and Bluetooth connectivity, CA10 also support GPS and WWAN with Gobi 3000 for 3G connections or LTE for ultra-fast 4G connections.



For further detailed information on the CA10 please visit: [www.touchstar.co.uk](http://www.touchstar.co.uk)

## Guyson Maintenance Equipment for Injection Moulders

The Guyson Euroblast PF (pressure fed) systems are designed for speed, giving faster cleaning times (up to four times faster than suction fed venturi systems) to meet higher production requirements, pressure feed blast systems are excellent for removing tough, hard scale and deposits particularly within hard-to-reach recessed areas and complex shapes.

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For a free four page brochure on Guyson's mould and die cleaning equipment options please contact Guyson's Customer Service team now on 01756 799911 or email [info@guyson.co.uk](mailto:info@guyson.co.uk)

## ABB launches new license-free HART handheld configurator

The cost and complexity of configuring instruments in the field has now been significantly reduced following the introduction of ABB's new lightweight and robust handheld configurator.

The mobile handheld DHH805 allows easy parameterization of any HART device from any manufacturer as long as its EDD (Electronic Device Description) is released from the HART foundation.

Featuring the common ABB HMI platform, the configurator can be powered up in less than 10 seconds and is supported by a powerful battery, which provides 80 hours of continuous use before recharging.

The DHH805 is delivered with a Windows compatible PC-Tool that will notify users of firmware and software updates that may become available, which can then be downloaded or updated free of charge.

The device is fully certified for hazardous areas (IEC Ex, ATEX and FM)



For more information on ABB's DHH805 handheld configurator please email [moreinstrumentation@gb.abb.com](mailto:moreinstrumentation@gb.abb.com) or call 0870 600 6122 ref: 'DHH805'.

## TiME Process Produces Cranial Meshes

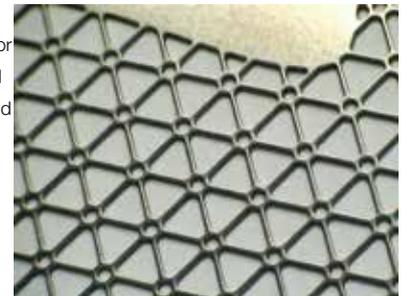
Titanium mesh cranioplasty is becoming increasingly popular for patients with large cranial defects caused by traumatic injuries, iatrogenic injuries and congenital defects.

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Further information from Ian Whateley: Tel: 01952 416666  
Email: [iwhateley@ace-uk.net](mailto:iwhateley@ace-uk.net) | Web: <http://ace-uk.net/>

# Spirax Sarco systems help ReFood save over 10MWh per day at waste-to-energy plant

ReFood UK Limited is recovering more than 10MWh a day of energy and saving over £80,000 a year thanks to the use of heat recovery systems from Spirax Sarco at its new anaerobic digester (AD) facility at Doncaster.

The AD plant and associated combined heat and power (CHP) engines generate heat and 2.8MW of electrical energy from food waste. This is the first industrial-scale AD plant under the ReFood badge.

The company's parent group, Prosper De Mulder (PDM), is one of the UK's biggest recycling specialists and plans to follow the success of the Doncaster project by rolling out a network of ReFood AD plants across the UK over the next five years.

The site's two CHP units generate hot water as well as electricity, and this is used to drive the AD process. The AD process in turn breaks down 45,000 tonnes per year of food waste to generate methane gas and run the CHP engines. But the engines actually generate more hot water than needed, and that's where the Spirax Sarco systems come in.

The three heat recovery packages take the excess hot water at 90oC and use it to carry out three different

heating roles within the plant. The first system raises the temperature of incoming water from ambient to 80oC before it enters the hot well of the site's steam boiler. The second one heats water from ambient to 80oC to feed the site's general-purpose hot water tank. The third maintains the temperature of the water that recirculates in ReFood's tank farm heating circuit, which typically needs raising from 70 to 85oC in order to prevent the oils and fats in the tanks from solidifying.

Without the systems, the site would otherwise need to meet its hot water needs from the steam boiler, so they are effectively helping ReFood to save money and reduce emissions that would otherwise arise from its new facility.

Robert Smith, PDM special project manager, says: "The Spirax Sarco units have been very effective for the recovery of valuable waste heat which would otherwise be lost to the atmosphere. They make a significant contribution to the PDM Group's commitment to



produce energy from renewable sources and reduce climate change."

"ReFood is looking to install further units both at the plant in Doncaster and at their future AD facilities for further use in heat recovery."

For more information regarding heat recovery please visit [www.spiraxsarco.com/uk](http://www.spiraxsarco.com/uk) or call 01242 521361.

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parts, rigging etc. had also to be decided by mechanics, adjustment of impeller was also decided by mechanics. All of this is PLANNING. The inefficiency in this example lies in that planning was done after scheduling and it must be done the other way around to enable people to be efficient.

The other scenario is that the problem with the pump was discovered during an established inspection route a couple of weeks before the problem must be corrected. A planner could then plan the job efficiently. It would take the planner about two hours to prepare all needed for work, arrange for pump impeller to be adjusted etc. The store would stage and deliver parts in advance. The mechanics would then do the work in a safe and organized way in about five maintenance hours instead of about 20 hours including overtime as in the example above.

We have done hundreds of evaluations of maintenance organizations all over the world and found that without organized inspections and planning followed by scheduling of work crafts people spend 40 – 60 % of their time on “planning activities” as given in the example above.

In this example the maintenance organization is very reactive and crafts people are put in a situation where they have to “plan” to get the work done. The implementation of basic inspections will change the situation so that a planner can plan before work is scheduled by a supervisor and executed by crafts people. The target is to get down to about 10% urgent work where the situation described in the scenario above would still be repeated. That would free up 190 hours/day from crafts people’s time. To be efficient in work management this organization would need about three to four planners (24 – 32 hours/day). This would enable crafts people to free up 158 – 166 hours/day. The number of planners needed is very dependent on disciplined priorities of work, access to an updated and accurate bill of materials and close cooperation with operations.

Number of crafts people	% of time they “plan”	Total hours “planning” hours/day	Target Hours/day	Freed up time. Hours/day
60	50	240	50	190

## Roles of Front Line Management

Some of the most common questions I get from organizations all over the world include:

- Do we need leaders in the frontline?
- Do we need planners?
- How many planners do we need?
- How many frontline leaders do we need?
- Do we need Operations – Maintenance Coordinators ?
- How should we decide the roles of planners and frontline leaders?

These are the same questions I received when I started in industry many years ago and it is still today one of the first issues that need to be clarified when we help organizations improve reliability and maintenance performance.

Over all these years organizations have tried everything from combined roles, centralized planners, self-directed work teams, autonomous maintenance, no planners, no frontline leaders and so on. All these experimental attempts I have seen over all these years has reverted back to the fact that leaders and planning and scheduling are absolutely necessary to provide a safe working environment and efficient work execution.

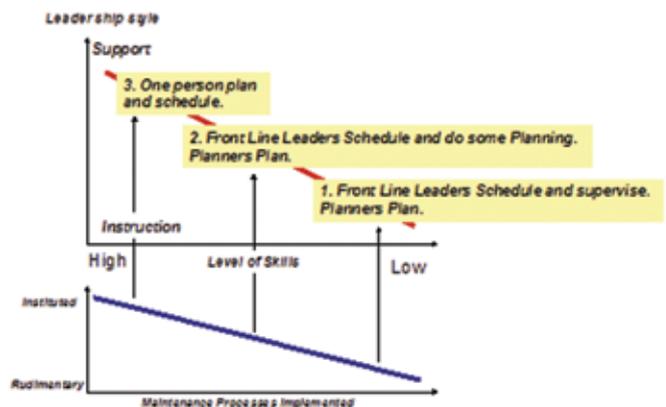
In smaller organizations of up to about eight maintenance craftspeople the roles of planner and frontline leader is by necessity often combined, but someone still has to do these functions. In larger organizations I know you need all of the above roles as positions to be efficient.

## How many planners and frontline leaders?

To decide how many planners and frontline leaders an organization needs is not a simple answer based on ratio of planners to craftspeople and frontline leader to craftspeople. There are a number of factors needed to give the right answer including:

- How the role of a planner is defined.
- How the role of a frontline leader is defined.
- Quality and access to support systems such as a complete Bill of Materials.
- Skill level and participation in planning by crafts people.
- Implemented and disciplined use of processes for maintenance.

Figure 11. Leadership style and roles changes depending on Craft People’s Skill levels and Processes implemented and used. Upper X- axis shows leadership style as it relates to craft people’s level of skills. The upper Y-axis shows leadership style from instruction to support. If the crew has low skill levels a frontline leader will be forced to use much time to instruct how to do a task. If the crew has a high level of skills the leadership style can, and should, change to more



support and less instructions. The best way to support is to act more as a coach and use planning and scheduling of work as one of the tools to do this better.

The X-axis in the lower graph shows how well the essential maintenance management processes are instituted and used in a disciplined manner in the organization. (Work Management Process, Preventive Maintenance, Bill of Materials and Store Room support)

In an organization with a low craft people skill level and very few and/or poor essential maintenance management processes instituted the frontline leader have no choice but to use much time to instruct and follow up on an execution of tasks. He/she can therefore not manage more than about six people.

If a planner has no access to a quality populated Bill of Materials and bombarded with many “Do-It-Now” requests he/she will not manage to plan for more than perhaps four people.

On the left side of the graph the situation is different. Craft People’s skill levels are very high and essential maintenance management processes are instituted and used in a disciplined manner. In this scenario a planner can plan for up to 20 people and a frontline leader can lead up to twelve crafts people. You might even consider merging the roles of planner and frontline leader into one that can plan, schedule and lead teams of up to eight crafts people.

There are other circumstances that impact crew sizes per planner and frontline leaders such as the size of the physical area they manage. One frontline leader managing a central workshop might handle 25 to 30 people. In a very spread out manufacturing area the frontline leader can handle much fewer crafts people.

The function of Maintenance – Operations Coordinator will also enable the frontline roles to become more efficient.

For examples on Role Descriptions please contact [info@idcon.com](mailto:info@idcon.com)



# ATEX is not enough

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Once a control system project is completed, its ownership transfers to the customer and their production & engineering staff.

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The last important discipline is engineering quality and its impact lives-on long after the handover stage. It is the least understood by procurement professionals, it is the most difficult to measure and the easiest one to unwittingly compromise. A low cost price inevitably means that less time can be afforded to a project and when time is tight corners are unwillingly cut in order to achieve a deadline. No one wants this. Understanding the engineering and management content of a project is therefore crucial to optimise the ownership experience and discern supplier proposals.

For further information contact:

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Managing Director

Optima Control Solutions Ltd., Blackburn

E: info@optimacs.com

Tel: (+44) 01254 272829



## Sonatest are proud to announce that the Prisma has won the Platinum “A’Design Award”.

The A’ Award and Competitions board are happy to inform that the Prisma project by L A Design & Sonatest Ltd wins the noted Platinum A’ Design Award at Scientific Instruments, Medical Devices and Research Equipment Design Competition.

The A’ Award and Competitions board are happy to announce that the project “Prisma” by Pete Holdcroft - LA Design, Matthew Brown - LA Design, Stewart Lamont

- Sonatest Ltd and Yvan Gosselin

- Sonatest AP has been awarded

the Platinum A’ Design Award in

the Scientific Instruments, Medical

Devices and Research Equipment

Design category of competition.

This project was selected as a

winner by the international awarding

commission of the A’ Design Awards & Competitions Board’s members.



For further information please contact:

Corinna Cuciureanu, Marketing Communications Manager

Sonatest Ltd. Tel: 01908 525904, Email: corinna@sonatest.com



## MEDAVIA - MEDITERRANEAN AVIATION COMPANY LIMITED

Medavia Maintenance Repair Organisation (MMRO) based in Malta (Europe), is an EASA Part-145, Libyan LyCAA CAR-145 and South African CAA approved AMO, is authorised to conduct Base, Line and ad-hoc maintenance on a variety range of aircraft types including DHC8-100/200/300, Hawker Beech 1900 & B200 series, CASA C212, Dornier 328-100 series and DHC6-100/200/300.

Over a long period of time, MMRO has established itself as a distinguished service provider in the aviation industry. Our internal pool of talented, dedicated and certified technical staff ensures consistent qualitative service to the highest levels of airworthiness.

For additional information regarding capability listings, approvals and services, please refer to [www.medavia.com/maintenance](http://www.medavia.com/maintenance). Requests for proposals are to be forwarded to the Maintenance Manager:

Email: [maintenance@medavia.com.mt](mailto:maintenance@medavia.com.mt) / Tel: +356 2249 0000.



# Macdonald Humfrey Fuel Rod Loader And 'Strongback' Helps Springfields Re-Commission LWR Nuclear Plant

MacDonald Humfrey Automation (MHA) has completed a contract to design, build and install a new Fuel Rod Loader and 'Strongback' system.

It will help re-commission a light water reactor (LWR) to meet growing demand for nuclear fuel at the Springfields Fuels processing plant near Preston.

The Rod Loading Machine consists of a carriage (a honeycomb matrix) fitted to a support frame mounted on linear slides, which allow it to index away from and towards the Strongback. The Machine pulls certified fuel rods from a magazine into a skeleton, in a pre-determined sequence to

create 12ft or 14ft fuel assemblies. MHA also manufactured an Envelope Alignment Machine, which enables the fuel assemblies to be removed from the Strongback to have their tolerances checked to ensure that alignment is correct.

A sophisticated MHA human machine interface ensures that the whole system works effectively to improve the speed and safe handling of the fuel rod assembly process.



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E-Mail: sales@exmac.co.uk

## Vortex FP control panels monitor gas detectors in Zone 1 hazardous areas

Compact model now available for tight spaces where other flameproof panels may not fit

Crowcon's new Vortex FP Compact control panel increases the flexibility of its flameproof product range. Like the existing Vortex FP, the FP Compact is specifically designed to monitor toxic and flammable gas detectors or fire detectors where there is a need for the control system to be installed in ATEX Zone 1 and 2 hazardous areas. Its more compact size, however, means it is particularly suited to confined spaces such as analyser shelters in refineries, offshore rigs or FPSO (floating production, storage and offloading) installations.

The standard Vortex FP contains up to 24 relays and can monitor up to 12 gas/fire detectors, while the FP Compact contains up to 16 relays and can also monitor up to 12 detectors.

In areas where explosive or toxic gases are a real and imminent danger, both the Vortex FP and the Vortex FP Compact allow workers to perform their jobs more efficiently without compromising their safety.



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## X-Rite Pantone ushers in digital era of colour and appearance management for automakers and their suppliers

Company demonstrates powerful new tools for key automotive players recently at Automotive Innovation Day and for media covering the Geneva International Motor Show



REGENSDORF, Switzerland, 14 March, 2013 – X-Rite, Incorporated and its wholly owned subsidiary Pantone LLC is ushering in the digital era of colour and appearance management to address some of the toughest design and manufacturing problems faced by the automotive industry.

In response to a widespread need for more sophisticated management of color and appearance throughout the automotive workflow, X-Rite demonstrated its new Total Appearance Capture (TAC) technology and other powerful tools for key users and influencers recently at the company's Automotive Innovation Day in Frankfurt, Germany. The company also demonstrated the TAC technology during a special X-Rite media event held in Geneva, Switzerland that coincided with the 83rd Geneva International Motor Show.

For more information on these sessions, please contact Le Vin Chin at lchin@xrite.com, or visit [www.xrite.com/custom\\_page.aspx?PageID=391](http://www.xrite.com/custom_page.aspx?PageID=391).

# Halifax Fan Ltd Reports Two Record Years.

While the global economy is still struggling and major UK high street chains are failing, one Yorkshire based traditional engineering company reports two bumper years.



Halifax Fan Ltd, based in Brighouse enjoyed sales growth of 30% in 2000/11 and followed that up with a record 43% growth over the last twelve months.

Established in 1965 to serve the local textile industries, Halifax Fan designs and manufactures a wide range of industrial fans and has grown to be a global player with offices and factories

in China, Hong- Kong, Thailand and Sydney Australia. Managing Director Malcolm Staff, "Fan technology hasn't changed much over many years but their application is essential in a great many industries. We saw the opportunity to strengthen our position simply by making our products more reliable and more efficient, reducing their total cost of ownership. It was also clear that the main growth

market was the Far East, particularly China, where power stations and petrochemical plants were being built widely and that to enter that market, we needed a local base. In 2006 we opened a modest manufacturing facility in Shenzhen, just over the border from Hong-Kong and this has grown to span three factory units totalling some 4,000 m2. Crucially, from the outset, we focussed on embedding our UK quality practices in the Chinese plant and invested in staff training to ensure that product quality and reliability is constant regardless of which plant our products are built in."

The petrochemical and oil industries particularly demand fans built to the highest safety standards and Halifax has developed a particular expertise in this sector, even to the extent of in-house testing and certification to these standards. This has resulted in repeat orders such as the two year contract to supply 50 hazardous area fans per month to a US oil sector company and a single order for Halifax's biggest ever fan worth almost \$1m.

All of this has required a continuous investment in computer based design and manufacturing technology, moving software and communications to the 'cloud' and extensive personnel training and most significantly, apprenticeships and graduate sponsorships to overcome the UK shortage of skilled engineers. Plans are in place for further growth globally so this one UK company that has 'got on its bike' and found success where other less bold companies have struggled to weather the recession.

For more information on halifax fans,

please contact:

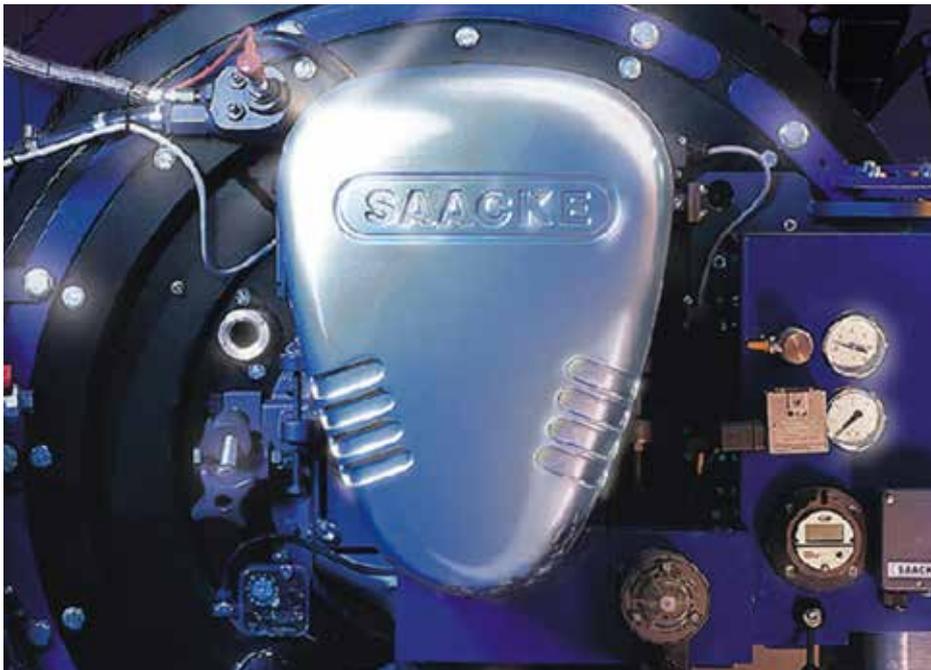
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# SAACKE help the Award winning Harveys Brewery

When your product, reputation and future prosperity depend on the quality of steam, then you make absolutely sure that you find the very best solution. And that's exactly what Harveys of Lewes did when they called on SAACKE to improve the operation of their boiler plant.



Harveys Brewery in Lewes is the oldest brewery in Sussex, dating back to 1790. Its rich heritage is passionately carried through to the present day. It brews using only local hops and barley, while it draws water from an artesian well 60ft below its site, known locally as Lewes Cathedral.

As with all breweries the use of steam is a vitally important process and the quality of the steam is imperative, the temperature of the hops being the key to the taste of the beer.

So when Harveys invested in a reconditioned boiler fitted with a pressure jet burner suitable for firing natural gas and diesel and encountered issues with the quality of steam and the frequency of burner firing, they turned to SAACKE for help.

The brewing process requires a large variation in steam demand, a case of all or nothing. The small turndown of the burner on the new boiler meant that to maintain the boiler at its required level the burner would start and stop every few minutes

which significantly reduced plant efficiency. After spending some time studying the boiler, SAACKE recommended fitting a burner with a superior turndown, thus allowing the boiler to match the site's steam demand.

The new burner uses a low pressure gas register for the main fuel, and Rotary Cup atomisation for the standby diesel fuel. Alongside this SAACKE fitted a new control system; a combined burner management and air/fuel ratio controller, the SAACKE SCanView.

Once commissioned, it was very clear right from the start that the change in burner was giving the Brewery greater boiler control, providing easier and more accurate boiler operation and yielding substantial fuel and energy savings.

With the burner operation now vastly improved, the hunt was on for ways to further improve the efficiency of the boiler plant. SAACKE quickly identified the original Feed Water System as an area for improvement.

The original system was based on an on/off system with the feed water pump, much like the original burner, constantly stopping and starting. This constant cycling of the Feed Water Pump introduced cooler water into the boiler and caused unnecessary wear on the pump motor.

The challenge for SAACKE was to find a way to control the flow of water from the pump, delivering only the required water quantity into the boiler. If they could achieve this, as well as matching the water added to the boiler steam demand, the wear and tear on the pump motor would be reduced and the energy use of the pump minimised.

The SAACKE solution was to fit the SCanView Boiler Water Control (BWC) module. This expansion to the SCanView system allows control of the boiler feed water system through the 10.4" Touchscreen of the SCanView.

By installing the SCanView burner management control and Boiler Water Control in one control system, SAACKE helped Harveys save energy, improve control and increase efficiency.

Most critical of all, SAACKE helped Harveys to improve the safety of their boiler operating system by virtue of the unique SCanView Controller Safety Test System which is designed to assist the operator through the statutory boiler and burner tests. Alarm logs, fault and event histories are available on the 10.4" touchscreen.

So lovers of Harveys' Sussex Best Bitter, the Champion Best Bitter at the Great British Beer Festival for consecutive years, can rest assured that the winner of the many awards, including regular World Beer Award titles, will continue to produce wonderful ales, with just a little help from SAACKE.

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**BYWORTH BOILER HIRE LTD**

# Byworth Boilers Hire Fleet Leads The Way

**Byworth Boilers, the country's leading independent manufacturer of steam and hot water boiler services, was one of the first companies to recognise the potential of providing a boiler hire service.**



That was over 30 years ago. Today Byworth has a fleet of over 100 modern mobile, de-mountable, static and containerised boilers available for long or short term hire.

According to managing director, Peter Baldwin, an on-going development programme is key to the success of this service. He said, "We are committed to offering our customers a modern hire boiler fleet and this commitment has seen us invest £500k per annum in new units over the last few years. It is an investment we intend to continue, for it has paid dividends in a number of ways."

One of these ways has seen Byworth's boiler hire market share increase significantly due primarily to the reliability and fuel efficiency of the fleet. For example, the company has evidence that the latest

Yorkshireman 2 boiler can save up to £100 K on an annual fuel bill.

Another result of the investment programme has seen more and more customers commit to long term hire instead of investing in new plant. The obvious advantage of this policy is that it reduces the need to find large amounts of capital and provides companies with much greater flexibility in terms of boiler output requirements and pressure on site facilities. All the servicing, maintenance and statutory inspections are taken care of by Byworth. This applies not just in the short term but also in the medium and long term.

The company has seen the increased popularity of long term hire taken up by a diverse range of industry users all over the UK from the Devon

coast to Morayshire in Scotland. These include food manufacturers, petro-chemical plants, energy providers, feed mills, and hospital projects.

All Byworth's new hire boilers and equipment are designed and built in the company's own Keighley factory where the very latest manufacturing techniques are combined with time-honoured boiler making skills to ensure quality control is of the very highest standard.

Byworth's mobile hire boilers can be transported quickly and easily and be up and running on site within hours. Trailerised or containerised boilers are ideal for long term hire with the containerised units being perfect where space is tight and when security is an issue. The de-mountable fleet is designed for the smaller user looking for speedy delivery. In addition Byworth also offers fuel tanks, steam hoses, and pressure reducing stations.

A new product now being offered by Byworth Hire is a special steam meter which can be hired on a weekly basis. The use of temporary steam metering has been instrumental in helping end users to make quick decisions for both new boiler sales and long term hire boiler sizing.

Byworth understands that production continuity and reliability are vital to all steam users and that prolonged down-time can be extremely costly. That is why they offer a complete boiler service which, as well as hire, covers in-house design, manufacture and full installation, lease, training, maintenance, repair and replacement parts services.

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BD21 4NW  
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Web: [www.byworth.co.uk](http://www.byworth.co.uk)

## KING'S BOILERS TAKE THE HIGH ROAD

King's Boiler Hire were contacted in December 2012 by SSE (Scottish & Southern Energy).

SSE had been trying to source a large, high pressure steam boiler with a superheater for their Peterhead Power Station in Scotland without success, until they called King's Boiler Hire.



Kings had two 15,875 kg/hr (35,000 lbs/hr)

units available and SSE promptly placed an order for one unit on a twelve month hire. After an eight week total refurbishment, the unit was ready to be transported the 541 miles from King's Mildenhall workshops to Peterhead. After a three day escorted journey to Peterhead, the most easterly point in Scotland and the largest town in Aberdeenshire, the 52ton boiler unit arrived on site ready for installation into the power station's boiler house.

"We are delighted that King's Boiler Hire were able to assist SSE with their requirements" said David King, "and are proud to have developed an excellent working relationship with the SSE team"

Kings Boiler Hire Ltd, Unit 4 New England Industrial Estate, Pindar Road, Hoddesdon, Herts, EN11 0BZ  
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SAACKE can provide various training courses to assist customers, these being either Burner or Boiler related. These courses are designed to improve customer knowledge of the equipment and to promote safe plant operation, continued plant efficiency and awareness of the environmental impact created when the plant is not operating at its optimum performance.

Burner Technician Training - The course incorporates burner and boiler electrical systems and controls, combustion theory, fault identification, automated systems and fuel/air ratio controllers.  
Boiler Operator Training - The course incorporates BGO1 and INDG436. A certificate of attendance is provided on completion of the course, which may be viewed by enforcing authorities.

SAACKE recommend that customers hold a stock of essential parts. This stock will depend on the type of equipment and the operating philosophy/process. SAACKE can advise on and quote for all appropriate spares, detailing the availability of these spares. We hold extensive stocks at our Havant head office which are available for same day dispatch, nationally. In addition, breakdown spare parts are also held regionally, primarily for easy access for our technicians and customers alike.

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Website: [www.saacke.com](http://www.saacke.com)

# Biogas & Waste Gas Combustion

**Increasing fuel prices, pressure to reduce greenhouse emissions and a need to exhibit Corporate Social Responsibility (CSR) are driving more and more end-users to invest in technologies that use waste products to generate bio and off-gases.**

Once produced these gases need to be stored or combusted either independently or mixed with an existing base fuel.

Bio and off-gases often exhibit three distinct characteristics. Firstly, the calorific value is usually considerably lower than gases such as natural gas and LPG. Secondly, the calorific value is variable and thirdly the quantity of gas produced is haphazard depending on how much organic material is available and how efficient the process to generate the gas is. In the case of off-gas the amount and quality of usable fuel produced is dependent on the nature of the process and output of primary product. A further characteristic of bio and off-gas production is that often there is limited storage available and as a consequence the fuel needs to be used when it becomes available or discharged to atmosphere.

Standard electronic Burner Management Systems use fixed profile curves to position fuel and air drives to achieve predefined ratios of fuel and air across the modulation range of industrial burners. Fixed ratios ensure the combustion in these applications is as efficient as possible by optimising the excess air such that there is enough oxygen to support complete combustion, ensuring that carbon monoxide (CO) is not produced, but not too much that energy is wasted by exhausting hot combustion gases up the flue to atmosphere.

An additional feature of electronic Burner Management Systems is Oxygen Trim. There are several combustion variables, such as air temperature, pressure and humidity and fuel quality that have a direct effect on the amount of oxygen in the flue. When these variables change, the flue

gas oxygen concentration moves away from the optimum level set by the combustion engineer on the day the system was commissioned. Oxygen Trim automatically adjusts the fuel or air to compensate for these changes thus reverting the system back to its optimal operating level.

Conventional electronic Burner Management Systems are not well suited for the control of bio and off-gases where variable calorific values and availability are key characteristics. Energy Technology & Control Ltd., has been aware of this problem for some time and has developed a solution, the ETC6009, which enables bio and off-gases to be burnt either independently or blended with a base fuel in proportion to the amount available at any particular time. An external 4-20mA signal determines the proportion of bio or off-gas that is used as part of the modulation rate at any time and blends this with the base fuel.

Oxygen Trim is an integral part of the ETC6009 and is designed to offset the variable calorific values associated with bio and off-gases. Two in-situ zirconia oxygen probes are used to crosscheck the oxygen level in the flue and so ensure the safety integrity of the system. This increased level of security allows a much higher level of air or fuel offset to be applied to compensate for the variances in calorific value than standard electronic Burner Management Controllers.



To find out more about the ETC6009 and other Energy Technology & Control Products visit:  
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**LANEMARK**  
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# Lanemark Process Gas Burner Systems Help JCB Optimise Manufacturing Quality

Gas process air burner technology from Lanemark International is now playing a key role in the heating of two painting lines installed at JCB Heavy Products in Uttoxeter, where the company manufactures tracked and wheeled excavators from 11 to 46 tonnes.



both the flash-off and the curing oven facilities.

Installed as part of JCB Heavy Products' move from former premises in the centre of Uttoxeter, the painting lines have provided both extra capacity and increased process control. "The latter is a key area in which our burner designs can make a significant contribution to the provision of accurate temperature control," adds Adrian Langford.

"The decision to opt for direct fired gas heating was centred on a number of key benefits that it offers as an energy medium," adds Keith Taylor at George Koch. "It is highly flexible, cost effective and offers the opportunity for extremely accurate control. The Lanemark designs made the most of these factors whilst fulfilling the technical compliance parameters that were defined for the installation."

As one of the major manufacturers worldwide in its field, JCB has a leading reputation for production facilities that reflect both its design capability and the quality of its extensive range of construction equipment. The decision to build the purpose-designed facility on the outskirts of Uttoxeter is testimony to this commitment, and the use of high quality Lanemark burner systems – linked to the process engineering capability of George Koch – has played a key role in maximising the productivity and the success of the plant to date.

The 'Attachment' and 'Revolver' process lines, designed and installed by Lichfield-based George Koch (Europe) Limited, include air handling units and post curing ovens, each fitted with Lanemark high performance burner systems. The air handling units for each of the twin paint spray booths raises the air flow from an external temperature as low as -10°C to 21°C using Lanemark Midco direct fired duct burner systems.

"The Attachment line processes manufactured parts through a series of application stages," comments Keith Taylor, Sales & Marketing Manager at George Koch. "These include a shot blasting station followed by paint primer application, a flash-off facility, top coat painting and a final curing oven."

The primer and top coat facilities are heated by a George Koch air handling system which delivers air volume at a rate of more than 62 m<sup>3</sup> per second. Air movement is centred on a ducting arrangement that separates the air flow into the two process zones.

The Attachment line is a 2.5 MW rated heating installation which utilises 16 x 12" Midco burner sections, configured as a straight assembly, and operates under a negative air pressure of 175 Pa.

This is provided by a centrifugal air fan located downstream of the burner. The adjacent Revolver line features a similar arrangement with a 2.0 MW burner system operating in an air flow of 52 m<sup>3</sup> per second.

"We worked closely with George Koch to make full use of our DB calculation software to set minimum design criteria for the system configuration for each of the two air handling unit installations," comments Lanemark's General Manager Adrian Langford. "The software calculates the optimum duct dimensions, the burner rating and the air speed and pressure across the burner to achieve a facility which produces highly effective results and is extremely energy efficient. As well as providing the correct heat input under winter operating conditions, the burner systems are capable of a 'turndown' which is able to deliver an air temperature rise of only 1 – 2 °C when the outside air temperature is 19 – 20 °C."

Three Lanemark Forced Draught (FD) oven heating burner systems have also been specified by George Koch within the painting facilities. The first provides process air heating for the flash-off oven within the Attachment line, while on the Revolver line, two separate FD installations supply process air heat for

Lanemark International Ltd.  
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## G.P. Burners (CIB) Ltd Can Now Offer Remote Access To All Their P.L.C. Controlled Burners

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Older boiler houses can benefit from a range of upgrades to include installation of P.L.C. control, variable speed drive for the burner fan, and an oxygen trim system for optimum performance.

Higher energy costs and the need to reduce carbon emissions mean that all aspects of steam or hot water production are areas where savings can be made using improved technology available today.

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## New Electric Boiler Range Launched

Atlantic Boilers of Lancashire have supplied condensing and highly efficient boilerplant to many public and private sector buildings, housing developments, industrial and commercial buildings for over 30 years.

They have added a comprehensive selection of electric boilers to their range.

These boilers have just been installed at Barts Hospital, Central London, Iona Abbey in Scotland and as part of the Acton Town Hall Regeneration project in Ealing.

The Multi-Elec is a floor-standing electric boiler with an output of up to 630kW. It has a small footprint, and comes as a complete package with a control panel. Multi-Elec is offered in 19 models with a range to suit different output and installation needs.

The Compacte is an electric boiler with a small footprint. Floor-standing, it is economic to install and run, and has no flue requirements. Designed for any heating system, it has a maximum working pressure of 4 bars. 36kW to 72kW.

The GWR complete with integral pump, expansion vessel and controls is a wall-hung electric boiler that helps ensure low fuel bills for modern buildings. It is compact and requires no flues, and installation is simple and low cost. 6kW to 18kW.

Atlantic also stock a range of Electric water heaters to suit all applications.



For more information email [info@atlanticboilers.com](mailto:info@atlanticboilers.com) or see full range at [www.atlanticboilers.com/electric](http://www.atlanticboilers.com/electric)



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All CERTUSS Steam Generators are type tested according to European Pressure Equipment Guideline DGRL 97/23/EG.

CERTUSS offer seven construction groups within their range of fossil fuel Generators with outputs ranging from 80kg/hr to 2000kg/hr and operating pressures of up to 32 Bar G.

To accompany the Generator, CERTUSS also offer their CVE Package Plant Module, where all of the associated ancillary items are pre-piped, pre-wired and factory tested.

Fuel types offered are Gas, Light Oil, LPG and Bio Fuel, with combination burners offered on all units from 500kg/hr upwards. Also available are a range of Electrical Steam Generators from 6kW to 120kW.

CERTUSS also offer a new "TC Model" with touch screen control and full modulation from 50-100% firing. The TC offers output ranges from 500-2000kg/hr and is compatible with many BMS interface provisions such as Profibus and Modbus etc.

image to the right: shows a photo of 2 x 500kg/hr SC Model Generators and Package Plant Module, with Duplex water softener on a 24 x 7 Duty/stand-by operation.



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sales@certuss.co.uk

## BOILER HOUSE CLEANING

BVC have completed a project for a food manufacturer, supplying and installing a central vacuum cleaning system within a boiler house.

The system, designed for 1 person using 51 mm hose and tools to carry out essential housekeeping duties throughout the boiler house and bulk removal of sand from the boiler.

There are 12 hose connection points installed, through 6 floor levels, with interconnecting pipe work back to a BVC static industrial vacuum cleaner.

The BVC Centurion model T180 industrial vacuum cleaner, powered by a 7.5kw motor, protected by a vacuum relief valve. Displaced air is filtered within the BVC 'clear flow' filtration system and particles collected in a removable bin.



For more information:- Tel: 02392 603700,  
www.bvc.co.uk or marketing@bvc.co.uk.

## Babcock Wanson Launches New Water Treatment Service For Coil Boilers

Babcock Wanson UK, a leading manufacturer of Steam Generators, has launched a new Water Treatment Service backed-up with a five year corrosion warranty on the boiler coil.

In the unlikely event of feed water deficiencies causing the coil to corrode within the first five years, Babcock Wanson will replace it under warranty.

Using its exceptional in-depth knowledge of boilers, Babcock Wanson has established an exclusive relationship with water treatment specialist Deep Water Blue to provide a comprehensive range of Water Treatment programmes for coil boilers. Employing highly qualified and professional chemists ensures the treatment and testing regime is completed to obtain an accurate picture of a site's specific requirements under a variety of conditions; this ensures the most appropriate chemical dosing regimen is always employed. In between scheduled consultancy visits their unique vSteam web portal allows customers to simply enter daily readings on-line and receive real-time feedback support.

All steam raising equipment requires suitably treated water to ensure safe and reliable operation. Traditionally this has been provided by a separate supplier, who will undertake water testing and on-site services to achieve the required feed water condition. This is quite acceptable, but if problems do occur questions inevitably arise as to the root cause of the problem and who holds the underlying responsibility. To overcome this, Babcock Wanson now offers a single-source solution by providing high quality water treatment services and back-up for the life of your Steam Generator. When this service is employed from new, the company also offers a unique five year corrosion warranty on the main coil of the boiler, so the equipment user has complete peace of mind. Babcock Wanson offers three levels of Water Treatment service to cater for differing requirements



and budgets; from a highly convenient single chemical pack solution, to a dual chemical pack solution balancing cost with convenience, through to a multi-chemical pack solution for cost-effective treatment, especially in high steam load/low condensate return applications. All Programmes use top-grade, environmentally friendly chemicals that are safe and simple to handle.

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# Supporting The Wright Technology

Sir George Cayley could not achieve powered flight in his lifetime as some thirty years would elapse before the combustion engine driven motor car would be invented.

The first car appeared in 1885 but still no suitable engine was readily available for the Wright Flyer in 1903, however the technology was there so they built their own having the power to weight ratio suitable to get their machine off the ground. The important item being the engine and if Orville had lived one year longer he could have witnessed the world's first commercial jet airliner taking to the sky in 1949. Much has been written about the lack of support the government gave Frank Whittle during his struggle to develop the jet engine. Despite a contrary perception funds were made available during the prevailing wartime period of austerity and a purpose built jet engine factory was built and equipped at Whetstone Leicestershire. Rolls-Royce and GE Aviation the two major players in today's aero engine manufacture are well aware that they owe their success in no small way to the pioneering work of Frank Whittle's Power Jets Company. Although no jet engines are produced on this site today cutting edge technology survives through the activities of ITP Engines UK, GE Energy and Babcock Airports Ltd. Engine development is an expensive business as one example the RB211 development costs had increased above £170 million during 1970 and as with Power Jets a large amount of government funding was required to secure the project. Today large engine manufacturers share technology, setup risk/revenue agreements and working in collaboration, companies regarded as competitors come together to design develop and produce new engines.

Hoping to achieve a third land speed record it is the intention of Sir Andy Green to take Bloodhound SSC to a speed greater than 1000mph. A combination of devices will be used

to propel Bloodhound including the



Eurojet EJ200 an engine produced jointly by Rolls-Royce, MTU, Avio and ITP. Collaboration at its best with competing companies joining forces to produce this engine. Rolls-Royce, Avio with its HQ in Italy (now owned by American company GE), MTU Aero Engines, a German engine manufacturer and Industria de Turbo Propulsores S.A. a Spanish company, with facilities in the UK for test, manufacture and software development for many of the world's leading aerospace organisations. Government funding in times of financial constraints is not something new, recently announced by the present government is a £2 billion joint government industry funding for aerospace and further funding of £0.5 billion for other industries including automotive R and D. The creation of ATI The UK Aerospace Technology Institute.

For work on the next generation of aircraft to create increased efficiency via airframe design and engine development aiming for noise reduction, reduced emissions and greater fuel efficiency. The creation of ATI is good news indeed for what we in the U.K. are very good at, making engines. Will ATI benefit the UK, secure employment within that sector and promote growth? That is the intention.

As with the example of the European Bloodhound SSC engine we must not dwell on who owns what for it all becomes a veritable maze of historical resentment of our lost heritage. To enable serious development and move forward we must be positive. In very simplistic terms it's a case of where it's being done and by whom. Examining non-flying engines, Bentley, Rolls-Royce and Minis are all German owned, Mercedes? Lewis Hamilton doesn't care as both McLaren and Team Mercedes engines are Mercedes AMG Powertrain units developed, made and tested in the U.K. (British engines?) Last year the Hams Hall BMW engine plant produced its three-millionth engine during its ten years of operation, quite an achievement.

Jaguar is expecting to commence engine production next year at the new £355 million facility currently being built in the West Midlands.

J.C. Bamford (JCB) have announced plans for a new £31 million engine development programme assisted by a multi million pound award from the Government's Regional Growth Fund.

Having already set up facilities and producing the very successful Dieselmax engine, this new engine will



complement the range, sell to outside customers for a range of applications and be used extensively to power their own machines.

As with BMW and Jaguar, increased production by JCB within the locality is creating much needed private sector employment.

In 2006 a JCB Dieselmax powered "Car" was driven at over 350 mph to take the World Diesel-Powered Land Speed Record which still stands today.

Many other engine manufacturers exist in the UK with some struggling to survive the economic downturn but whilst there maybe partial conversion to electric power there will I feel always be a requirement for the internal combustion engine. Fuels will change and future emission controls will tighten beyond any limits we can imagine today but we can face the challenge, learn from history but remember this is the 21st century and we are almost one eighth of way through it.

## Steve Reed MIDiagE MIDGTE

Technical Director of the Institution of Diagnostic Engineers

<http://www.diagnosticengineers.org/>

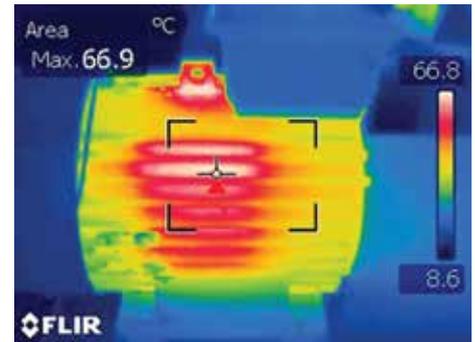
The Institution of Diagnostic Engineers supports and encourages the recognition of "Excellence in Industry" its growing Membership of Accredited Partners are amongst the elite of Industry recognised providers of goods and services. With continuing education and development being a foundation stone of the Institution the groundbreaking developments of products and services by these partners and others are quickly communicated to our Membership through our journal and accessible web site.

The Institution is a registered charity under the name of Society of Diagnostic Engineers number 1082296

For more information contact: [admin@diagnosticengineers.org](mailto:admin@diagnosticengineers.org) or visit the website.

# FLIR Thermal Imaging Adds Value To NDT Services

For Belmont NDT and Quality Services, the ability to provide its customers with the most accurate assessment of plant health and efficiency relies on a range of technologies. For this reason, this Leeds based company knew its offering to industry was not complete without thermal imaging.



The camera swiftly paid dividends for Belmont on a project in the utility sector. Belmont has systematically undertaken thermographic surveys of electro-mechanical plant for this customer, resulting in five-figure cost savings through failure prevention. And this success has led to Belmont's further engagement to monitor the efficiency of plant at the customer's new waste-to-energy site.

"We're not just finding the FLIR camera useful for looking at the efficiency of old plant," Matt Clarke adds. "There are even more instances where new plant isn't correctly set-up and the camera shows evidence of that too."

Although Belmont NDT is clearly deriving early benefit from its FLIR investment, its wider potential and many features are still being explored. One growth area for the company is in identifying electrical faults in fully energised systems. Building thermography is another hot prospect.

Having now invested in a FLIR T335 infrared camera, however, Belmont's MD Matt Clarke has already been surprised at its findings. "We have found several critical problems for customers, preventing costly downtime," he explained.

Manufacturing and production, across a wide range of industries, are established markets for Belmont NDT. The company provides a complete NDT preventative maintenance service and prides itself on its quality systems that meet international standards and both sector and company specific approvals.

Indeed it was Matt Clarke's NDT experience that reinforced his determination to undertake the highest level of certified training in order to provide his customers with the best thermal imaging service possible. He is now completing his Level III qualification in predictive maintenance, an achievement that will put him amongst the UK's elite thermographers and allow Belmont to add IR

training and certification to its list of services.

The FLIR T335 thermal imaging camera is the basis of this new business opportunity and it was chosen because it provided the best ratio of value to budget. Its image quality, portability and on-board memory were the key features highlighted by Matt Clarke.

The camera includes both IR and digital capability, picture-in-picture fusion, touch screen, interchangeable optics and the FLIR T-Series hallmark, a tiltable lens. The FLIR T335 applies 2% thermal accuracy and 0.05°C thermal sensitivity across a wide temperature range.

To identify the best FLIR model for Belmont's needs, Matt Clarke sought the advice of FLIR distributor Crimson Industrial Vision Limited based in Tunbridge Wells. He added: "Crimson lent us different camera models to try out and provided valuable guidance on the most suitable for what we needed."

In the short term however, Matt Clarke is discovering that thermography has its own way of generating more business.

He explained: "We were recently contracted to look at the efficiency of several 250kW motors. Whilst I was waiting for vibration monitoring results I scanned the plant with my FLIR T335 and found two abnormally hot cable feeds. As a result of that discovery and our ability to show the customer the problem visually, we have now been asked to check out other plant and systems for signs of other serious faults."

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Fax: +44(0)1732 843707.  
Email: sales@flir.uk.com  
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# Vibration Analysis- Thermal Imaging-Ultrasonic Testing

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# Get Smart, Go Optical

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Continuous health monitoring is recognised as an essential tool to reduce the cost of ownership of critical assets. Using such monitoring to inform a condition based operating and maintenance regime provides the asset manager with the potential of: increased asset availability, extended asset service life, data to facilitate improved asset operating efficiency and early warning of component failure. The value of condition monitoring systems is most apparent in extreme harsh-environment locations where the value and criticality of assets is the greatest. Ironically, it is in such harsh-environment locations where the availability and reliability of conventional, electronic-based instrumentation required to provide monitoring is the lowest.

For 15 years, Smart Fibres have been pioneering the development and application of condition monitoring systems based on optical fibre sensing technology. Systems offer multi-parameter measurements including strain, temperature, vibration, acceleration, pressure and flow. Optical technology benefits from having

no electronics at the point of measurement, so overcoming the harsh-environment limitations of electronic-based instrumentation systems through its unique advantages of:

- tolerance to extremes of temperature, pressure, vibration and radiation
- dense multiplexing capability (dozens of sensors can be multiplexed on a single fibre)
- immunity to electromagnetic interference (from motors and generators and lightning)
- negligible cable weight
- high fatigue durability
- inherently safe operation (ATEX certified for use in hazardous zones)

Smart Fibres has taken the condition monitoring application of this technology from its aerospace origins to numerous harsh-environment sectors including downhole and subsea oil & gas, renewable energy, marine and nuclear. Our customers, over 200 in number, include some of the world's industry leaders such as BAE Systems, Rolls Royce, Shell and Statoil.



## About Smart Fibres

Optical fibre sensing can deliver numerous, key advantages over conventional, electronic sensing technologies for design validation, process optimisation and condition monitoring. Smart Fibres have been pioneering the development of such systems based on fibre Bragg gratings since 1998.

The markets that we have opened to this technology are many and varied, from aircraft and ships, to bridges, wind turbines and oil wells. Join our customers, currently over 200 in number, and team up with the widest experience, the broadest range of product offerings, the most commercially viable sensing solutions and the most respected name in the industry.



Please contact us to discuss your own unique condition monitoring requirements.

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## Fluke launches Preventive Maintenance platform

**Analysing and Troubleshooting – Always one step ahead!**

Fluke, the global leader in portable electronic test and measurement technology, has launched a Preventive Maintenance platform on its web site to help industrial maintenance personnel to maximise plant uptime and minimise downtime. Constant condition monitoring maximises component life, tracks equipment wear trends and reduces downtime by identifying problems before they occur. From precision analysers to troubleshooters, loggers and recorders, Fluke tools provide the information to help cut plant energy costs and minimise downtime and production stops. Aimed primarily at industry service and maintenance engineers, process industry engineers, power quality engineers and industrial consultants, the preventive maintenance platform at [www.fluke.co.uk/preventivemaintenance](http://www.fluke.co.uk/preventivemaintenance) will help grow expertise for best practice in maximising uptime, saving costs and optimising processes.



To meet new challenges in analysis and troubleshooting of industrial machinery, automation and process controls or power conversion electronics, Fluke tools can provide the solution. Recognising, identifying and solving power quality problems are increasingly important to businesses. Whether calibrating instruments, troubleshooting a problem or carrying out routine maintenance, proven Fluke tools bring the understanding to get the job done well and quickly.

Support is provided by a range of media available on the platform. Application Notes and Case Studies of best practices can be downloaded; video testimonials showing the benefits from customers' successful application of Fluke products can be viewed online; online virtual product demonstrations show the capabilities of Fluke tools; applicable Fluke tools are listed, with click-throughs for more detail on each product; and to ensure that Fluke tools are used to their full potential, classroom seminars, online webinars and training are all available to members of the Fluke Academy, which is free to join via the web site.

More information about all Fluke products can be obtained via the Fluke web site at: [www.fluke.co.uk](http://www.fluke.co.uk).

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## Testo Kits You Out For Safety

**Health and safety considerations, the workplace environment and the welfare of employees are rightly a high priority for any responsible employer; as such it makes clear sense to acquire the best type of compact and all embracing Workplace Welfare Kits from the experts Testo.**

The Testo Workplace Kits enable employers to carry out effective ongoing monitoring of key parameters which embrace three core areas, namely: Good Ventilation – a supply of fresh, clean air coming in from outside or via an internal ventilation system: A Reasonable Working Temperature – this is usually 16°C or 13° for strenuous work aside from specific laws relating to other conditions: Lighting – suitable for the nature of work being carried out..

The Standard Testo Kit is an investment in peace of mind as well as helping boost staff morale and improve efficiency. The instruments are simple to use, robust and of course meet The contents are a T535 CO2 Monitor displaying actual and average CO2 levels plus the option of on-site printouts: a 317-3 CO2 Detection Monitor with headphones and belt/wrist attachments: a handy pocket-size 540 Lux Meter and Testo 810 surface and ambient air thermometer and last but not least an easily



adjustable 815 Sound Level Monitor. The Advanced Kit substitutes the first four products with a 435 -2 Multi-Function unit, and Probes for Indoor Air Quality, CO and Lux whilst retaining the 815 Sound Monitor. The products of course meet all tested requirements and standards backed by Testo's noted fixed price and guaranteed calibration service.

For further details of the Testo portfolio and services please contact 01420 544433; email [pr@testo.co.uk](mailto:pr@testo.co.uk) or visit [www.testolimited.com](http://www.testolimited.com)

# Analysis Services Driven By Quality And Experience

Fluid and debris analysis services are a key tool for preventative monitoring and are a recommended aspect of most maintenance procedures: the data generated can give a clear indication of the equipment's condition and detect potential failures.



Regular analysis provides early warning to ensure continuous smooth operation and is an established means of monitoring the condition of many types of oil wetted systems, such as gearboxes, engines, generators, pumps and bearings.

A complete service

- Comprehensive test suites and quality analysis, combined with a tailored approach to each customer by providing valuable information and guidance.

- Samples are scrutinised using state-of-the-art equipment operated by experienced engineers and technicians, ensuring that quality results are delivered every time.
- ISO17025 accreditation attained at the highest level for all laboratories (United Kingdom, USA and Switzerland).
- Superior customer service. All calls answered in person, no voicemail/ menu options with on call technicians available 24/7/365.

## Company Overview

Spectro in the UK, Spectro Oil AG in Switzerland and our associated company, Jet-Care in the USA, are privately owned, independent laboratories which, for over 37 years, have provided high quality analysis services to the aviation, marine and industrial markets. We are renowned as leaders in the field of equipment condition monitoring and have clients spanning 140 countries.



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**Fluke free gift for CNX wireless measurement!**

Fluke's 65th anniversary - CNX Wireless System promotion

Fluke, the global leader in portable electronic test and measurement technology, is celebrating its 65th anniversary by offering special promotions. When purchased during April and May 2013, Fluke (UK) is offering customers buying two of its latest CNX 3000 wireless modules a free PC adapter with software to provide real-time wireless datalogging on a PC at distances up to 20 metres.



The Fluke CNX system allows users to place modules in hazardous or awkward places and then watch and record the readings from a safe distance. This special promotion is for purchasers of two test tools from the following: the Fluke CNX v3000 Wireless AC Voltage Module, the CNX t3000 Wireless K-type Temperature Module, the CNX i3000 Wireless iFlex AC Current Module and the CNX a3000 Wireless Current Clamp Module.

More information about all Fluke products and authorised distributors can be obtained via the Fluke web site at [www.fluke.co.uk](http://www.fluke.co.uk).



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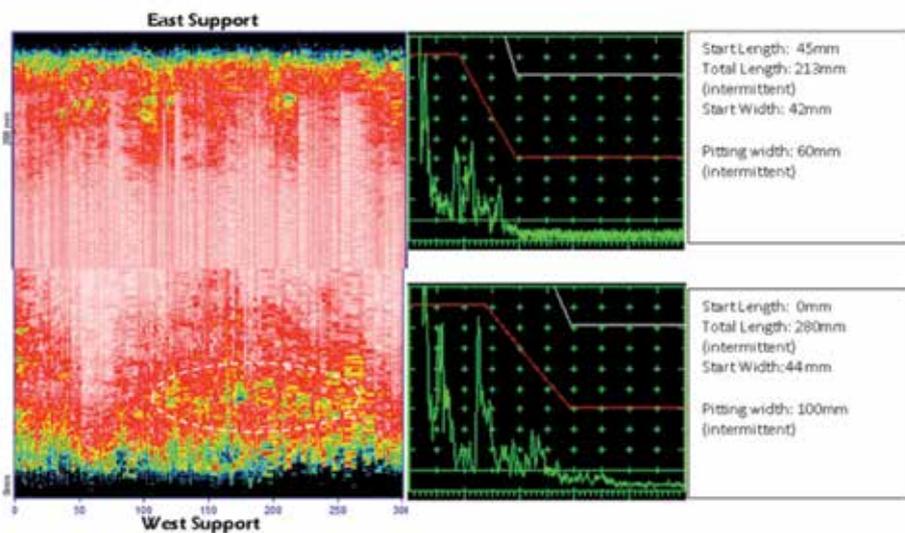
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# Short Range Ultrasonic Testing (SRUT)

## Corrosion Under Pipe Supports

Short Range Ultrasonic Technique (SRUT) was designed mainly to test the Annular Plate of Above Ground Storage Tanks (AST's) while the tank remains in-service, finding out Corrosion Under Pipe Supports, corrosion at soil air interfaces, and similar

Scope of Work:  
Short range ultrasonic inspection on inaccessible areas of piping under pipe support saddles, as per client request as listed below.  
Inspection Summary and Test Results:  
Short range ultrasonic Inspection was carried out on



Scanning was carried out from East and west sides on bottom pipe Support 17A. Pitting was noted on the piping covered by the pipe support saddle, as shown in the scan above.

difficult to access locations. The technique is based on the concept of pulsing guided laminar waves into the base material from the chime area. The waves propagate up to three feet into the annular plate. When corrosion, pitting, erosion are present the ultrasonic waves mode convert and are received by the same transducer.

TechCorr were contracted to perform a current health assessment of corrosion located under pipe support saddles on critical piping systems located on board Champion 7 in Brunei.

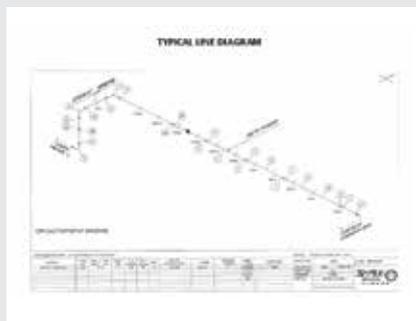
the nine pipe supports as shown in the table below and selective on the scans on the following pages. All areas underneath the pipe supports saddle were fully inspected by Short Range Ultrasonic Testing. Some supports were not cleaned and as a result, only scanned from one side. All scans were carried out in a clockwise direction, if facing east and clockwise if pipe was running north and facing north. The depth of pitting/corrosion could not be obtained, but the area percentage under the pipe support saddle, could be and is given in the table below.

ISO No#	Support	Pipe Diameter	Support Length	Support Width	Pitting area (%)
CPCA07-PV-6045-SHT 1 of 2	PS235	8"	300	150	≤ 10%
CPCA07-PV-0001-SHT 3 of 3	PS18 Top	12"	200	100	≤ 10%
CPCA07-PV-0001-SHT 3 of 3	PS18 Bottom	12"	300	100	≤ 10%
CPCA07-PV-0002-SHT 1 of 1	PS13	24"	300	240	≤ 10%
CPCA07-PV-0004-SHT 1 of 2	PS16C	20"	300	240	15%
CPCA07-PV-0004-SHT 1 of 2	PS17A Top	20"	300	240	20%
CPCA07-PV-0004-SHT 1 of 2	PS17A Bottom	20"	300	240	38%
CPCA07-PV-0004-SHT 1 of 2	PS18A Top	20"	300	240	18%
CPCA07-PV-0004-SHT 1 of 2	PS18A Bottom	20"	300	240	8%
CPCA07-PV-0004-SHT 1 of 2	PS18 Top	20"	300	240	≤ 10%
CPCA07-PV-0004-SHT 1 of 2	PS18 Bottom	20"	300	240	≤ 10%
CPCA07-PV-0004-SHT 1 of 2	PS19	20"	300	240	≤ 10%
CPCA07-PV-0004-SHT 1 of 2	PS16A	20"	300	240	12%

## Products During Inspection



## Typical Line Diagram



For additional office locations within the USA, Canada, Latin America, Middle East, Africa, and Asia please visit our website [www.techcorr.com](http://www.techcorr.com)



Technology Design Ltd specialises in the design, manufacture and supply of high performance ultrasonic data acquisition systems.

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# The Workload Of A Modern Calibration Laboratory Has Placed Ever Greater Demands On The Calibration Source

Both in terms of functionality and the combination of voltage, current and frequency required to calibrate today's diverse range of instruments.

This need for high voltage and high current at high frequency into demanding loads such as clamp meters and current coils, combined with a desire to produce ever more economic and compact calibrators, has resulted in a number of significant developments in the transition from the vacuum tube designs common in the past to today's solid state designs employing the latest semiconductor and transformer technologies.

This paper explores the development of technologies enabling the design of high bandwidth power amplifiers compact enough to be integrated within the calibrator in a single enclosure, eliminating the need for a separate Boost Amplifier, and their

impact on calibration applications.

Introduction:

During the 1970s a number of alternating voltage calibrators were successfully developed and deployed, but where a high voltage output was required a separate power or boost amplifier was always involved. These designs were based on vacuum tubes, often utilizing tubes designed as UHF radio transmitters because of their availability in suitable power ratings and their physical suitability for mechanical mounting. Reliability was poor and many manufacturers products earned a well deserved reputation for fragility - and with one exception those manufacturers either collapsed

or chose to leave the calibration business. The most successful AC voltage calibrator/amplifier partnership continued into the 1980s and was the competitive target for a new generation of AC voltage calibrator released in 1984 - the Datron 4200.

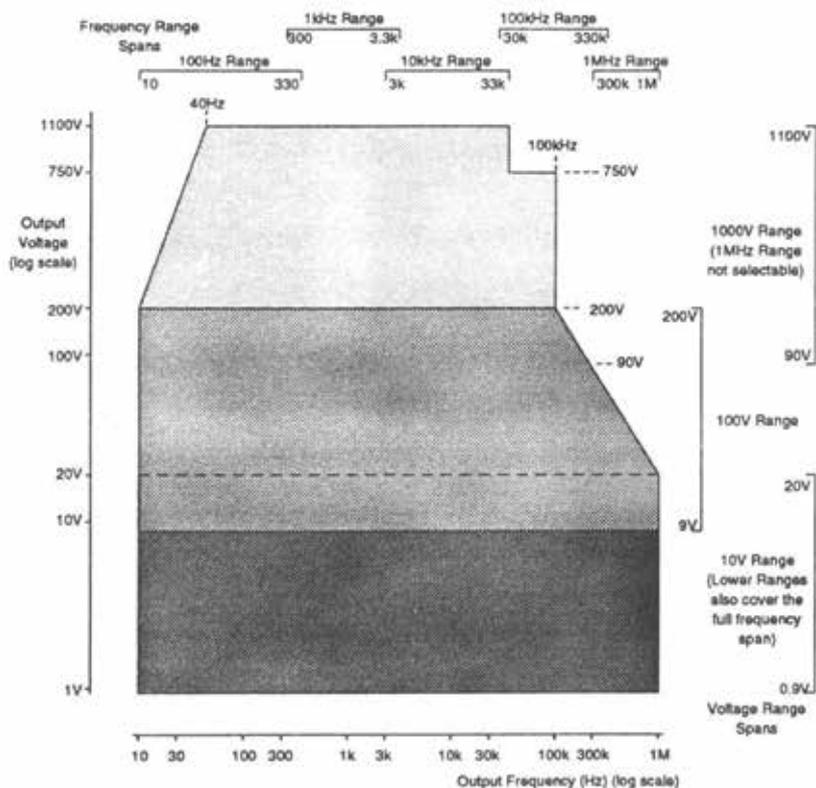
This new design employed fully solid state technology with an integrated power amplifier capable of delivering 1000V at frequencies up to 30kHz extending to 100kHz at 750V. The size of this unit was identical to its closest competitor which could only provide 200V - the additional vacuum tube boost amplifier required to obtain 1000V capability occupied almost twice the volume of its partner. Analysis of workloads revealed that high voltage capability at

high frequency was an essential requirement for complete calibration of the precision DMMs appearing on the market at that time - one in particular which required 700V at 100kHz. And this even in the days before ISO9000 was driving the need for complete calibrations!. However, output current requirements were within the capabilities of semiconductors - vacuum tube designs were overkill for the actual workload in this respect.

The technology which enabled such a compact power amplifier design was the power MOSFET transistor. The following sections of this paper discuss the design requirements and their implementations in more detail. Initially, for the voltage amplifier used in the Datron 4700 series multifunction calibrators launched in 1986 (developed from the original AC voltage calibrator design) and employed with further development in the Wavetek 4800 series introduced in 1991. The paper continues by exploring the current source amplifier used within the recently introduced 9100 universal calibrator capable of delivering 20Amps at 10kHz from an enclosure smaller than the original AC voltage only design whilst coping with the demanding load that an external current coil can present.

Design and Development of the Solid State Voltage Power amplifier:

The design requirements for the multifunction calibrator (4800 series) were to provide a power



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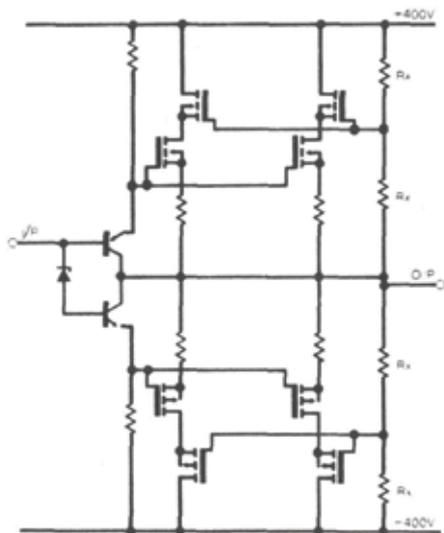
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amplifier capable of sourcing the output voltages for the DC and AC 100V and 1000V ranges. This required a high bandwidth design capable of providing up to 200V RMS at 100kHz reducing to 20V at 1MHz directly from the same amplifier that could also operate as a low noise DC source for the DCV ranges and drive a step up transformer to provide the 1000V range at frequencies up to 30kHz, extending at reducing voltage to 100kHz at 750V. (In the 1000V DC range the power amp/ transformer provide a signal which is rectified and filtered to generate the DC output). Additional constraints were weight, size and load into which these levels must be driven. The most stringent requirement is the 1000V capability requiring delivery internally of 180V RMS at 1A into the 6:1 step up transformer primary to satisfy the required, mainly capacitive, load current. (At high frequency the dominant load is the capacitance of cables connecting the calibrator to its workload and internal signal path capacitance.

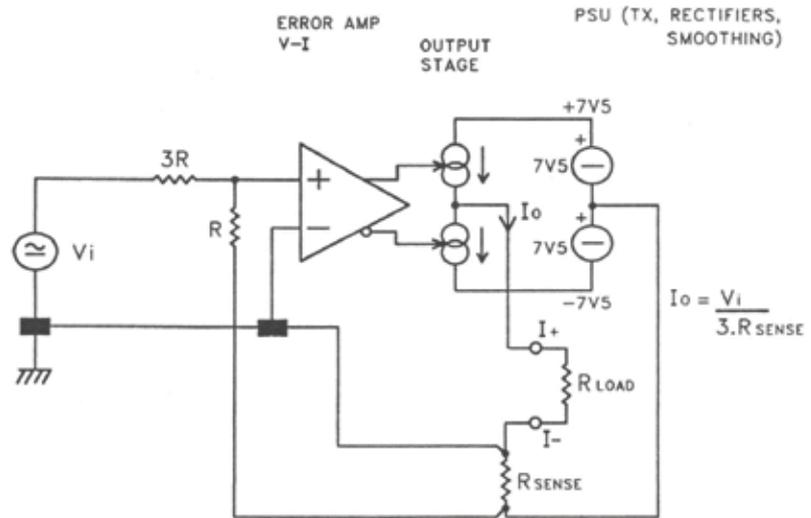
The design chosen utilizes complementary MOSFETs, chosen over bipolar devices for their reliability, lower distortion and more forgiving thermal characteristics - unlike bipolars which exhibit thermal runaway to destruction, MOSFET characteristics reduce drain current for a given gate voltage as junction temperature rises. Low distortion is important to ensure output sinewave purity and eliminate errors in any mean sensing DMMs which appear in the calibration workload. (The true RMS value of the calibrator output is controlled by internal sense and leveling circuits, but mean sensing instruments are calibrated in terms of a pure sinewave and relatively modest amounts of distortion introduce significant errors due to the response of the mean sensing circuitry to harmonics.) The amplifier output stage topology is shown in Figure 1. Supplies of plus and minus 400V



are required to allow sufficient output voltage swing, which demands use of devices with 500V ratings series connected with voltage sharing provided by the resistors marked Rx. Devices are paralleled to increase the current capability. Those familiar with high performance audio design will recognize elements of this topology. The voltage capability of P-channel MOSFETs is much more restricted than N-channel devices due to semiconductor physics - the lower charge carrier mobilities of P-type material impacts device geometry and has limited currently available devices to 500V. The N channel devices employed are actually rated at 800V and are chosen not for voltage rating but to match the capacitance of the P-channel devices and provide a truly complementary design. The high input capacitance of MOSFETs, typically 1nanofarad per device, poses a difficult load for the driver stages and imposes a limit on the achievable slew rate which is more restrictive than attaining the bandwidth target - if the amplifier or any of its parts slew rate limit distortion will be introduced into the output waveform which the local negative feedback around the amplifier will not be able to reduce - in effect the amplifier fails to keep up with itself. Other novel features include a distortion canceling circuit which cancels distortion introduced in a pre-driver cascode stage resulting from the drain-gate capacitance of another MOSFET which varies non linearly with voltage. The achieved Volt-Hertz profile is presented in Figure 2.

Design and Development of the Current Power amplifier:

Design objectives for the 9100 universal calibrator were to produce a precision high current source capable of delivering up to 20A at DC with compliance voltages up to 4V, and up to 20A AC from 10Hz to 10kHz (30kHz at lower currents) into a 700μH load with compliance voltages up to 2.5V



RMS. (Inductive load capability is limited at higher frequencies by the compliance voltage developed across the load). High output impedance is critical in producing a constant current source to avoid compliance errors. The workload requiring this capability are the common current clamp meters or clamp accessories which typically measure currents up to 1000A. To achieve these high currents a pair of ten and fifty turn current coil accessories were designed to accompany the calibrator. Magnetic shielding within the coil minimizes the influence of stray fields and allows a physically small low inductance design. However, the coil inductance is significantly modified (increased) by applying the clamp, with the hall effect clamps presenting the most difficult loads. Producing a compact calibrator design was the other objective of enabling a small and easily transported single enclosure unit to supply the wide functionality needed to address the diverse workload now common in calibration labs - from handheld DMMs through analog meters and frequency counters to oscilloscopes.

The topology chosen was a ground sensed voltage to current converter employing bipolar transistors in the power output stages, shown in block form in Figure 3. In this case bipolar transistors were chosen over MOSFET devices due to their better cost/performance ratio in this application. Bipolars have a lower thermal resistance than MOSFETs for a given current requiring fewer devices for a given power dissipation capability, and they have lower capacitance - bipolars do not suffer the high gate input capacitance of MOSFETs and have lower output capacitance which simplify driver circuits and improve output impedance of the current source. The output stage is constructed from complementary current mirror stages with low current drive from a preceding error amplifier stage.

## Pailton Steers A New Course With Development Of Wiper Systems

Creation's Zephyr MRV programme is a range of new radical design protected vehicle platforms that offer high survivability whilst being multi-purpose thus providing total flexibility.

The brief was originally to design the vehicle to a UK specification. This subsequently changed as Creation recognised an opportunity to market the vehicle on a global basis. As a result they asked Pailton to develop a steering system for a left hand drive vehicle which was unveiled at the DVD exhibition.



Amid complaints of poor quality, technical issues and lack of support from their existing supplier Pailton recognised that there were a number of similarities between the company's traditional product portfolio of bespoke steering systems and wiper systems and offered their help.

"It was simply an opportunity not to be missed", commented Pailton MD John Nollett "and one in which we knew we could offer real value."

Pailton has been named as both Manufacturing Company of the Year and Company of the Year in regional business awards .

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## New White Paper highlights cost and efficiency savings of water treatment for steam users

A new White Paper from Spirax Sarco shows how steam users can save money and prevent a wide range of potential problems with an effective water treatment regime.

If left unchecked, the impurities naturally occurring in raw water supplies can damage steam system performance dramatically. Corrosion, foaming and the build-up of deposits are just some of the issues that can lead to poor performance and spiralling maintenance costs.

The right water treatment can prevent these issues, but with raw water quality varying widely, it can take considerable expertise to analyse the problems and devise the most effective remedies.

As well as substantially reduced maintenance costs, the right water treatment regime can improve energy efficiency, reduce carbon emissions, maximise productivity and minimise the cost of treatment chemicals. The result is a significantly lower total cost of ownership for the steam system.

The White Paper explains the different types of contamination and their likely impact if left unchecked, as well as how steam operators can control these through softening technologies, chemical treatment and reverse osmosis.

A free copy of the White Paper can be downloaded from [www.spiraxsarco.com/uk/about/news/water\\_treatmentWP](http://www.spiraxsarco.com/uk/about/news/water_treatmentWP) or is available on request in PDF format, please email [uk.enquiries@uk.spiraxsarco.com](mailto:uk.enquiries@uk.spiraxsarco.com) or call 01242 535319, ref: 'Water Treatment White Paper'.

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Figure 4 shows a simplified current mirror stage - more devices are actually used to achieve high current output. A novel bias technique referred to as 'Class Aa' is used to provide Class AB type operation except that the output devices never enter Class B operation - a small bias current ensures devices do not fully switch off. This enables relatively slow bipolar devices to be used in a high bandwidth amplifier with low distortion, whilst maintaining low power dissipation (important in a small enclosure) and requiring low power supply overheads. Power supply design is also simplified since these current mirror stages are effectively self regulating avoiding the need for regulation of the high current supplies. Stage gain and linearity, and hence distortion performance and output impedance, is improved by utilizing active current mirrors composed of several devices (to obtain the required current capability) and an operational amplifier. The bandwidth of these stages is much wider than the overall amplifier, however the gain bandwidth product for the overall amplifier is still large and its performance is desensitized from the individual

device characteristics contributing to distortion and output impedance performance over the required wide frequency range.

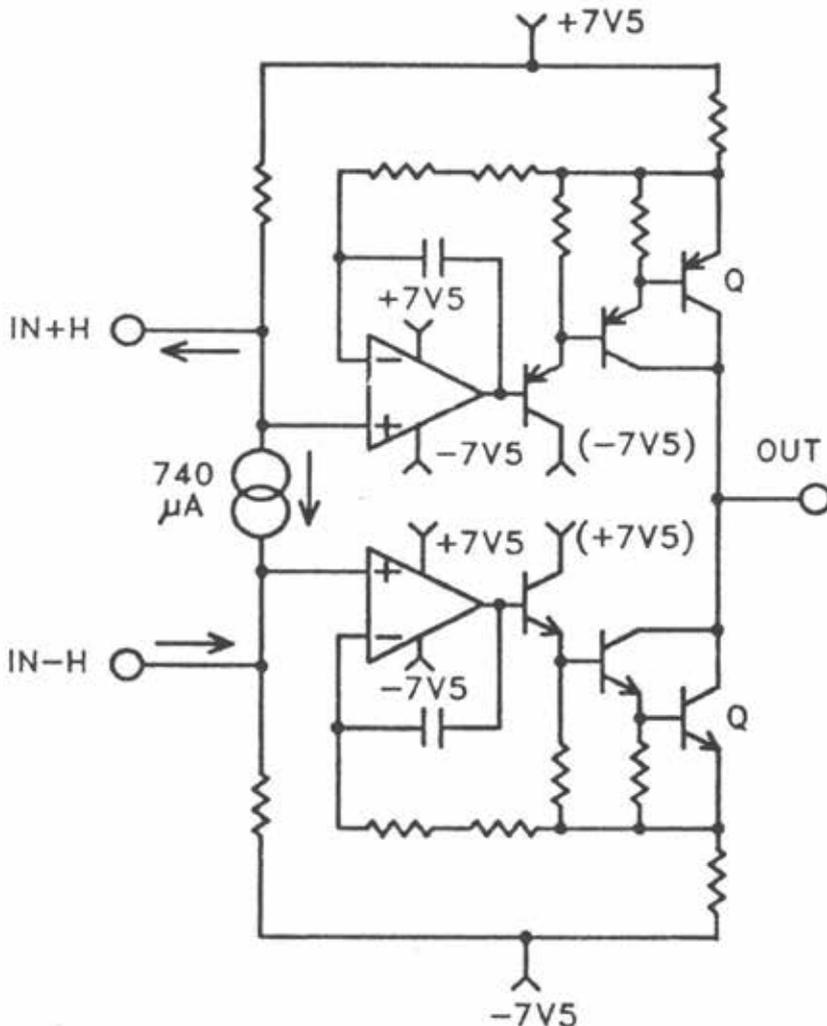
Systems Integration - delivering circuit performance in the final product design:

Physical layout and mechanical design is critical to enable the performance inherent in the power amplifier design to be delivered to the output terminals. In the universal calibrator employing the current amplifier described above the high current power supply and output current signal routing involves novel design features. For example, to avoid voltage drops in printed circuit tracks and associated local temperature rises due to the power dissipated in the track resistance. Special pcb design and manufacture techniques are employed to avoid the use of busbars or loom wiring. In AC applications the magnetic fields surrounding high current carrying conductors can cause serious problems by inducing unwanted voltages and currents in other parts of the circuitry. This is eliminated by careful layout design minimizing loop areas, which also reduces stray inductance, another significant factor.

Systems design and operation also contribute. The output turn on and turn off sequences within the firmware for the universal calibrator employing the current amplifier described above are designed to enhance the load tolerance of the product. In the quiescent state a zero input signal is applied to the voltage to current converter input in parallel with an input clamp 'short circuiting' the input.

An internal short is connected across the current source output and the output terminals are isolated. The turn on sequence in response to front panel or GPIB operation starts from this quiescent state by connecting the output terminals, followed by removal of the internal short. The input clamp is removed and the input signal is then ramped up (around 70msec) at a rate slow enough to avoid any voltage transients on an potentially inductive load, but fast enough to present the output quickly.

Turn off is the reverse. This approach avoids nuisance tripping of overload detectors or potential damage to either the internal circuitry or the load. The output is monitored by voltage detectors which can trigger the controlled shut down and initiate a user warning if an unsuitable load is connected which cause a high compliance voltage or disturbance on the output signal.



#### Conclusions:

Even in today's calibration equipment marketplace, an integrated 1000V wide bandwidth capability is unique - both in precision multifunction calibrators and in the universal/multiproduct calibrator areas. Achieving a robust wide bandwidth high current capability within a small single enclosure together with wide functionality is also unique. Recent analysis of field failure data for the calibrators employing the described design confirm that reliability has not been compromised - an MTBF (mean time between failures) figure in excess of nine years was reported.

Utilizing the techniques described above has enabled these compact designs to be developed and provide reliable cost and space efficient solutions to calibration equipment users, whilst offering improved load driving capability and wider Volt-Hertz and Amp-Hertz profiles than alternative two unit solutions.

# Calibrating Smart Instruments

**A modern transmitter is advertised as being smart and extremely accurate and sometimes sales people tell you they don't need to be calibrated at all because they are so "smart". So why would you calibrate them?**

First of all, the output protocol of a transmitter does not change the fundamental need for calibration. There are numerous reasons to calibrate instruments initially and periodically. A short summary of the main reasons include;

- Even the best instruments and sensors drift over time, especially when used in demanding process conditions.
- Regulatory requirements, such as quality systems, safety systems, environmental systems, standards, etc.
- Economical reasons – any measurement having direct economical effect.
- Safety reasons- employee safety as well as customer/patient safety.
- To achieve high and consistent product quality and to optimize processes.
- Environmental reasons.

## Calibration of a smart transmitter

According to international standards, calibration is a comparison of the device under test against a traceable reference instrument (calibrator) and documenting the comparison. Although the calibration formally does not include any adjustments, potential adjustments are often included when the calibration process is performed. If the calibration is done with a documenting calibrator, it will automatically document the calibration results.

To calibrate a conventional, analog transmitter,

you can generate or measure the transmitter input and at the same time measure the transmitter output. In this case calibration is quite easy and straight forward; you need a dual-function calibrator able to process transmitter input and output at the same time, or alternatively two separate single-function calibrators.

But how can a smart transmitter, with output being a digital protocol signal, be calibrated? Obviously the transmitter input still needs to be generated/measured the same way as with a conventional transmitter, i.e. by using a calibrator. However, to see what the transmitter output is, you will need some device or software able to read and interpret the digital protocol. The calibration may, therefore, be a very challenging task; several types of devices may be needed and several people to do the job. Sometimes it is very difficult or even impossible to find a suitable device, especially a mobile one, which can read the digital output.

Wired HART (as opposed to WirelessHART) is a hybrid protocol that includes digital communication superimposed on a conventional analog 4-20mA output signal. The 4-20mA output signal of a wired HART transmitter is calibrated the same way as a conventional transmitter. However, to do any configuration or trimming, or to read the digital output signal (if it is used), a HART communicator is needed.



## The solution

The Beamex MC6 is a device combining a full field communicator and an extremely accurate multifunctional process calibrator. With the Beamex MC6, the smart transmitter's input can be generated/ measured at the same time as reading the digital output. The results can be automatically stored into the memory of the MC6 or uploaded to calibration software.

When it comes to configuration of the smart transmitters, the MC6 includes a full field communicator for HART, WirelessHART, FOUNDATION Fieldbus H1 and Profibus PA protocols. All required electronics are built-in, including power supply and required impedances for the protocols.

The Beamex MC6 can be used both as a communicator for the configuration and as a calibrator for the calibration of smart instruments with the supported protocols. The MC6 supports all of the protocol commands according to the transmitter's Device Description file. Any additional communicator is therefore not needed.

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# Messier-Bugatti-Dowty Takes Off with Three Year Planned Maintenance Service Contract from ICS Cool Energy Ltd

Safran, an international high-technology group, operates worldwide with more than 60,000 employees.

Messier-Bugatti-Dowty is an integral part of the Safran group's landing systems integration capability and is a world leader in the design, manufacture and support of landing gear systems. Combining advanced engineering with integrated systems technology, enables innovative solutions for a diverse range of aircraft to be provided both in the commercial and military sectors. The company's focus has always been to provide landing gear systems which are not only reliable and robust, but also efficient and environmentally responsible.

Messier-Bugatti-Dowty's Gloucester site undergoes a 24-hour operation with a number of tooling

machines and over 40 chillers running continuously. The chillers are used to cool the machine tool hydraulic oils, the high speed spindles on critical routing machines. Previously in the event of a breakdown, Messier-Bugatti-Dowty would either call upon the services of local service companies for maintenance or in-house maintenance personnel would undertake repairs. At that time Messier-Bugatti-Dowty had no overall provision for service and breakdown cover for machine tool chillers. Facilities Team Leader Mr Wayne Evans proposed to streamline the process to ensure the site was working at maximum efficiency. The brand of chillers used on-site varied but the most reliable were

supplied by ICS Cool Energy Ltd. Wayne contacted ICS Service, the service support division of ICS Cool Energy Ltd, to obtain information on their service support, maintenance and back-up support systems.

ICS Service suggested a tailor-made planned maintenance service contract to cover the full range of ICS branded and non-branded chillers. The contract would run for a year and include two annual maintenance visits (one in the summer and one in the winter), 24/7 emergency breakdown and technical support, discounted parts and labour and a log book with each chiller to show servicing and maintenance history.

Following a review of the service provision at the end of year one, Mr Evans commented "Our history was that we had continual breakdowns which affected production. By putting the chillers under a single service contract our call outs were greatly reduced and our machine up-time improved, thus showing the benefits of regular maintenance and service. We have been very happy with the support provided this year and it was particularly reassuring having a dedicated and familiar Engineer who could be shown the set-up once and then for future visits be left to carry out the work giving greater continuity - a simple yet effective time saver from my perspective. Now that the contract is up for renewal I will definitely be committing to a three year service contract. ICS are now our preferred option on new and replacement chillers due to service continuity and spares support".

ICS Service has over 3,500 units nationwide on contract ranging from 1,500kW chillers to -40 °C clean room freezers and is conversant with virtually every industry sector. ICS Service is constantly striving to improve procedures and has recently invested in back office systems to ensure efficient scheduling, electronic data transfer and automated parts allocation.



Photo courtesy of Messier-Bugatti-Dowty

ICS House, Stephenson Road, Calmore Ind Estate, Totton, Southampton, SO40 3RY  
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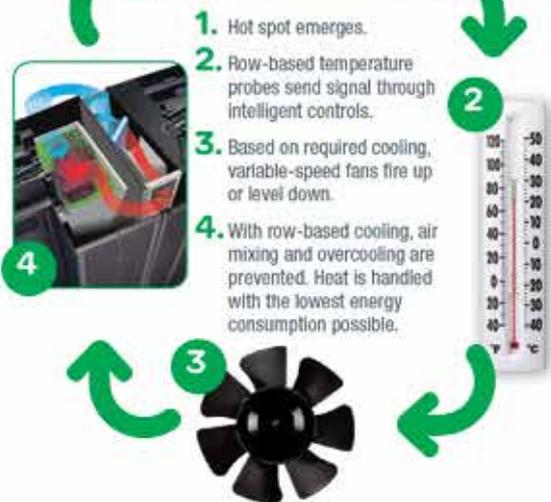
Scalable, modular InRow cooling units can be easily and quickly deployed as the foundation of your entire cooling architecture or in addition to current perimeter cooling for a high-density zone within an existing data centre. With this kind of hybrid environment, there is no need to start over and installation is quick and easy, allowing you to align your IT 'on-demand' to your business needs.

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# DuPont Introduces A New Cleaning Agent With Outstanding Environmental Profile

Stevenage, United Kingdom, 11th March 2013. – Based on new fluorinated chemistry developed by DuPont under its brand name DuPont™ Vertrel®, a new range of fluids allows users with special applications, including precision cleaning, heat transfer (cooling) and carrier fluid (lubricants, oils, greases, etc.) to exceed stringent environmental standards, while maintaining high levels of performance.

DuPont has started the introduction of these next-generation fluids as cost-effective replacements for PFCs and PFPEs, HFCs and HFES. Vertrel® Sion™ azeotrope is a binary azeotropic mixture based on this new fluorinated chemistry. It offers a higher solvency precision cleaning agent developed in response to worldwide market demand for safe, non-flammable and low environmental impact products for high-end industrial cleaning applications such as vapour phase degreasing, manual cleaning and open top, closed or hermetic equipment. The solvent is based on new extremely low (<1) Global Warming Potential (GWP), HFO-fluorinated chemistry. As well as providing powerful cleaning performance (Kb > 100) with reduced cycle

times, Vertrel® Sion™ also has a very favourable toxicity profile, is recyclable and reusable, non-flammable and has a low boiling point (47 deg C), making it fast drying and immediately ready for handling and use.

Mark Hughes, Business Development & Sales Manager EMEA DuPont™ Vertrel® Specialty Fluids comments: "Vertrel® Sion™ can successfully replace many high cost HFE materials, as well as nPB, HFC-365 blends and other hazardous chlorinated solvents in existing equipment. It can also be used as a safe, viable alternative to fast evaporating, flammable materials typically used in cold cleaning applications such as IPA, acetone, thinners and MEK. Furthermore, Vertrel® Sion™

is cost effective and is the lowest cost fluorinated solvent available on the market today."

Two further products based on the new chemistry are also being launched in the Vertrel® range. Vertrel® Sintera™ specialty fluid is for heat transfer and test fluid applications and has a GWP of less than 10, making it an ideal replacement product for Semicon fab (semiconductor fabrication plant) and display makers (e.g. flat panel displays, fibre optics and lens manufacturers) looking for the best environmental profile by moving away from PFCs and PFPEs with high GWP.

Vertrel® Suprion™ specialty fluid is tailored for optimal performance in carrier fluid applications and can carry a range of functional materials with appropriate drying speeds, which contribute to the highly efficient deposition of lubricants and repellent materials while having a GWP more than 30 times lower than the nearest rival chemistry used today. The full range of products is already available in the EU and is in the process of being introduced globally.

For more information in the U.K., please contact local distributor Fraser Technologies Ltd [www.frasertech.co.uk](http://www.frasertech.co.uk) or telephone 01506 443 058 or email [sion@frasertech.co.uk](mailto:sion@frasertech.co.uk)

DuPont Fluorochemicals is a leading global supplier of refrigerants and specialty products, using science and technology, market knowledge and global reach to provide sustainable materials and solutions to enhance personal comfort, enable food preservation, improve industrial processing and reduce environmental footprints. DuPont (NYSE: DD) has been bringing world-class science and engineering to the global marketplace in the form of innovative products, materials, and services since 1802. The company believes that by collaborating with customers, governments, NGOs, and thought leaders we can help find solutions to such global challenges as providing enough healthy food for people everywhere, decreasing dependence on fossil fuels, and protecting life and the environment. For additional information about DuPont and its commitment to inclusive innovation, please visit [www.dupont.com](http://www.dupont.com).



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# Dupont O-Rings Increase Sealing Performance For Processing Applications

Kalrez® Spectrum™ perfluoroelastomer O-rings from the DuPont™ Performance Elastomers range have been successfully used to minimise the risk of premature seals failure, increase MTBF times and significantly reduce costly downtime for hydraulic clamping systems.

The clamping products were manufactured by a leading European manufacturer of heavy-duty systems for applications in the metals, plastics and rubber processing industries. They utilise highly aggressive Oemeta HF/DU hydraulic fluids, working at operating temperatures of 250°C, and are used to retain large hot dies in exact positions on forging machines, and also secure hot moulds in injection moulding equipment. The clamping products are designed to withstand pressures of up to 400 bar at maximum temperatures. Any leakages of hydraulic fluid from the multiple pistons utilised to apply the clamping forces of 25 to 1250 kN could not be accepted.

By switching to the Kalrez® Spectrum™ 7075 sealing parts for their hydraulic pumps range, the manufacturer could offer a long-term resistance to aggressive fluids, as well as operating temperatures of 250°C, coupled with increased

reliability for their systems, while also achieving cost savings. Previously, other sealing solutions needed replacements due to seal failures after only a few months of operation. Since refitting with the Kalrez seals, the clamping systems have operated without problems or seal replacements for over 18 months. The company service intervals for their pressure cylinders have been considerably extended, providing cost savings and increased overall reliability for their clamping system. It has also allowed the company to offer new areas of application for their products to their existing and new users.

The sealing products in the DuPont™ Performance Elastomers range are available in the UK from Dichtomatik Ltd, an authorised distributor. The Kalrez® Spectrum™ 7075 product offers enhanced physical performance properties including very low compression set and maximum service



temperatures up to 327°C. This makes it an ideal choice for mechanical seals, valves, flanges and other demanding chemical and hydro-carbon processing applications. It is a carbon black filled compound designed for use as O-rings or custom sealing components combining long-term performance, low compression set and longer service life.

Further information is available from:  
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Riverside Road, Pride Park, Derby  
DE24 8HX  
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## Denso Tape Protects Bluebell Rail Wheel Assemblies

The well-known, volunteer-run, Bluebell Line was the UK's first preserved standard gauge passenger railway, re-opening part of the Lewes to East Grinstead line of the old London Brighton & South Coast Railway in 1960.

Maintaining the line's locomotives, coaches and signalling systems is carried out at its Sheffield Park Station.

A key aid in helping this preservation of Bluebell's locomotives has turned out to be Winn & Coales Denso Tape, which has been in regular use there for over 20 years. This is primarily on wheel assemblies, particularly on main bearing journals and crank pins. The use of Denso Tape is two-fold. First to prevent corrosion after pretreatment of the surfaces; secondly, as work is carried out in the open yard it stops abrasive damage from grit resulting from shotblasting in adjacent areas, and from coal dust.

Perhaps an unusual application for Denso Tape (although its range of uses has become legendary) was to stop water leaks in tender tanks. As the Bluebell engineers could not reach the leaking areas for welding, they applied small sections of wood wrapped in Denso Tape in the leaking areas. The first application was ten years ago; and there are still no leaks.

Denso Tape is a non-woven synthetic fibre fabric impregnated and coated with an adhesive compound based on petrolatum.

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# Armacell Awarded Building Confidence Accreditation

Flexible thermal and acoustic insulation producer, Armacell UK Ltd, has become the latest construction products manufacturer to achieve the prestigious Building Confidence accreditation.

The accreditation followed a rigorous audit process to check that the company meets the scheme's requirements in a number of key areas, including: product integrity, health & safety, environment & sustainability plus ethics & values. The scheme is used by many of the industry's leading contractors and distributors as an efficient way of assessing suppliers and certifying construction products. The Building Confidence scheme sets a high standard of accreditation and provides a cost effective method for participants to identify areas for improvement in their management, sustainability and corporate governance systems.

The accreditation is gaining in popularity following its adoption by a number of large contractors such as Balfour Beatty Construction Ltd, British Land, Costain, Davis Langdon, Kier Group, Lend Lease, Mace, Shepherd Construction, Simons Construction, Sisk, Sir Robert McAlpine, Skanska, Swift Horsman, Tarmac and Wolseley. In light of the current economic climate and changes in legislation, such as the CDM Regulations 2007, contractors are placing more emphasis on setting consistent and robust accreditation criteria and assessing the financial stability of suppliers and sub-contractors.

The scheme in turn benefits suppliers and sub-contractors by providing reassurance that main contractors using the

scheme will take a fair, open and transparent approach to sub-contractor and product selection.

Armacell is the world leading manufacturer of thermal & acoustic elastomeric insulation materials and innovative PET Core Foams. They manufacture and supply high quality and innovative products and systems throughout the UK and Ireland. Their reputation has been built on technical leadership, environmental responsibility, commitment to service, reliability and responsiveness. Armaflex is now the world's best-known brand in this industry. Almost all significant innovations in the field of flexible technical insulation materials have come from Armacell and the company has set industry standards throughout the world. Their product range covers insulation products, covering systems, acoustic solutions, fire protection, ancillaries & accessories, foams for OEM applications and PET foam cores.

The Armacell flexible, foamed rubber tubes and sheets are used to insulate pipes and ductwork in buildings, but they also come into their own in demanding industrial applications. The products prevent condensation forming, absorb sound and vibrations and protect installations against energy losses. This is a growth market as, in view of the rapid pace of climate change and rising energy prices, the insulation of building equipment and industrial installations



will play an even more important role in the future. The requirements made in the national rules and regulations on energy saving in buildings are being tightened and at the same time measures to increase energy efficiency are becoming increasingly important for economic reasons. Nowadays, when buildings are refurbished to improve their energy efficiency, the insulation of installations is considered to be one of the most effective and cost-efficient single measures. In addition, Armacell sees opportunities for growth in the global oil and gas business, which is now served by a separate, international team.

Further information is available on request to:  
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## Stay Clean And Safe With Kärcher

There are many financial benefits to investing in the right kit to keep your workshop floors safe and clean. Learning how to use that equipment correctly will save time and expense, give the best possible cleaning results, and keep floors safe and instantly re-usable.

The more often you clean your floors, the easier and quicker it becomes. A daily clean is quick and easy and will keep your floors safe and well presented.

Kärcher's BR 40/10 C is a compact machine that scrubs and dries hard floors quickly, in workshops, receptions, kitchens and toilet areas. It is also ideal for spot cleaning of smaller areas on factory floors. The 40/10 uses only clean water and leaves floors instantly dry and useable, and can also deal with water spillages quickly and safely.

### Step 1 – preparing the floor

Sweep the floor to remove any debris and dust.

### Step 2 – preparing the machine

Fill the machine's solution tank with water, adding

a small amount of Kärcher detergent. The 40/10 features medium hardness brushes as standard, ideal for daily cleaning of areas that don't get too dirty, but harder brushes for tougher stains can be fitted to the machine in seconds without the need for any tools.

### Step 3 – tackling tough stains

Pre-spray any tough oil, grease or tyre marks with Kärcher's Tyre Mark & Deep Stain Remover RM 776. Allow the detergent to remain in contact with the stain for a few minutes.

### Step 4 – cleaning the floor

Clean the floor with the 40/10, moving it with a forwards and backwards action. The machine will scrub and instantly dry the floor. For very dirty



floors the vacuum can be switched off to give the detergent and scrubbing brushes more contact time with the floor. Just switch the vacuum back on to dry the floor again.

### Step 5 – looking after the machine

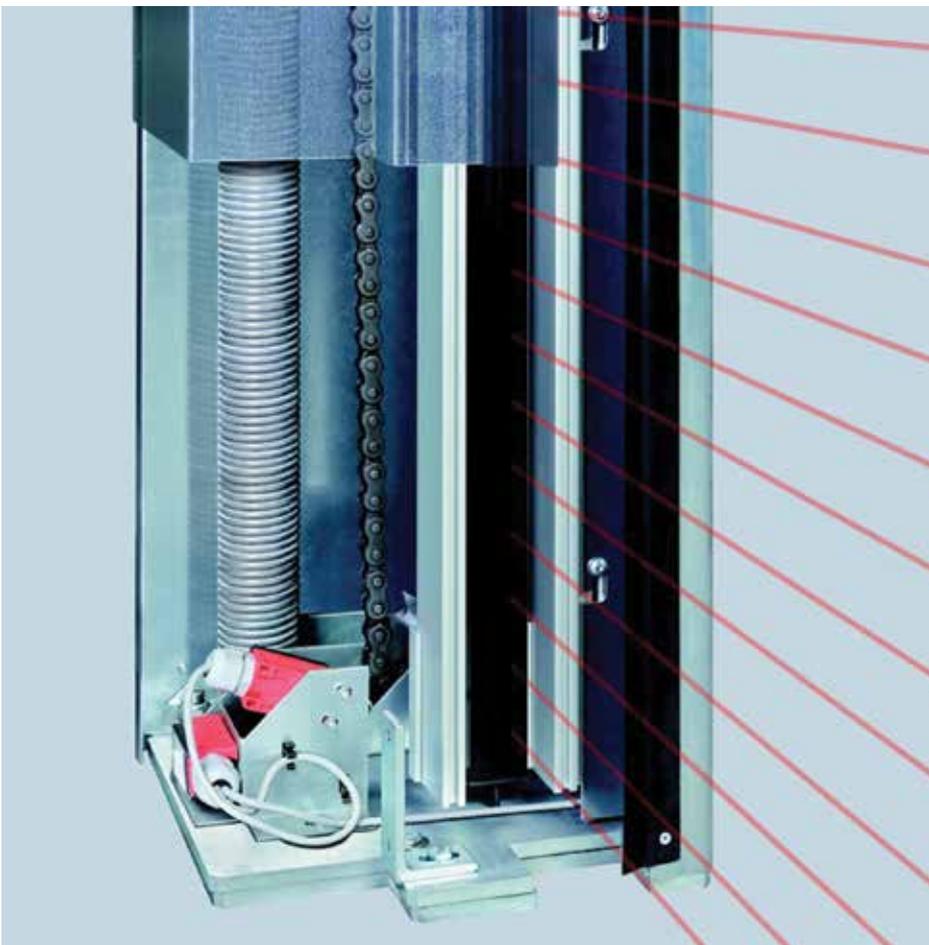
After each use, make sure you empty and rinse both the dirty water and clean water tanks. Roller brushes should be rinsed if necessary, and the machine's rubber suction squeegees should be checked and cleaned to ensure streak-free floors every time.

For more information on Kärcher products, please call 01295 752 142 or visit [www.karcher.co.uk](http://www.karcher.co.uk)

# Hörmann Light Grille Wins Design 4 Safety Award

The Hörmann Light Grille has won the Goods-in, Goods-out Design 4 Safety award.

Created to highlight the importance of product design in improving safety standards, the Design 4 Safety awards are chosen by a specialist panel of industry experts.



Three products were shortlisted in each category, with Hörmann capturing two nominations with the Light Grille and the HFB Forklift barrier.

One of a number of safety devices and innovations pioneered by Hörmann, the Light Grille makes a significant contribution to the safe operation of high-speed doors. This device exceeds the requirements of BS EN 13241-1 and

virtually eliminates the risk of harm to pedestrians from fast action doors.

This non-contact safety device is incorporated into the door frame, taking away the risk of safety being compromised by impact damage.

The solid state device uses an array of light beams to constantly monitor the door opening

## The Hörmann Group

The Hörmann Group is an internationally-oriented, fast-growing company in the construction supplier industry.

Doors, hinged doors, frames and operators are manufactured for the markets in Europe,

North America and Asia at 16 highly-specialised factories.

Employing more than 6,000 staff, this 100% family-owned company has achieved over 1

billion euros in sales.

to a height of 2.5 metres and will simply stop the door if any are broken. This offers a number of safety benefits. There is no need for a rigid or battery powered safety edge, which allows Hörmann to fit its patented SoftEdge and also means the door can operate quicker and react faster to any potential impact. With no moving parts, only limited maintenance is needed to ensure a long reliable service life.

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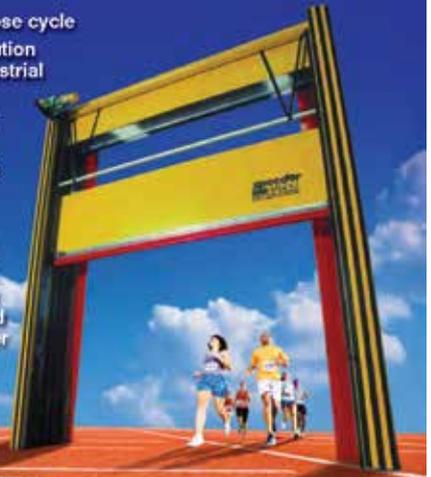


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# Stertil Stokvis *Retro Dock* Simplifies Multi Deck Loading

By converting a series of existing loading bays with the installation of its new *Retro Dock*, Stertil Stokvis has enabled a leading high street retailer to load and unload multi deck vehicles.

During construction of a distribution centre at Sherburn In Elmet six years ago, Stertil Stokvis installed a series of 58 loading bays, each featuring a conventional swing lip dock leveller. Following the retailer's recent acquisition of the site, the company decided to allocate six of the bays for the loading and unloading of multi deck vehicles and trailers.

As a result, Stertil Stokvis was appointed to convert the bays with the installation of its innovative *Retro Dock*.

The novel design of the *Retro Dock* system eliminates the need for any civil works to be carried out. Instead, by utilising the external skeletal frame of the dock leveller it replaces, the new platform and cylinder can be simply installed within the empty space. Each of the six docks now comprises

a 6000kg capacity telescopic dock leveller, type XF 30-20, plus a WIS 300 Series inflatable dock shelter, featuring an inflatable head curtain to accommodate a wide range of vehicles from 7.5 tonne rigid lorries through to 4.8 metre-high double-deck trailers, and a set of highly durable PE dock bumpers. Finally, to ensure the safe movement of vehicles, Stertil Stokvis installed ultra-bright LED traffic lights at all of the 58 loading bays.

Andy Georgiou, General Manager of Stertil Stokvis's loading bay division, is very pleased with the success of the company's new *Retro Dock* system. He says, "This project typifies the kind of installation we're being increasingly asked to undertake.

The existing loading bays were not designed to accommodate the latest generation of higher, multi



deck vehicles. Access to the upper level vehicle decks would have been impossible and damage to the building, caused by reversing lorries, would have been unavoidable. That's where the *Retro Dock* comes in. Quick to install and, because no civil works are required, it's a proven cost-effective, reliable solution."

www.stertiluk.com  
Tel: 0870 770 0471

## Hart's Take-Off Continues

Hart Door Systems continues to supply its British-made industrial doors products across the globe with one of its latest projects being Vladivostok International airport where the Newcastle upon Tyne-based door manufacturer recently supplied a range of fire and security shutters.

This is not the first Russian airport to have Hart products. Hart also supplied door systems for Exxon on Sakhalin island, east of Vladivostok, so has significant experience of working in the country.

Hart's global reach currently extends into Africa and the Middle East with several airports in the Kingdom of Saudia Arabia now equipped with Hart products. Another recently completed contract was for Bole International Airport, Ethiopia.

A Hart spokesman says British engineering still counts for a lot. "We have installations as far apart as central Sweden to the north to the Falkland Islands to the south. Our ability to develop bespoke systems that comply with the major quality accreditations on the back of quality design and construction is an excellent formula," says Hart's spokesman.

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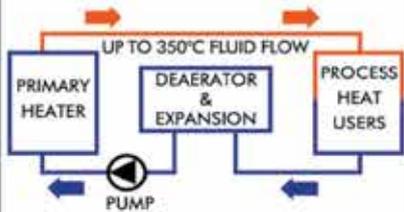
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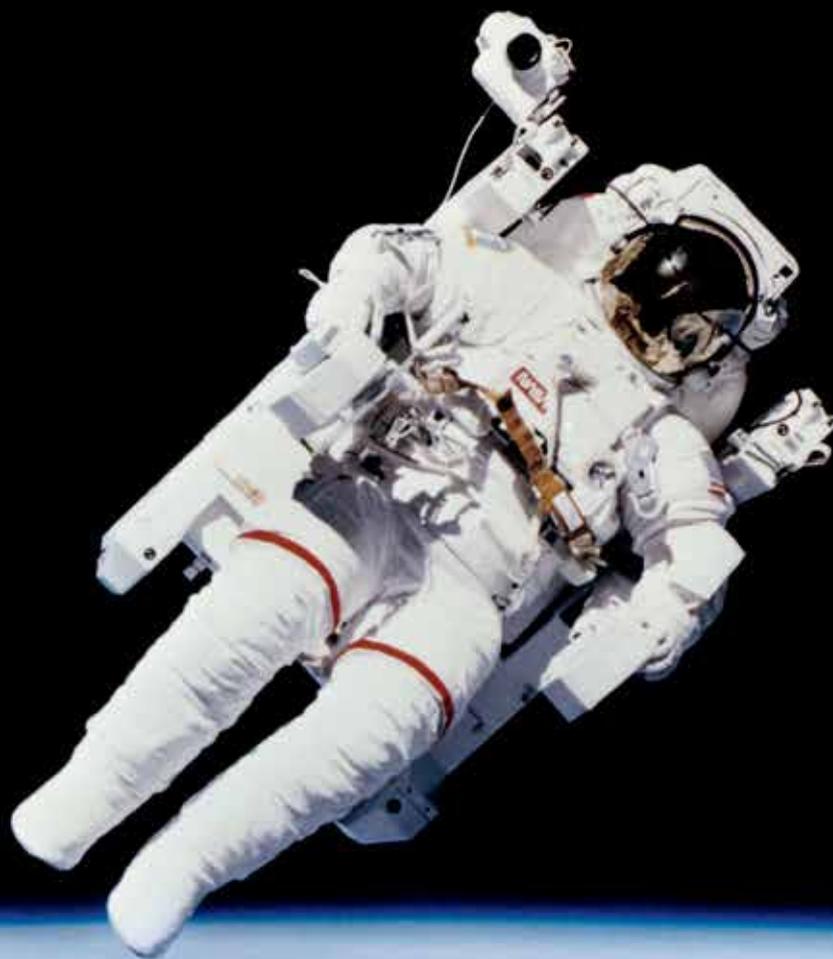
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