ISSUE 2

HEAT TRANSFER TECHNOLOGY

The latest news and views on heat exchanger technology from BOWMAN®

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Diving into the European market

European subsidiary company launched and new distributor appointed

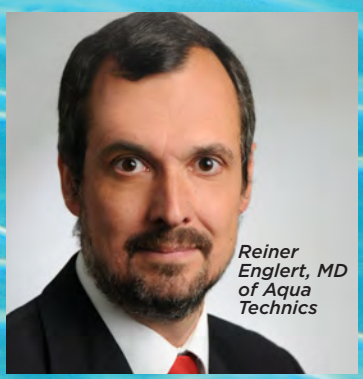
Bowman has made key appointments in two of its major European markets to further develop its 'leading brand' position and provide even better, localised service to customers.

The Bowman Piscine team

In France, the company has launched 'Bowman Piscine', a dedicated sales office of the UK manufacturer. From its HQ near Marseille and it's Northern office in Rennes, Bowman Piscine will be committed to providing its French swimming pool customers with application advice and technical support and, of course, Bowman's comprehensive range of heat exchangers for both solar thermal and conventional boiler heat sources.

In Germany, Bowman has appointed Aqua Technics Europe GmbH as its new distributor for swimming pool heat exchangers. Aqua Technics has an excellent reputation as a high-quality manufacturer and importer of innovative pool products. With its network of specialist dealers and distributors across Germany and Austria, plus expert advice and fast delivery, Aqua Technics was the ideal partner to stock Bowman products.

'These are two significant developments for Bowman', commented Sales Manager Jamie Pratt, 'The quality and performance of our swimming pool products has established Bowman as the 'leading brand' in many important European markets. 'We believe these two developments will strengthen that position even further.'



Reiner Englert, MD of Aqua Technics

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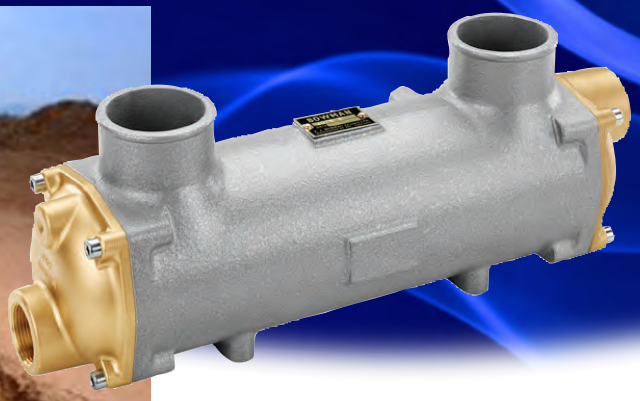


COOLING SOUTH AFRICA'S LARGEST PIPELINE

Bowman Charge Air Coolers have been specified on equipment for South Africa's largest pipeline project.

In January 2012, new pipelines transporting fuel from Durban to Gauteng, opened for business – and Bowman JK190 Charge Air Coolers are being used to cool the air from the turbo chargers on the diesel engine driven pump sets. Commissioned by Transnet, the multi-product pipelines, of 544 km and 160km, will help meet demand for transporting fuel from the coast to Gauteng.

Each of the eight Cummins diesel engines used on the installation has been fitted with a JK190 to provide efficient cooling of air from the turbo charger, improving engine performance and fuel efficiency, whilst helping to reduce emissions.

The units were supplied through Davron Equipment, one of the largest suppliers and installers of fire pump and associated equipment within Southern Africa – and Davron has already ordered a further eight JK190 coolers for use on a variety of other projects in South Africa.

Jamie Pratt, Bowman's Sales Manager said, "Our Charge Air Cooler product programme is currently one of the most comprehensive ranges available. Its complete reliability in some of the most challenging operational environments worldwide has been a key factor in its success".

NEW PK190 FOR LARGER ENGINES

Due to the success of the JK190, Bowman has developed a new, larger charge air cooler - the PK190 - for engines up to 800kW. The unit is released for sale and is available for rapid delivery.

TURNING UP THE HEAT AT ARTESIAN POOL

Bowman titanium heat exchangers are being used to heat the famous outdoor pool complex at the Moree Hot Artesian Spa in the Australian Outback. The units were chosen because they met the demands of this unique artesian water supply, together with the variety of pool sizes, the heating methods and the massive fluctuation in outside air temperatures.

Founded in 1895, the Spa uses water from the Great Artesian Basin and has been expanded over the years. The current development by Australian firm, Swimplex Aquatics incorporates a total revamp of the facility with a new 50m FINA pool, a program pool, children's play pool, three artesian wellness pools and a water slide.

Eleven 5114-5T Bowman heat exchangers are being used to heat the FINA Olympic pool during cooler months while the program pool is heated by five Bowman units. The artesian bore directly feeds the three wellness pools, maintaining them at 39°C. Residual artesian water also feeds two banks of Bowman heat exchangers to heat the freshwater pools which are supplied from the treated municipal supply.

The program and children's pools are on one filtration circuit which gets preferential heat from the residual artesian water. The set point for this plant is 31°C. Any useful heat remaining is passed through the second bank of 11 heat exchangers which serve the 50 metre FINA pool. The upper set point for this plant is 28°C. Thermostats control heating boost pumps for both plants.

Swimplex selected Bowman titanium units because of their resistance to the corrosive bore water and the ease of plumbing on the pool side. Swimplex director, Geoff Leaver, added: "By manifolding banks of exchangers we will be able to take one off-line at a time for cleaning without unduly affecting total output. Because of the low primary heat differential we selected exchangers designed for solar heating as opposed to output from boilers."

The spa is open 12 months of the year, even though ambient air temperatures in winter can drop below freezing point and reach 40ºC in summer. The Bowman units have proved to be highly efficient and reliable in operation, which was a major factor, given the nature of the hot water supply.

MORE POWER FOR THE SAME ENERGY?

Using Bowman heat exchangers, ORC technology can provide a high efficiency solution to turn waste heat into 'free' electrical power.

It's well known that Combined Heat Power (CHP) enables anyone with an engine powered genset to provide heat and power from a single fuel source - without consuming any more fuel than the genset requires for generating power alone.

While a conventional genset typically runs at 30 – 35% efficiency, Bowman exhaust gas heat exchangers capture around 60% of all waste heat from the engine. Fitting Bowman units to recover waste heat from the exhaust, water jacket, charge air, fuel and oil, makes it is possible to increase the overall efficiency of a CHP system to over 90%.

However, in locations where demand for power is at a premium, the heating element of CHP is often not required due to local climatic conditions. Electricity, in contrast, is always in demand.

Bowman is developing its exhaust gas heat exchangers to work in conjunction with ORC (Organic Rankine Cycle) technology to deliver more electrical power from the same amount of fuel.

An ORC Turbine Generator is a closed cycle electrical power generation system driven by an external heat source. No internal combustion is needed; instead the ORC generator uses an organic working fluid with a lower boiling point than water to generate electrical power.

"We quickly recognised that ORC processes offered huge potential for turning waste heat from CHP into electricity, when used in conjunction with our heat exchanger products," comments Kevin Howell.

ORC Technology is already used successfully in bespoke, large scale applications. Several companies have now fully productionised the ORC equipment to make it accessible to thousands of smaller scale heat wasting processes.

When used in conjunction with a Bowman genset and Bowman high efficiency heat exchangers, the ORC turbine process increases efficiency significantly for the same amount of fuel.

"Thousands of users could benefit from 'free' electricity to power site equipment, reduce their energy costs and achieve independence from the grid. Unlike solar and wind powered systems, ORC based systems are predictable and measurable, so users can calculate the exact payback from their system," says Kevin Howell. "Now, combined CHP offers a significantly more efficient way to generate more electricity with no extra fuel consumption or cost."

Bowman is currently developing strategic partnerships with leading renewable energy specialists, developing its exhaust gas heat exchangers to work in conjunction with ORC turbine generator systems.

SURVIVING THE ANTARCTIC WINTER

Bowman heat exchangers installed at the British Antarctic Survey's (BAS) new research station are reported to have survived 'years of freezing conditions' in the world's harshest climate.

Halley VI is the UK's most isolated research station and is currently under construction on the Brunt Ice Shelf. In winter, temperatures plunge to - 50ºC, snow falls for half the year and gales can last for 40 days.

The Bowman heat exchangers are a vital part of the combined heat and power system (CHP) that supplies energy for space heating, hot water, lighting, ventilation and electrical power. Without this CHP system, the resident BAS team who live and work at the base could not survive.

In 2011, BAS personnel and main contractor, Galliford Try, towed all of the modules to the Halley VI site and tested the generators.

BAS reported that "after several years of storage in freezing conditions... the main contractor, Galliford Try, were keen to test all the generators to make sure they still worked and to give confidence they will start next season when commissioning begins in earnest. All four generators were first checked by setting them up and dry firing them.

Then they were tested and analysed under load. Thankfully they all passed with the minimal of works required."

Towards the end of 2011, BAS staff returned again to check the modules had survived the winter with no problems and that the CHP system, of which Bowman heat exchangers are a vital part, was fully operational and performing to the required standards.

BOWMAN IN THE FAST LANE

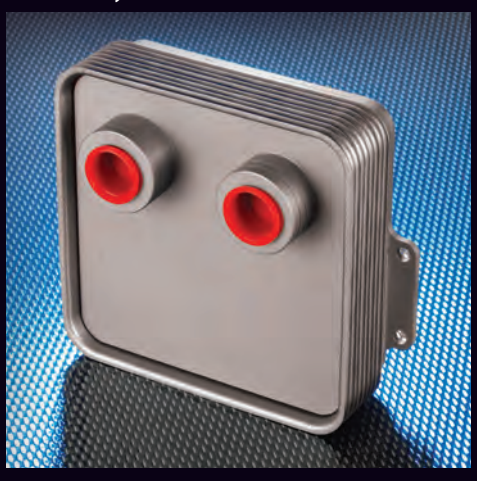
New plate heat exchanger for automotive test cells.

Stainless steel Plate heat exchangers have become the industry standard for cooling or heating fuels in automotive test cells. Manufactured from individual stainless steel plates which are then brazed together using copper gaskets, they are reliable and deliver excellent cooling performance.

However, the growing introduction of ethanol into fuels has made new demands on these products. The problem is that ethanol removes copper causing it to be leached into the fuel and deposited in the fuel injection system, resulting in performance problems and system failures.

In an industry first, Bowman has developed a new design which eliminates copper from the manufacturing process, so there is no risk of damage to the fuel injection system.

"We carried out extensive research into materials that could provide an alternative and have developed a totally new brazing compound. No copper is used in the manufacturing process, eliminating the problems experienced previously. Initial tests have proved the new heat exchanger works reliably on up to 100% Ethanol based fuels. We're now putting it through an intensive testing programme with independent automotive specialists to validate our findings and provide 'real time' performance and reliability data' adds Kevin Howell.



BOWMAN ON THE BALL

Great Barr Harriers under 13 football team received a big boost thanks to new kit and sports equipment from EJ Bowman.

"Sponsorship from local businesses is vital in supporting grassroots football in the area, giving children the opportunity of playing team sport in a safe environment," said Adrian Lippiatt, manager of the side.

"The new kit and equipment will help the boys tremendously. The side has had new players this season and the new kit will provide the boys with a sense of camaraderie and confidence."

Wayne Moseley, Chief Executive of EJ Bowman, said: "We are delighted to support Great Barr Harriers Football Club. It's good to be involved with a club who aren't 'win at all costs' and gives every child a chance to play."

OUR PEOPLE

TAKING THE TECHNICAL CHALLENGE

We're pleased to welcome Adam Taylor, who has joined us as our Engineering Manager.

After graduating with a B. Eng honours degree from the University of Hertfordshire, Adam joined vehicle air conditioning manufacturers, Clayton Heaters as a design engineer. A spell with SPX Cooling Technology followed, where he was a senior design engineer, before joining Bowman to head up the technical engineering programme.

A family man who's two young children keep him very busy, he's also a keen supporter of local rugby team, Worcester Warriors .

Commenting on his appointment, Adam said "I'm very pleased to be joining such a well respected company as Bowman. I'm looking forward to the challenge of ensuring we stay at the forefront of heat transfer technology."

We wish him every success in his new position.

CELEBRATING FIFTY YEARS!

1962 was a very significant year. The Beatles were about to become mega stars, Telstar - the world's first commercial satellite was launched and a young man called Roger Webster joined Bowman at the age of 15! In June this year, that young man will be celebrating his 50th anniversary with the company.

Joining initially as a semi-skilled trainee, Roger has gone on to become a highly skilled heat exchanger assembly engineer and has built over 500,000 units during his time with the company - most of which are still operating efficiently around the world today!

Looking forward, Roger already has plans for his retirement, which include an IT training course , so he can stay in touch with the many friends he's made over the years at the company, and enjoying listening to a very wide range of music.

SEE US AT:

PISCINE
Lyon November 2012
Europe's major swimming and leisure pool exhibition.

HANNOVER MESSE
Hannover April 2013
Europe's leading technology and automation exhibition.

FOR MORE INFORMATION

If you would like more information on any of the articles contained in this newsletter, or for technical data on any of our heat exchanger ranges, please contact us directly;

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