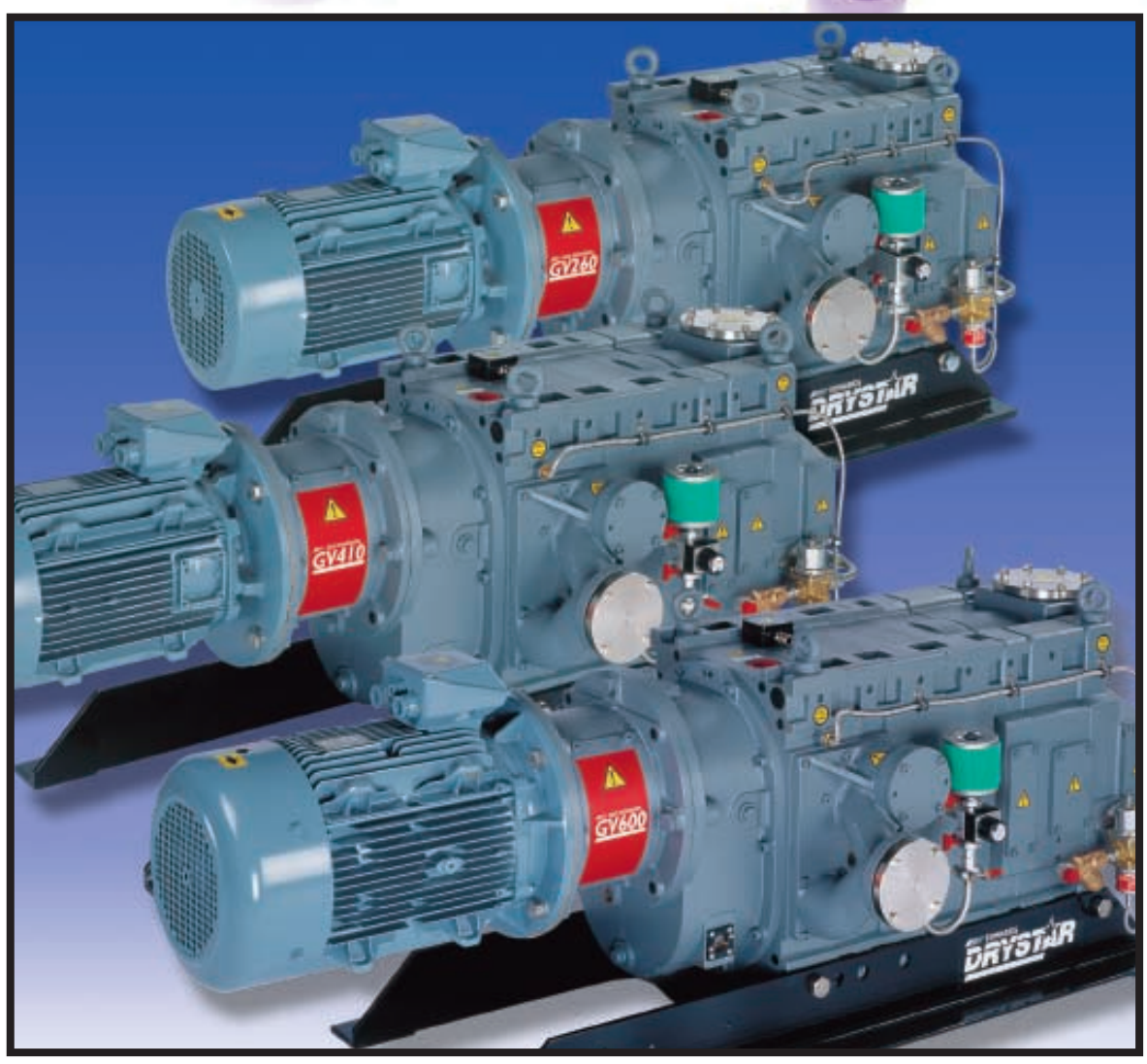
ISSUE TWO | MAY 2001

EDWARDS NEWS

THE OFFICIAL NEWSLETTER OF BOC EDWARDS

The new GV260M, GV410M and GV600M combine higher pumping speed with ultimate vacuum, plus lower cost of ownership



BETTER ALL ROUND

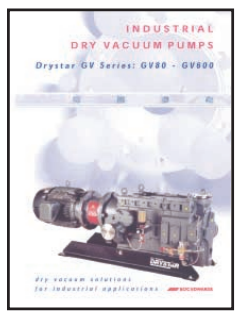
Dry pumps you can forget about

BOC Edwards has added two new models to its GV Drystar range of latest-generation industrial vacuum dry pumps. The GV260M and GV410M now complete the series, which offers high capacity 'fit-and-forget' pumping with none of the contamination risks or frequent maintenance associated with oil-sealed technology. GV Drystar pumps are ideal as industrial diffusion backing pumps in a wide range of vacuum applications such as metallurgical processes, tank evacuation, process or pipeline drying and glass coating. Proven claw technology, with a built-in Roots mechanism, facilitates high speed evacuation down to an ultimate vacuum of 5×10^{-2} mbar. As a result, time to cross-over pressure is reduced, pump-down is faster and process efficiency is improved.

BOC Edwards' dry vacuum pump technology offers considerable benefits over traditional oil-sealed mechanisms. Because it uses no lubricating oil, there is no risk of contamination of the process and no oil change/disposal requirement. While the efficiency of a traditional mechanism varies with the quality of its oil, GV Drystar technology is consistent and long-term reliable, even in harsh, dusty or humid atmospheres. The major service interval is typically six years, offering significant savings in running costs and process down-time compared to oil-sealed pumps.

GV260M and GV410M offer peak pump capacities of 260 and 410 m^3/hour respectively. The GV600M, launched earlier in the year, is the largest in the series, offering 560 m^3/hour peak speed. Despite its high pumping capacity, GV Drystar uses less energy than other dry pumping technologies, and offers significant power cost savings.

Further information on the new GV Drystar range can be found in our 10-page brochure available now.

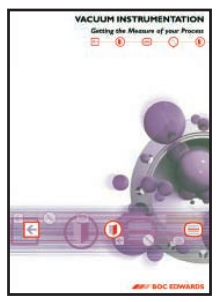


circle: Number 201

INSIDE

ISSUE TWO

GETTING THE MEASURE OF YOUR PROCESS



New literature gives detailed information on vacuum measurement and control instruments

As a leading supplier of vacuum technology to the industrial, scientific and semiconductor markets, BOC Edwards has an outstanding record in the successful development and application of vacuum instrumentation. The Active Gauge concept, for example, was first developed by BOC Edwards and is now the industry standard.

Now BOC Edwards offers a wide range of vacuum measurement and control instruments covering 2000 to 10^{-11} mbar, to suit the simplest to the most demanding applications.

The Active concept covers all types from Pirani to ionisation gauges as stand-alone instruments, with adaptable and intelligent controllers for up to six gauges and low cost displays. The Barocel range of capacitance manometers is also available, along with a variety of standard vacuum measurement and control devices.

A recently published set of data sheets gives detailed information on each individual instrument.

Number 202

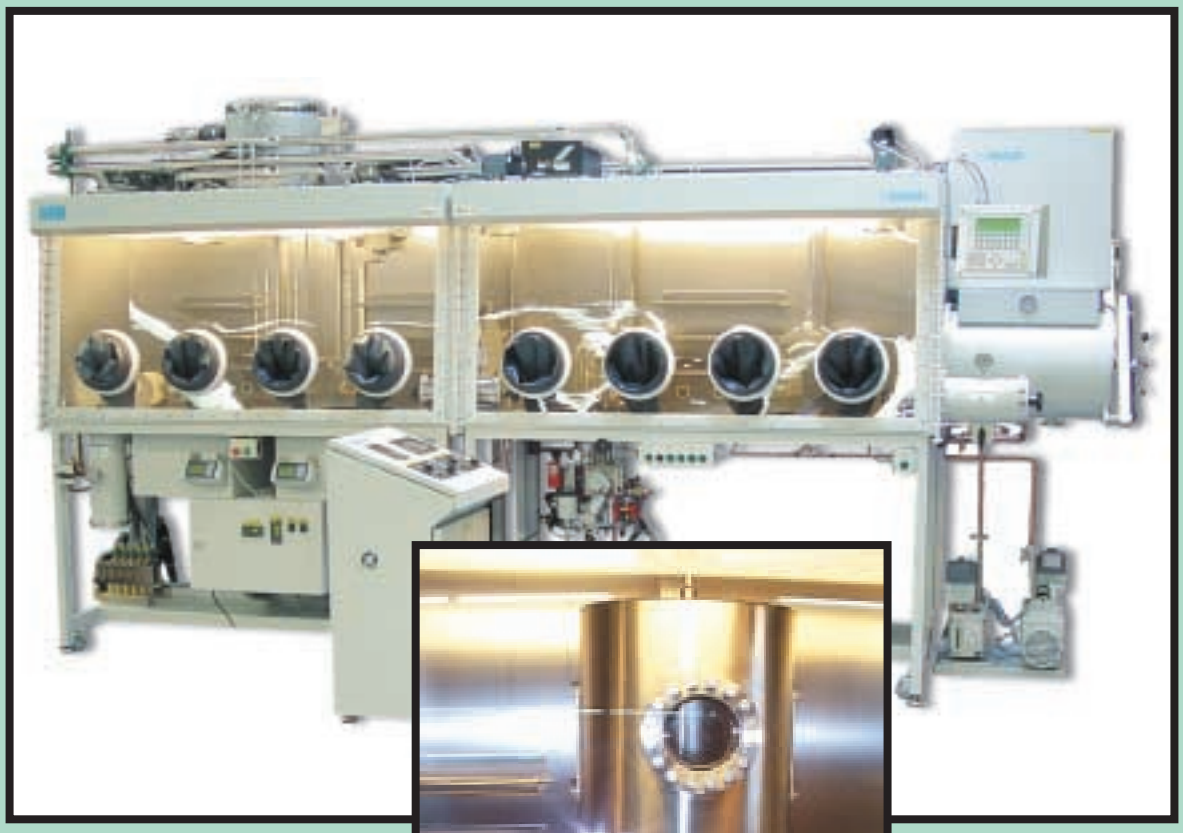
BOC EDWARDS

APPLICATIONUPDATE

Leading manufacturers of production and analysis equipment rely on BOC Edwards vacuum pumps and systems.

OLEDS AND VACUUM GO HAND IN GLOVE

Modern processes in micro-electronics, chemistry and physical research often rely on vacuum technology. One example of this is the manufacture of OLEDs – Organic Light Emitting Diodes. M Braun, a leading company in the area of glove-box technology with inert gas systems based in Garching, Germany, is integrating evaporation systems from BOC Edwards into its systems.



Since the discovery of electrically conducting polymers around 1990, knowledge about the production and manufacture of these materials has developed rapidly. OLEDs are polymers that react to a voltage by emitting light. This makes it possible to produce flat light sources with a high luminous density, like digital displays for radios, telephones and TV control panels. Selected basic materials also allow for emission of colour nuances to produce flat panel colour displays.

The OLED production process begins with a glass substrate, on which is laid a transparent and conductive ITO (indium-tin oxide) electrode. This is created in a vacuum through reactive evaporation or sputtering, followed by an organic layer about 100nm thick and by a second electrode, this time metallic. Soluble LEPs (light emitting polymers) can be applied through spin coating, while low-molecular layers are created by means of high vacuum evaporation in a BOC Edwards AUTO306 evaporation system. The precise metering and control by the evaporant boats is a matter of great importance. This is achieved by thyristor control units. To solve the sensitivity problem of many basic materials to atmospheric oxygen, M Braun's glove boxes are supplemented by BOC Edwards AUTO306 and AUTO500 evaporation systems. M Braun inert gas systems provide an atmosphere within the glove boxes with less than 1 ppm of oxygen and water vapour. This atmosphere serves as the basis for a rapidly increasing number of procedures in laboratory and production facilities. Steps such as spin-coating and evaporation can be performed completely within the box.

Dr. Andreas Knipp, Sales and Service Manager for M Braun, says the company chose the BOC Edwards system because of Edwards' ability and willingness to adapt to M Braun's requirements. The evaporation system underwent additional development and has become a module within M Braun's range of glove-box technology systems. Dr Knipp said: "We also value the worldwide presence of BOC Edwards because of the high level of our export business, and the large number of BOC Edwards R&D systems installed worldwide giving us access to the most advanced application expertise."

For further information circle:

Auto306 evaporation system: Number 203

Glove boxes from M Braun: Number 214

"ELECTRONIC NOSE" SMELLS SUCCESS

ALPHA M.O.S. has been developing smart sensing devices so-called, electronic noses since it was established in 1992.

A unique generation of hybrid system called α PROMETHEUS has been introduced where it combines gas sensor array technology with fingerprint mass spectrometry to provide a very powerful and flexible tool.

Indeed, the mass spectrometry-based electronic nose provides a specific fingerprint of the total volatile compounds in the mass spectrum. Between 1 and 200 variables may be analysed, and the product fingerprint may be obtained within a few minutes.

This new smart sensing system is a major breakthrough compared to earlier designs, in particular the vacuum supply to the mass spectrometer. ALPHA M.O.S. selected BOC Edwards vacuum products for this critical part of the process. The RV series is used as the primary pump for the EXT255H turbomolecular pump, which provides high vacuum of 10^{-6} mbar.

The α PROMETHEUS offers enormous advantages against other sensing devices for alcoholic beverage applications. The mass spectrometer can scan all the fragments except those produced by ethanol. Then statistical data treatment allows to easily compare gold reference and out-specification product by detecting the difference of fragment intensity from their fingerprints and thus identifying the fragments responsible for taints and off-flavours.

The application field of the ALPHA M.O.S. electronic nose covers the needs of food ingredients suppliers, food industries, cosmetics and packaging. They are mainly used as a quality control tool that can assist the human panel and complement more sophisticated analytical techniques. They are also used at R&D level for container-content interaction study and to compare different formulations or position competitive products.

For further information circle:

EXT turbomolecular pumps: Number 204

RV pumps: Number 205

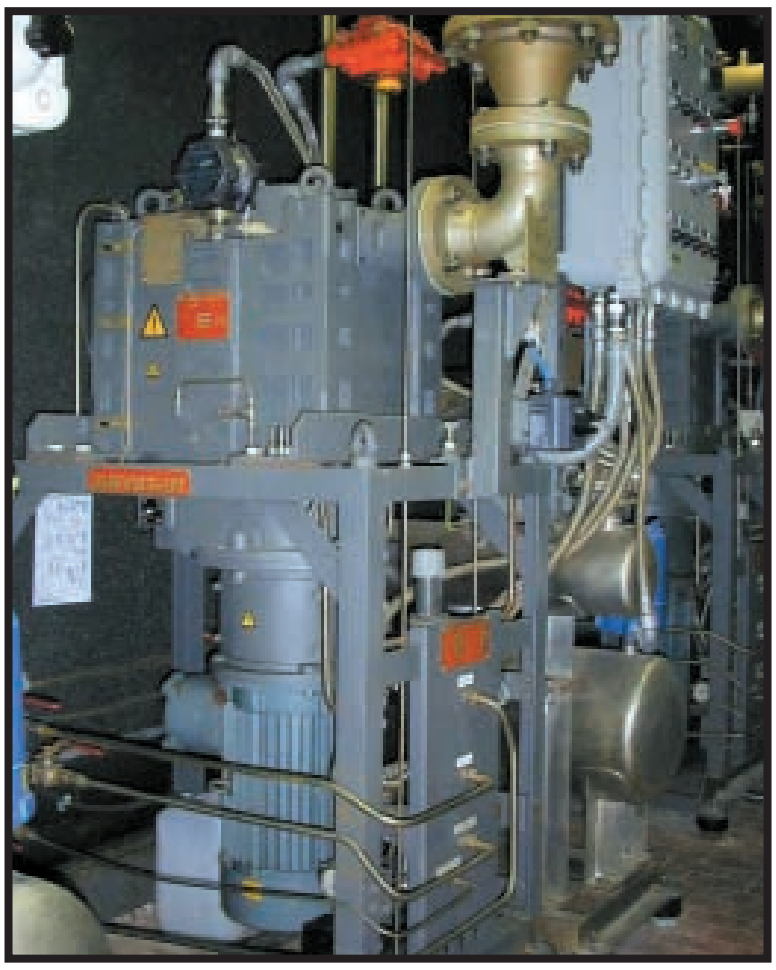
ALPHA M.O.S.: Number 215
website: www.alpha-mos.com

BOC EDWARDS

APPLICATIONUPDATE

Clean, low maintenance, dry vacuum pumps lead the way in many applications, from the metallurgical to the chemical and pharmaceutical industry.

DRY RUNNING CENTRAL VACUUM SYSTEM



Demand is growing for reliable centrally controlled vacuum systems, especially in the chemical and pharmaceutical industries. Manufacturers are increasingly convinced of the superiority of dry vacuum technology, especially where contaminants, corrosive vapours and solvents are involved.

A good example of this is the Pharmacia facility in Nerviano, Milan, where dry vacuum for a centralised system serving several chemical work-centres is provided by six BOC Edwards pumps – five DP160s and one DP80.

Nerviano is a key centre for oncology research by scientists at Pharmacia, one of the largest pharmaceutical companies in the world. Anti-cancer drugs are developed at the centre, which is capable of small-scale production for clinical trials.

Last year Pharmacia expanded the Nerviano plant, with BOC Edwards products and systems accounting for 20 % of the total investment.

The centralised vacuum system is based in an 18 m^2 room where the six pumps are installed in two rows of three. A Distributed Control System allows the pumps to be operated independently or in groups, depending on vacuum demand from the different chemical laboratories.

All the pumps are equipped with flame arrestors, explosion-proof instruments, and local control cabinets. This is vital in an environment where flammable organic substances, are present.

Post-condensers and receivers recover the solvents, and active carbon filters minimise exhaust emissions. Suction filters are installed on the pumps to prevent the build-up of powders which could potentially form as process by-products.

Performance requirements were determined by the design of two different vacuum lines, one working at 5 mbar and the other at 40 mbar. This required five pumps with a pumping speed of 100 m^3/h for the 5 mbar line, and one pump with a capacity of 25 m^3/h for the 40 mbar line. As part of the supply package, BOC Edwards also provided the plant validation procedure (Installation and Operational Qualification) and the compilation and execution of the validation protocols.

The pumps have been running trouble-free since installation, in full compliance with the specification parameters and to the customer's complete satisfaction.

For further information circle:

Dry vacuum pumps
DP series: Number..... 206

LOOKING FORWARD TO SEE YOU AT OUR EXHIBITION STANDS

EUROCHEM 2001
Birmingham (GB)
05 - 07 June 2001

METAL SPAIN 2001
Zaragoza (Spain)
05 - 07 June 2001

ATTT 2001
Lille (France)
27 - 29 June 2001

PROCESS TECKNIK 2001
Göteborg (Sweden)
04 - 07 September 2001

HERNING INDUSTRIMESSE 2001
Herning (Denmark)
11 - 15 September 2001

EUROPEAN VACUUM CONFERENCE EVC 7
Madrid (Spain)
17 - 20 September 2001

RICH & MAC
Milano (Italy)
02 - 06 October 2001

FURNACES 2001
Birmingham (GB)
08 - 11 October 2001

HÄRTEREI-KOLLOQUIUM
Wiesbaden (Germany)
10 - 12 October 2001

SALON DE LA PHYSIQUE
Paris (France)
23 - 25 October 2001

NEW SPARE PARTS PACKAGE REDUCES MAINTENANCE COSTS FOR BEST-SELLING ROTARY VANE PUMPS

Since its introduction the RV series has become the best-selling range of oil-sealed rotary vane pumps. The original maintenance plan recommended replacement of a complete pumping cartridge if major parts became worn. Under the BOC Edwards continuous quality improvement programme, cartridge components such as Low and High Vacuum Rotors, Stators and Endplate are now available individually. These spares can be fitted by BOC Edwards' or the user's own personnel, and are available throughout the BOC Edwards organisation and it's distributors. This new option makes RV pumps even more cost-effective to service. RV pumps will give their best performance only if the product is serviced regularly, using high quality spares designed and manufactured by BOC Edwards.

RV pumps are dual mode vacuum pumps to meet the demand for high ultimate vacuum and high throughput by a single pump. They are available with pumping speeds of 3, 5, 8 and 12 m^3/h.

For further information circle:

RV pumps - brochure: Number 205
RV pumps - spare parts: Number 207

BOC EDWARDS

AUTO500: NEW FRONT LOADING COATING SYSTEM

BOC Edwards has developed a new system for state-of-the-art thin film processes in R&D and pre-production, the AUTO500. Controls and vacuum chamber/pumping systems are housed in two separate boxes. The design, with a clear and flat surface, makes the coating system cleanroom-compatible while the 480mm rack provides ample space for process controllers and power supplies.

The AUTO500 can be equipped with a variety of vacuum systems, including diffusion and turbomolecular pumps backed by oil-sealed or dry pumps. The largest size of the stainless steel chamber is 500 mm dia by 500 mm high, and there is a wide range of process accessories for evaporation, electron beam and sputtering applications.

For further information circle: Number 208

NEW ACTIVE IONISATION GAUGES AIGX SERIES

BOC Edwards has added new Active Ionisation Gauges to its range of instrumentation for vacuum measurement and control. The new AIGX gauges are smaller and lighter than comparable instruments and provide an output signal of 0-10 V for connection to universal and intelligent vacuum controllers or to the users' programmable logic controller.

AIGX gauges equipped with robust yttria-coated Iridium filaments, give continuous measurement from 5 x 10^{-2} to 5 x 10^{-10} torr (6.6 x 10^{-2} to 6.6 x 10^{-10} mbar) with a 1 Volt/decade log linear output. Other features include easily removable electronics for bakeout at up to 200°C, and automatic filament protection against switching on at atmosphere and running or degassing at high pressure.

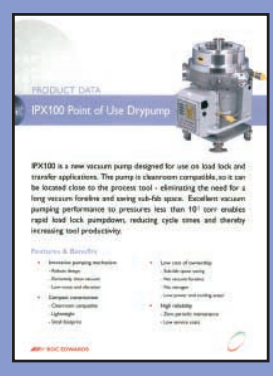
AIGX gauges are available in two versions, each with three vacuum coupling variants. AIGX-S models are fitted with FCC68 sockets and are fully compatible with BOC Edwards Active Gauge Controllers. They are provided with a set point, comprehensive error/status reporting, and automatic emission current switching which prolongs filament life. AIGX-D models have a 9-pin D plug, providing an interface standard commonly used in the industry.

For further information circle: Number 209

LITERATURE FROM BOC EDWARDS

IPX100 and 500 Dry Pumps

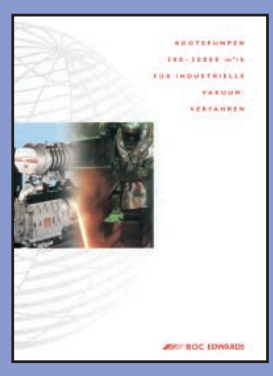
IPX100 and 500 pumps, with their innovative mechanisms, are capable of pumping from atmosphere to pressures below 10^{-2} and 10^{-6} mbar respectively, with peak speeds of 100 and 500 m³/h. In addition to extremely clean vacuum, features include compact construction, high reliability, zero maintenance and low cost of ownership.



Number 210

Mechanical booster pumps

Cleanliness and reliability make BOC Edwards booster pumps ideal for industrial applications. With four ranges of pumps providing speeds up to 30,000 m³/h, users can select exactly the right option according to their needs. Complete systems can be built with oil-sealed or dry pumps.



Number 211

EVC Single Stage oil sealed pumps

EVC Series oil-lubricated rotary vane pumps are the most economical solution for many industrial applications requiring fine and rough vacuum. The range covers pumping speeds from 15 m³/hr to 1000 m³/hr, capable of operating continuously in the region of 0.5 to 130 mbar.

Number 212

T4 and Zone 0 Dry Vacuum Pumping

BOC Edwards provides ATEX-certified dry vacuum systems including special flame arrestors and temperature sensors for Zone 0, with products capable of T4 pumping at full capacity without the need for frequency inverters, gas coolers, inert gas dilution and low temperature coolants.

Number 213

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