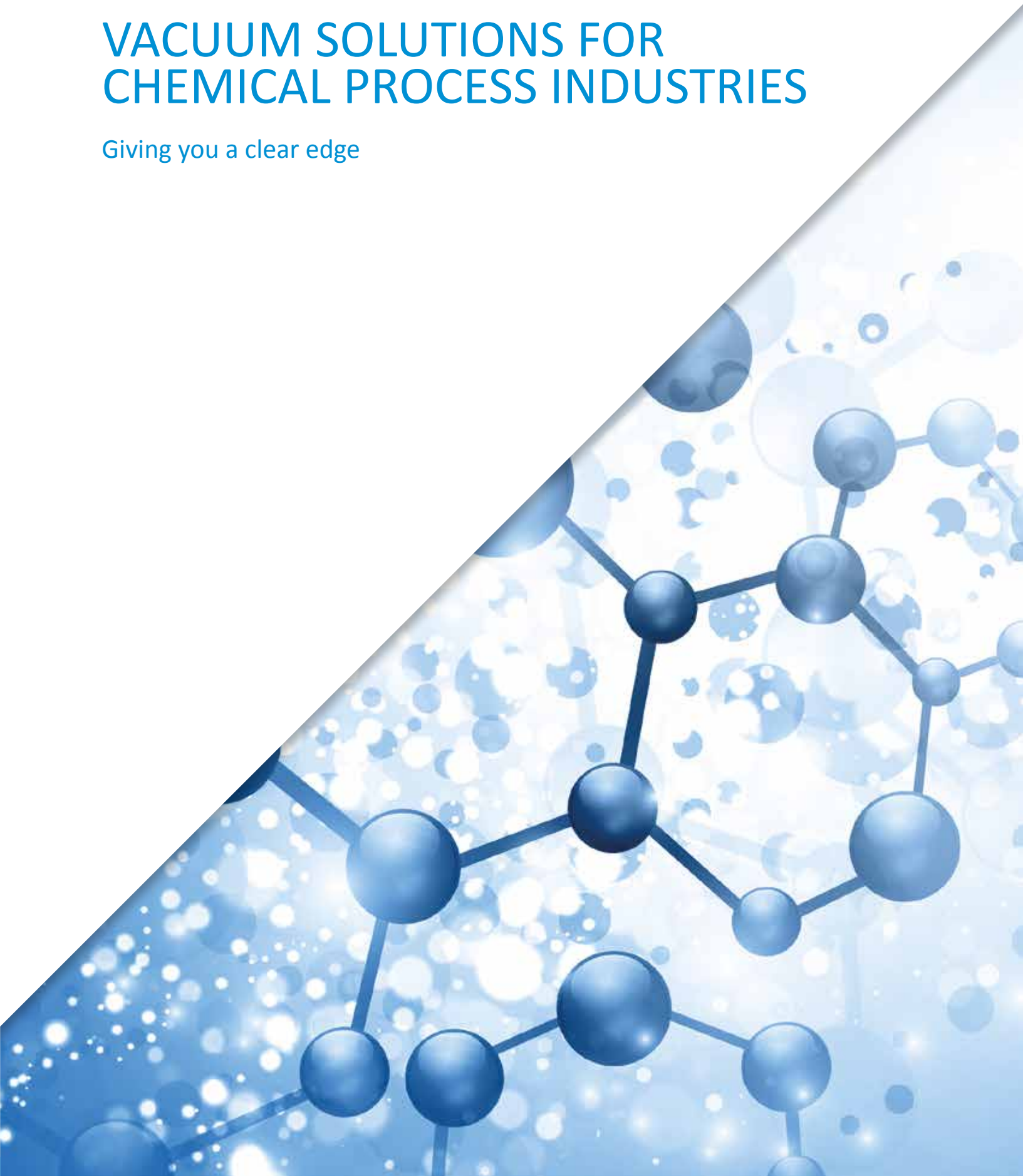




# VACUUM SOLUTIONS FOR CHEMICAL PROCESS INDUSTRIES

Giving you a clear edge



A close-up, black and white photograph of a vacuum pump rotor, showing its complex, curved, and polished metal surfaces. The rotor is positioned diagonally across the frame, with the top-left corner being the most prominent. The lighting creates strong highlights and shadows, emphasizing the metallic texture and the precision of the engineering.

## EDWARDS THE PARTNER OF CHOICE

**Edwards is a world leader in the design, technology and manufacture of vacuum pumps with over 95 years' history.**

Edwards believes in delivering results that bring value to our customers by using our breadth of industry experience to identify and apply solutions to your problems. Using the most innovative and up-to-date modelling techniques, we can optimise the pumping configuration for customers to provide a system design giving the maximum performance in the most reliable and cost-effective way.

# MORE THAN PUMPS, COMPLETE VACUUM SOLUTIONS

**Edwards is a world leader in the design, technology and manufacture of dry vacuum pumps for process applications in the chemical, speciality chemicals and pharmaceutical industries.**

Vacuum pumping systems need to handle organic solvents and compounds in a reliable and safe way while ensuring control, and the reduction of environmental pollution and cost of ownership.

Our expertise in chemical processes and applications has allowed us to design rugged, non-contacting dry mechanisms able to pump a comprehensive range of organic and inorganic materials, flammables and corrosives, with excellent liquid and solids handling capabilities, ensuring high reliability in every condition.

Our dry pumps are designed to minimise maintenance interventions and to lower utilities consumptions for a low cost of ownership.

Robust and environmentally friendly  
**Clean, reliable dry vacuum solutions**

Low cost of ownership  
**Low maintenance and utilities costs**

Not just pumps, complete solutions  
**Fully engineered vacuum systems**

We offer pumps and systems certified under European (ATEX), American and other applicable global standards and with; process design with equipment specification and selection; control systems integration; commissioning on site; and Installation and Operational Qualification for FDA compliance.

# APPLICATION CHART

	Chemical Dry Pump	Mechanical Booster	Rotary Piston Pump	Rotary Vane Pump	Liquid Ring Pump	Steam Ejector
Distillation, normal	✓✓	✓✓	✓	✓	✓✓	✓✓
Short path distillation	✓✓	✓✓	✓	✓		✓✓
Molecular distillation	✓✓	✓✓	✓	✓	✓	✓✓
Reactor service	✓✓	✓✓	✓		✓✓	✓
Central vacuum (flammables and corrosives)	✓✓	✓✓			✓✓	
Fatty acid deodorisation, Biofuels	✓✓	✓✓			✓✓	✓✓
Drying, evaporation, crystallisation, concentration	✓✓	✓✓	✓	✓	✓	✓
Gas recovery / recirculation	✓✓	✓✓				
Degassing	✓✓	✓✓	✓	✓✓	✓	✓
Absorption, adsorption, desorption	✓✓	✓✓			✓✓	
Pervaporation	✓✓	✓✓			✓✓	
Solvent recovery	✓✓	✓✓			✓	
Isocyanates production	✓✓	✓✓		✓	✓✓	✓✓
Impregnation	✓✓	✓✓	✓✓	✓✓	✓✓	
Polymers and plastics production	✓✓	✓✓	✓	✓	✓✓	✓✓
Paint, pigments, coatings and ink production	✓✓	✓✓	✓	✓✓	✓	✓
Soaps / detergents production	✓✓	✓✓	✓			✓✓
Ethylene Oxide sterilisation	✓✓	✓✓		✓✓		
Oil treatment plants	✓✓	✓✓	✓✓	✓	✓	✓
Dewatering and filtration	✓✓				✓✓	
Flammable and corrosive gases	✓✓	✓✓		✓	✓✓	✓✓

✓✓ - Preferred technology or widespread use  
 ✓ - Some applications

	Lowest cost of ownership		High cost of ownership typically		Highest cost of ownership typically
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## OUR VACUUM PRODUCTS

### EDP

In the early 1980's, the EDP range pioneered the use of environmentally friendly dry vacuum pumps in the Chemical Process Industries. Based on the award-winning reverse claw mechanism this pump range has been designed and tested with reliability and safety in mind. With a large global installed base, the EDP has been tried and tested over many years.



#### **Industry proven, tried and tested**

Specifically designed for chemical applications

#### **Designed and tested for safety and reliability**

Stable operation, even during process upsets

#### **Low cost of ownership**

Easy maintenance, low utilities consumption and no cooling gas injection required

### CDX

The CDX1000 pump is optimised for processes requiring large pumping speeds, delivering a 900 m<sup>3</sup>/h pumping speed and an ultimate vacuum of 0.005 mbar. Installed mainly in continuous, large, high throughput environments, this pump has been designed to withstand process malfunctions and to minimise down time from line maintenance to overhaul.



#### **Industry proven, tried and tested**

Specifically designed for larger, high-throughput chemical processes

#### **Peace of mind in continuous processes**

Tolerant to process malfunctions

#### **High uptime**

High reliability with on-site maintenance options

## CXS

CXS is Edwards most advanced chemical dry pump featuring new tapered-screw technology for exceptional energy efficiency and performance.

For non hazardous applications we can offer our GXS range of pumps incorporating the same patented tapered-screw technology used in the CXS.



### Low installation costs

Integral controller and safety systems for 'Plug and Pump' flexible operation

### Robust and reliable

Cutting edge screw technology for corrosion-free operation and robust liquid and solids handling

### Environmentally friendly

Smooth, quiet running, <64 dB(A), no effluent generation and low utilities consumption

## ATEX Certification/Explosion Proof Certified

The CXS dry vacuum pump is ATEX certified, relying on constructional safety and containment for pumping gases from groups IIB/IIB3.

Solvent flush options, if necessary, can ensure constructional safety is maintained.

### EXP systems

North American variants are suitable for Hazardous Locations Class 1, Groups C&D, Division 1 Environments. These variants are certified to NEC standards for Hazardous Areas.



## PRODUCTS

### EH Boosters

When higher pumping speeds are required for inlet pressures typically below 10 mbar the chemical dry pumps are systemised with mechanical booster pumps. EH booster pumps, available in five sizes from 250 to 4200 m<sup>3</sup>/h nominal displacement, have a unique and patented hydrokinetic fluid drive which couples the motor to the pumping mechanism. This unique drive allows start up from atmospheric pressure and cuts pump down times by up to 50% when compared with direct drive pumps.



#### Increased productivity

Faster pump down time

#### Simple installation

No need for pressure switches, bypass lines or variable frequency drives

#### Robust operation even for harsh duties

Proven shaft seal design



### Applications knowledge

Expert applications engineering is central to Edwards' success. We always provide solutions to customer problems. This can involve:

- Process design
- Equipment selection
- Integration into the plant control philosophy
- Safety considerations
- Advice at start-up, commissioning and training

Our experienced applications team are trained to provide expert advice on designing the correct pumping system.

## HV Boosters

For large scale chemical applications such as polymerisation or fatty acid deodorisation the CDX1000 can be systemised with HV mechanical boosters. Available in sizes from 8,640 to 40,000 m<sup>3</sup>/h nominal displacement, the boosters are controlled with variable frequency drives to allow for start up from atmospheric pressure and superior versatility.



### Stable process for consistent output

Suitable for continuous operation over wide pressure ranges on heavy duty, large scale applications

### No unplanned downtime

High performance water cooled mechanical shaft seal, large diameter shaft and large helical gears

### Easy integration and safe

Optional water cooled exhaust gas after cooler, shaft seal safety purge, temperature monitoring and VFD available

Our expert applications engineers work with you to offer a custom systemisation design and build service, exactly matched to your needs, using pre-engineered modules together with an extensive CAD capability.





## APPLICATION ENGINEERING, DESIGN AND SYSTEMISATION

Our application expertise and in-depth knowledge of your industry will ensure we can offer a comprehensive package of design and systemisation solutions.

- Process design
- Equipment specification and selection
- Safety and operating procedures
- Vacuum systems and control integration
- Commissioning and installation
- Installation and Operational Qualification for FDA Compliance

Our highly focused applications team, central applications group and regional networks of application specialists are on hand to offer expert support throughout your selection and installation process.

### Configured packages

Where possible, we will design your individual system from standard modules and accessories - this will typically include a dry pump system with a series of accessory modules including:

- Mechanical boosters - for increased pumping speed and improved ultimate vacuum
- Gas purges to dilute flammables and extend seal life. Options include - inlet purge, shaft seal purge, gas ballast
- Safety devices - flame arrestors, solvent flush, inlet isolation valves
- Recovery vessels for solvents or other fluids - knock-out pot, condenser, receiver
- Acoustic devices to reduce the pulsation in the exhaust and hence noise - silencers (drainable), full system enclosures (reduce system noise by >5 dBA)
- Monitors and controls from gauges and 4-20 mA transmitters to fully enclosed bespoke control units - temperature and pressure transmitters, pressure gauges, rotation sensors, inverter drives, control box





## SERVICE

Your business success depends on maximum equipment uptime and minimum total cost of ownership, and we constantly strive to support those objectives. As a global leader in vacuum technology and processes, we understand how vacuum pumps and systems perform in real life. Our wide portfolio of services is designed with you in mind: to help keep your processes and equipment running in the most economical and environmentally efficient manner.

Services include:

- Overhaul and repair using genuine Edwards OEM parts
- OEM spares and kits available for immediate despatch
- ReManufactured products available for cost-effective expansion and backups
- Global network of expert field service engineers available to respond quickly to unexpected equipment failures
- Extended warranty, to help manage the cost of the unexpected

Our Expert Advantage Service Plans provide you with the on-going support necessary to continuously improve your operational efficiency and meet your business objectives. As service offerings may vary slightly from product to product, please contact your Edwards representative to discuss your specific requirements.

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