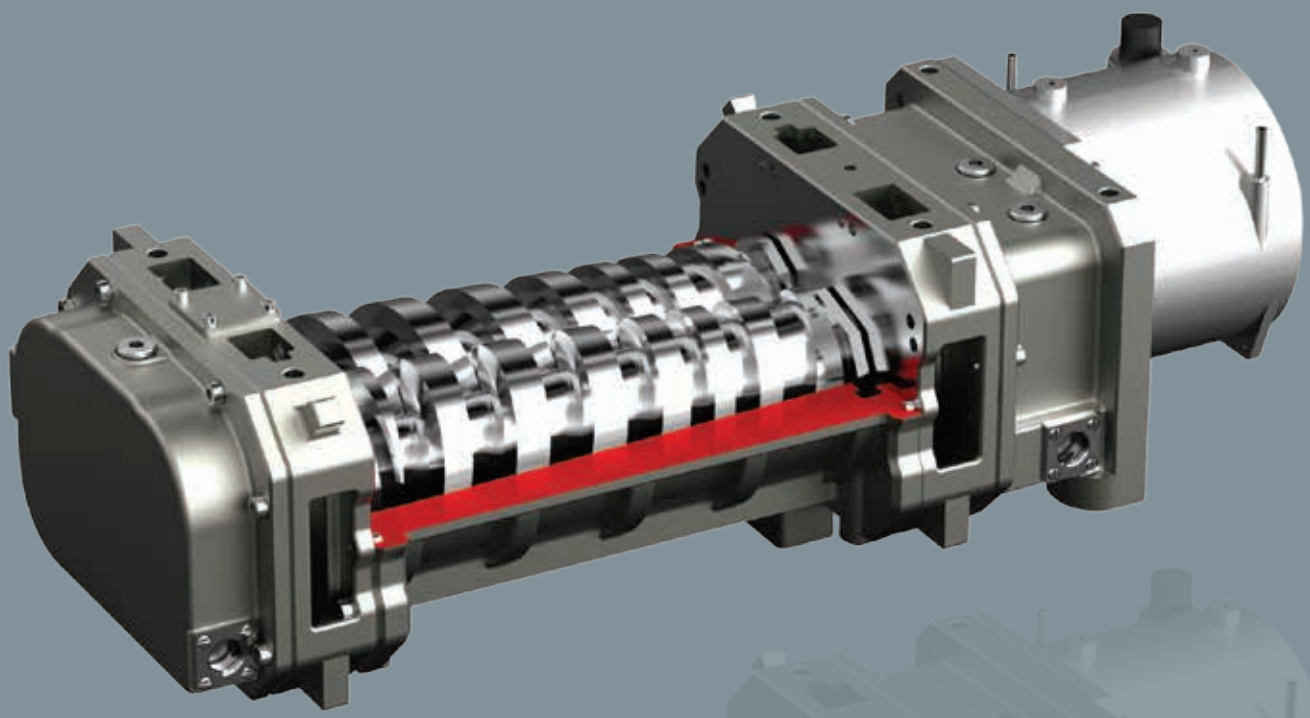
edwardsvacuum.com

VACUUM SOLUTIONS FOR INDUSTRIAL COATING

EDWARDS



EDWARDS
THE PARTNER OF CHOICE

Edwards is a world leader in the design, technology and manufacture of vacuum pumps with over 95 years' history and more than 75 years' manufacturing experience.

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.

MAXIMISE YOUR PRODUCTIVITY AND PERFORMANCE

Vacuum pumping systems are crucial in the coating process and with our decades of experience in coating systems we can provide the ideal vacuum solution for each type of process. Whether it is fast evacuation of load-locks that is required or high performance pumping in the process chamber, we have the right range of product technology configured to your needs. Major advantages offered are:

- **Accurate modelling techniques** to select the right system for meeting fast cycle requirement
- **Environmentally friendly** dry vacuum technologies
- **Reliable** and consistently reproducible results
- Compact pumping systems with **small footprint**
- **Cost-effective** oil sealed pumps and combinations
- **Low cost of ownership** with minimal planned maintenance

Coating processes can be diverse depending on the type of industry, application needs and utility of the final products. These include but are not limited to:

Glass Coating

Glass coating systems for low emissivity processes on glass sheets are comprised of large large chambers demanding fast cycle times, high vacuum requirements to yield superior layer uniformity, high throughput and reduced cost of ownership.

Display Coating

Sputtering coating processes for display applications require precision techniques to ensure ultra-thin layers of metals and Trans Conductive Oxide materials like ITO (indium tin oxide) on display substrates. Extremely reliable vacuum systems with the ability to manage high gas throughput are demanded for this application.

Roll Coating

Modern roll coating systems used for manufacturing printed electronic circuits on polymer films and flexible substrates need strong vapour handling capability and a high ultimate vacuum.

Optical Coating

Optical coatings that include reflective, anti-reflective or metallic mirror coatings, using different processes-thermal deposition, electron beam or sputtering - require stable vacuum systems in a compact footprint.

Hard Coating

Hard coating processes enhance the durability of the components by strengthening them with tough materials that need to be deposited in a high vacuum atmosphere. This requires reliable vacuum systems that ensure a long lifetime of the components.

APPLICATION MATRIX

Coating Application Vs

Edwards Technology Matrix

***Mid-Range Dry Pumps are available for small scale or pilot processes**

		APPLICATIONS								
		Display Coating	Optical Opthalmic Coating	Roll Web Coating	Plasma Deposition	Reflective Decorative Coating	Hard Coating CVD DLC	Surface Activation	Roll Coating Display	Glass Coating
PUMPING TECHNOLOGY	STP Turbomolecular	●	●	●	●	●	●	●	●	●
	HT Diffusion Pump	○	○	○	○	○	○			○
	GXS Dry Pumps & Systems			●			●	●	●	●
	Microvac Piston Pumps & Booster Combos	○	○	○	○	○	○	○	○	○
	ES Single Stage & EH Booster Combos	●	●	○	●	●			○	○
	EM Double Stage & EH Booster Combos	○	○						○	

● Recommended Technology ○ Conventional Technology

PRODUCTS

We have a broad portfolio of products and can provide appropriate solutions based on the process need. Dry pumping technology is the best solution for harsh and challenging processes where optimum yield is required or if cleanliness of the final product is essential. It is also environmentally friendly as it eliminates handling and disposal of contaminated oil.

Our intelligent dry pumps-GXS and STPs-also feature a fully enabled on-board control system delivering unmatched benefits for the various coating processes.

Reduced installation costs
Easy integration with other systems with intelligent controls

Safe operation, consistent output
Automated control of your process

Peace of mind
Remotely monitor your process (smart communications via ethernet, profibus or hard-wired interfaces)

Energy saving
“Green mode” with reduced power consumption during idle periods

We also have a range of proven conventional pumping technologies comprised of oil sealed rotary vane pumps, piston pumps and high throughput diffusion pumps. These have been used in the coating processes for years, providing consistent results.

GXS dry screw pump range

The GXS range features intelligent on-board control and has been developed using new variable pitch tapered-screw technology for exceptional performance and reliability in coating process; for both fast cycle load locks as well as process applications. GXS pumps can be readily systemised using a range of pre-engineered accessories to meet a variety of application needs. GXS pumps are systemised with GMB blowers to achieve pumping speeds up to 3,450 m^3h^{-1}. Larger pumping speeds can be achieved in combination with higher displacement blowers.

Increased productivity
Faster process and longer intervals between service

Improved product quality
Better ultimate vacuum

Highly reliable
Ability to handle harsh processes

Small carbon footprint
Low power and utilities usage

PRODUCTS

MAXX systems range

For fast cycle requirements in load locks, the GXS pump range is complemented with the pXH new generation of large mechanical boosters for an integrated flexible modular skid design. pXH booster pumps have high efficiency motors and inverter drives that integrate directly into the GXS pump control system with a single connection.

Two sizes are available:

- pXH4500 (displacement 6,766 m^3h^{-1})
- pXH6000 (displacement 8,358 m^3h^{-1})

Variety of pump combinations ensure Optimise the configuration
Delivering the performance required by your processes

Easy to upgrade
Whenever you need more capacity

Stokes Microvac rotary piston pumps

Stokes Microvac rotary piston pumps have established themselves with a large installed based in the coating market due to the nature of their robustness and low cost of ownership. They can be packaged with Edwards EH or Stokes 6” Series mechanical boosters to provide pumping packages with capacities up to 6,630 m^3h^{-1}.

Proven reliability
Over 80 years of time-tested proven performance

Value for investment
Low rotational speed enables longest pump life cycle

Easy on-site maintenance
Robust simple mechanism for high reliability and ease of rebuild

PRODUCTS

ES single stage rotary vane pumps

The ES range features class leading ultimate vacuum level and extended operating pressure range. The ES range, available in sizes from 65 to 630 m^3h^{-1} and in systems with EH mechanical booster pumps, is the recommended cost-effective technology for diverse-ranging vacuum coating applications.

Improved product quality
Stable vacuum performance

Ease of integration

In-built ISO and BSP connections

Easy to maintain
Easy oil and filter changes

The EH range

Engineered for high vacuum performance the EH range of mechanical boosters (from 250 to 4,200 m^3h^{-1} displacement) with their unique hydrokinetic drive allows for continuous operation from atmosphere to ultimate vacuum, giving faster pump down time.

Peace of mind
Industry proven with large installed base

Increased productivity
Faster pump down time

Robust operation even for harsh duties
Proven shaft seal design to protect pumping mechanism and gearbox from cross-contamination

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

PRODUCTS

Stokes 6” series

Available in sizes from 1,040 to 6,630 m^3h^{-1} displacement, the Stokes 6” Series features a rugged design for robust and reliable operation. A bypass version is available in the 615 series (61B). The bypass valve limits the maximum differential pressure enabling the booster to start from atmospheric pressure.

Peace of mind
Industry proven with large installed base

Configured for your needs
Direct drive 1,800-3,600 rpm, vertical or horizontal flow orientation with bypass version available

Reliability in all metallurgical applications
Large diameter shafts, ring feeder keyless gear locking system and dynamically balanced impellers

STP Turbomolecular pumps

In glass, display and roll coating processes, turbomolecular pumps are becoming increasingly standardised for high vacuum requirements. STP features high gas throughput for obtaining optimum quality end products and reduced power consumption.

Our STP magnetically levitated turbomolecular and compound molecular pumps are available in a range up to 4,500 ls^{-1} and offer a multi axis magnetic bearing system. The rotor is entirely suspended by magnetic bearings so all contact between the rotor and the rest of the pump is eliminated.

Increased productivity
Quicker pump down to base pressure

Compact size – saves space
And makes for easy installation

Low cost of ownership
Low power and utilites consumption

Maintenance free
Economical

PRODUCTS

Diffusion pumps

Our industrial, high throughput diffusion pumps and vapour booster pumps, with the very comprehensive range of sizes up to 15,000 ls^{-1}, are ideal for applications in the vacuum metallurgical processes.

Increased productivity
High throughput pumping

Stable performance
High backing line pressure

Better end-product quality
Low oil back streaming

Clean process
Stainless steel body

Measurement and control

Edwards offers a wide choice of vacuum measurement and control products – from dial gauges to microprocessor-based gauge controllers. Within each product range, there is a family of models designed to meet the widest user specification.

Valves for vacuum systems

Edwards applies the same energy and commitment to its valves. The result is an extensive range of valves, with a choice of actuation methods, materials and size. Materials of construction have been uncompromisingly selected for performance in high vacuum.

Fittings and flanges

Edwards vacuum fittings are designed to be leak-tight in vacuum applications. However, they are not intended to provide full structural support. When designing vacuum systems, it is essential that consideration be given to the static and dynamic loads imposed on each connection. If necessary, additional mechanical support should be provided.

PUMP COMBINATIONS

Edwards' comprehensive range of pumps forms the basis for the manufacture of factory tested combination systems, with displacements from 310 m^3h^{-1} to 30,000 m^3h^{-1}/180 ft^3min^{-1} to 17,700 ft^3min^{-1}. With a wide and robust range of accessories to choose from, the pumping system can be optimised for your application. Our systemisation service offers fully factory tested combinations with appropriate accessories.

Dry Pumps & Booster combinations

	GMB 1750	GMB2600	GMB4200	pXH4500	pXH6000	2xpXH4500	2xpXH6000
GXS160	●						
GXS250		●					
2xGSX250				●	●		
GXS450		●	●	●	●		
2xGXS450				●	●		
GXS750		●	●	●	●	●	
2 x GXS750				●	●		
GXS250/2600				●			
2xGXS250/2600					●		
GXS450/2600				●	●	●	
2xGXS450/2600					●		
GXS450/4200					●	●	●
GXS750/2600				●	●	●	●
2xGXS750/2600					●		
GXS750/4200				●	●	●	●

Oil Sealed Pumps & Booster combinations

	EH250	EH500	EH1200	EH2600	EH4200	607	615	61B	622
ES100	●	●							
ES200		●	●						
ES300		●	●	●	●				
ES630			●	●	●				
212J	●	●	●			●	●	●	
412J		●	●	●	●	●	●	●	●

SERVICE AND SUPPORT

We recognise that the success of your Coating business depends on high operational uptime, low cost of ownership and rapid response to service needs. 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 ongoing 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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EDWARDS

GLOBAL CONTACTS

EMEA	
UK	+44 1444 253 000 (local rate) 08459 212223
Belgium	+32 2 300 0730
France	+33 1 4121 1256
Germany	0800 000 1456
Italy	+ 39 02 48 4471
Israel	+ 972 8 681 0633

ASIA PACIFIC	
China	+86 400 111 9618
India	+91 20 4075 2222
Japan	+81 47 458 8836
Korea	+82 31 716 7070
Singapore	+65 6546 8408
Taiwan	+886 3758 1000

AMERICAS	
USA	+1 800 848 9800
Brazil	+55 11 3952 5000

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Edwards Ltd, registered in England and Wales No. 6124750, registered office: Innovation Drive, Burgess Hill, West Sussex, RH15 9TW, UK..

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