

Винтовые насосы с масляным впрыском EOSi

Технические характеристики

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EOS1300-1900i ROTARY SCREW VACUUM PUMPS

Edwards EOS1300-1900i range is a new generation range of quiet, oil-sealed rotary screw vacuum pumps

With Variable Speed Drive (VSD) technology and intelligent control, the EOS1300-1900i range delivers impressive on-demand performance capability and optimises energy consumption. The highly efficient oil separator design extends service intervals and reduces maintenance costs. Temperature management control enables unrivalled water handling capability to provide you with the versatility and flexibility you need for your application.



State-of-the-art screw technology, Variable Speed Drive (VSD) and innovative motor design

Increased efficiency

Class-leading pumping speed and fast chamber pumpdown performance capability

Improved productivity

Closed loop pressure control and active power management

Intelligent control

Automatic performance matched to vacuum demand

Low cost of ownership

Noise levels approximately half that of comparable technologies

Quiet operation

Ultra-high oil retention at all operating pressures

Reduced environmental impact

Features and benefits

Pump module

- Highly efficient oil-sealed rotary screw
- Outstanding performance
- Robust design
- Element life is significantly longer than screw compressors and vane pumps

Energy recovery options

- Available for larger motor sizes
- Helping you to fulfil your energy management and environmental commitments according to ISO 50001/14001

Easy to use, simple to maintain

- The top cover of the oil separator has a unique hinge mechanism
- It slips the cover to the side allowing the oil separator filter to be changed easily and quickly
- A cleverly designed exhaust pipe enables the condensates to be collected in the discharge pipework at the outlet

Guaranteed oil retention

- Optimum design for maximum oil retention
- Longer life because of managed performance means the vacuum pump never overloads the separators
- Innovative design retains oil at $<3 \text{ mg/m}^3$ even when under the greatest load
- In conventional fixed speed vacuum pumps overloaded oil separators lead to oil carryover

Inlet control valve

Provides modulating vacuum control in conjunction with the VSD drive to minimise energy consumption

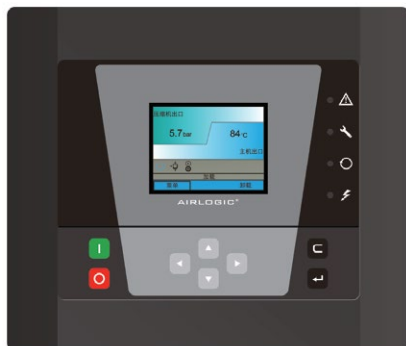
Enclosure with hot-cool zones

The EOS1300-1900i range features an enclosure with a hot-cool design. It isolates all heat producing and temperature critical components (oil separator and element) from all other components. As cool running means higher reliability this feature extends the lifetime of electronic components and leads to a longer Mean Time Between Maintenance (MTBM)

PRODUCT DATA SHEET

Airlogic® monitoring system

Airlogic® is a state-of-the-art monitoring system for your vacuum pumps. It is simple and comprehensive and leads to energy savings. It can also integrate with your plant management system thanks to a remote monitoring option.



Easy to use

- 3.5-inch high-definition color display with clear pictograms, 32 language settings
- Additional LED indicator for service
- Graphical display of key parameters (day, week, month)

Plant management system

Airlogic® installed on different vacuum pumps can be monitored in cascade. Remote monitoring can be added as an option (Modbus/Profibus/Ethernet protocols)

Comprehensive

You get all the information for the everyday management of your vacuum pump as well as the alarms, safety shutdowns and maintenance:

- Monitoring: Vacuum pump operating status, recording of running/stopped hours, programmable timers, temperature/pressure read-outs, set point control and other settings
- Safety: Warning indications, fault and shutdown indications
- Service: Service operations, remote control (optional)

Intelligent monitoring system

Airlogic® is a flexible solution for data monitoring: easy to install and customise and user-friendly

TECHNICAL SPECIFICATIONS

	EOS1300i	EOS1600i	EOS1900i
Peak pumping speed (m ³ /h/cfm)	1250 / 740	1590 / 940	1810 / 1070
Ultimate vacuum (mbar/Torr)	0.35 / 0.26	0.35 / 0.26	0.35 / 0.26
Inlet connection	DN 150	DN 150	DN 150
Outlet connection	DN 100	DN 100	DN 100
Shaft power (kW)	22	30	37
Permissible ambient temperature (°C)	0 - 46	0 - 46	0 - 46
Noise level range (dB(A))	65-75	65-79	65-80
Oil quantity (l)	40	40	40
Dimension L x W x H (mm)	1420 x 1590 x 1470	1420 x 1590 x 1470	1420 x 1590 x 1470
Weight (kg)	1058	1058	1073
Electrical specification	380 / 460V 50 / 60Hz CSA / UL		

EOSi OIL-SEALED SCREW VACUUM PUMPS WITH EJGO CONTROLLER

EOS350-5400i





EDWARDS THE PARTNER OF CHOICE

Edwards is a world leader in the design, technology and manufacture of vacuum pumps for industrial applications with over 100 years' history.

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

INNOVATION AND INTELLIGENCE

EOS350-5400i range of oil-sealed rotary screw vacuum pumps are efficient, quiet and are equipped with Edwards' new generation intelligent controller - EJGO. As ever at the forefront of technology with Variable Speed Drive (VSD), the EOSi range delivers impressive on-demand performance capacity and optimises energy consumption. EJGO brings cutting-edge control and connectivity to optimise and monitor EOSi operations.



Increased efficiency

Plug and play screw technology for easy installation Variable Speed Drive (VSD) and innovative motor design



Reduced environmental impact

Ultra-high oil retention at all operating pressures



Improved productivity

Class-leading pumping speed and fast chamber pumpdown performance capability



Small footprint

Reduces space used in utility room or production floor



Intelligent control

Closed loop pressure control and active power management



Quiet operation

Low noise levels for a safer working environment



Low cost of ownership

Automatic performance matched to vacuum demand



Improved maintenance

The highly efficient oil separator design extends service intervals and reduces maintenance cost



Versatility and flexibility

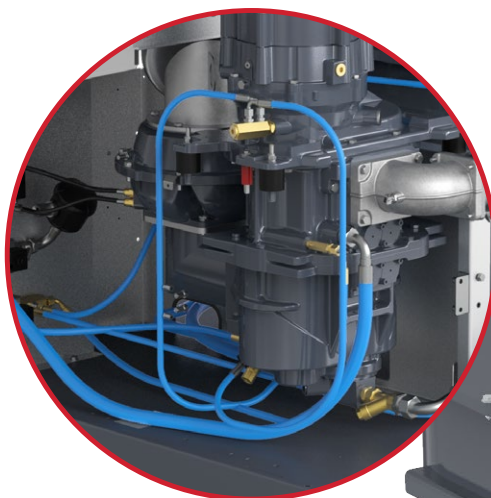
Temperature management control enables superior water handling capability. Various configurations are available to meet the needs of your applications



NEW GENERATION EOS1400-2000i - WITH VERTICAL DRIVE CHAIN, SMALLER FOOTPRINT AND EJGO INTELLIGENT CONTROL

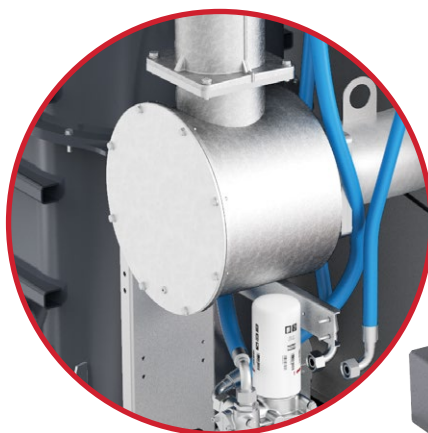
PUMP MODULE

- ▶ Highly efficient oil-sealed rotary screw
- ▶ Robust design
- ▶ Longer element life due to robust design



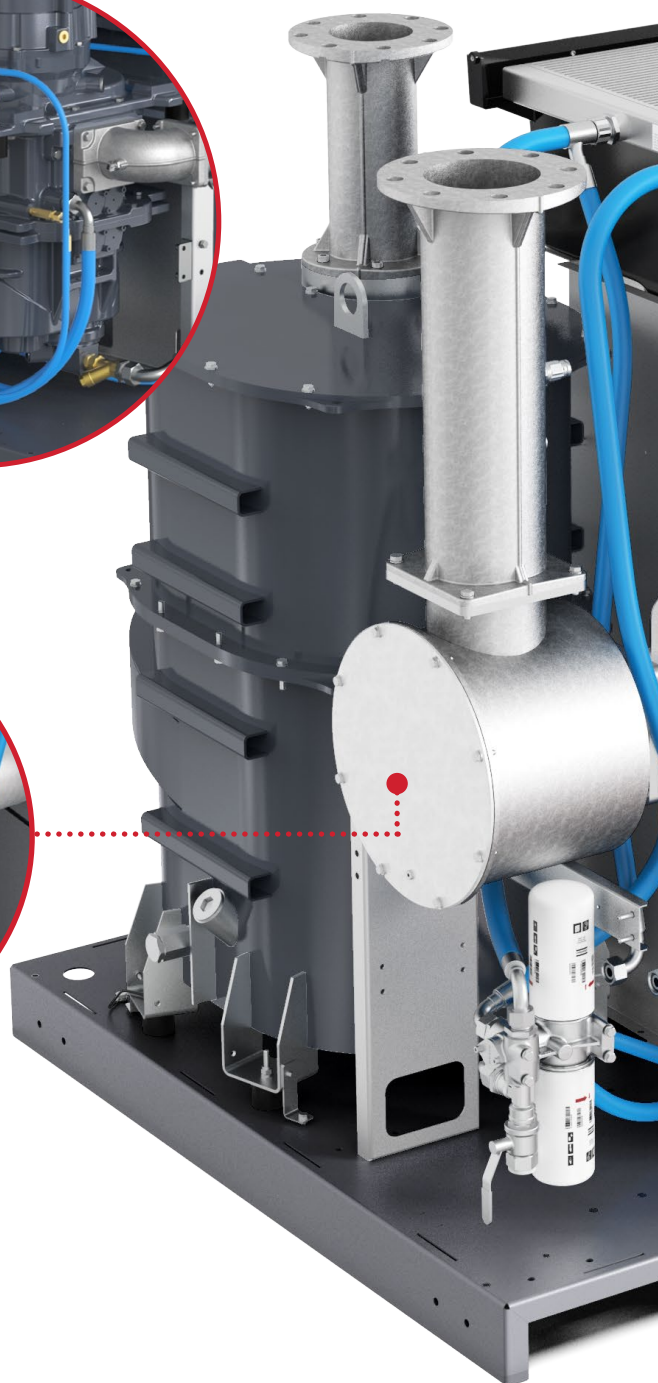
INLET FILTER AND CONTROL VALVE

- ▶ Inlet filter inside the machine provides protection with 99%+ removal efficiency standard to 5 microns
- ▶ Control valve isolation with the customer system and provide vacuum control



GUARANTEED OIL RETENTION

- ▶ Optimum design for maximum oil retention
- ▶ Longer life because of managed performance means the vacuum pump never overloads the separators
- ▶ Innovative design retains oil at 1.5mg/m³ on EOS1400-2000i, even when under the greatest load
- ▶ Minimal oil carryover from overloaded oil separators as compared to conventional fixed speed vacuum pumps





EASY TO USE, SIMPLE TO MAINTAIN

- ▶ The top cover of the oil separator has a unique hinge mechanism
- ▶ It slips the cover to the side, allowing the oil separator filter to be changed easily and quickly
- ▶ A cleverly designed exhaust pipe enables the condensates to be collected in the discharge pipework at the outlet

EJGO - INTELLIGENT CONTROL SYSTEM

EJGO is a control and monitoring system for your vacuum pumps. It is easy-to-use, and offers comprehensive control for your vacuum installation, leading to energy savings.

It can also integrate with your plant management system and connect to network thanks to the flexible connectivity that support fieldbus communication and network protocols



EOSi: OPTIMISED TO MATCH YOUR APPLICATION

The EOSi range features a variety of options - air-cooled and water-cooled, Standard, Q, W or QW to enable you select the optimal choice for your application.



Standard

This pump is designed to deliver the exact performance to match your demand, at the minimum possible lifecycle cost. With the intelligent control you can potentially save 50%* or more energy compared with conventional solutions.



W

Whilst the standard EOSi pumps are able to reliably pump water vapour loads similar to equivalent rotary vane pumps, the W version is designed to pump significantly higher water vapour loads and can offer superior comparative performance where required on applications such as pipeline drying and freeze-drying.



Q

The Q version is designed for cycling applications, where chamber pumpdown time is important. The responsive inverter control and special software enables even faster chamber pumpdown with optimal energy efficiency.



QW

The QW version combines the special design of the Q version with the water vapour handling capabilities of the W version.

KEY OPTIONS AND RETROFIT KITS

- ▶ Best fit to every need
- ▶ Make retrofits possible to meet the application changes

- **Quick pumpdown version**

Faster pumpdown time

- **Relative pressure control**

Setup for inlet pressure setpoint control relatively compared to actual atmospheric pressure

- **Wet version retrofit**

High water handling capacity

- **High ambient version**

Up to 50 °C ambient temperature
(Available for EOS1400-2000i)

- **Energy recovery retrofit**

Available for EOS1400-2000i and EOS3800-5400i

Recover up to 80% of this heat

- **Overboost function**

Allows to increase the flow below 200 mbar(a) during a short period

Boost the performance for cycling application

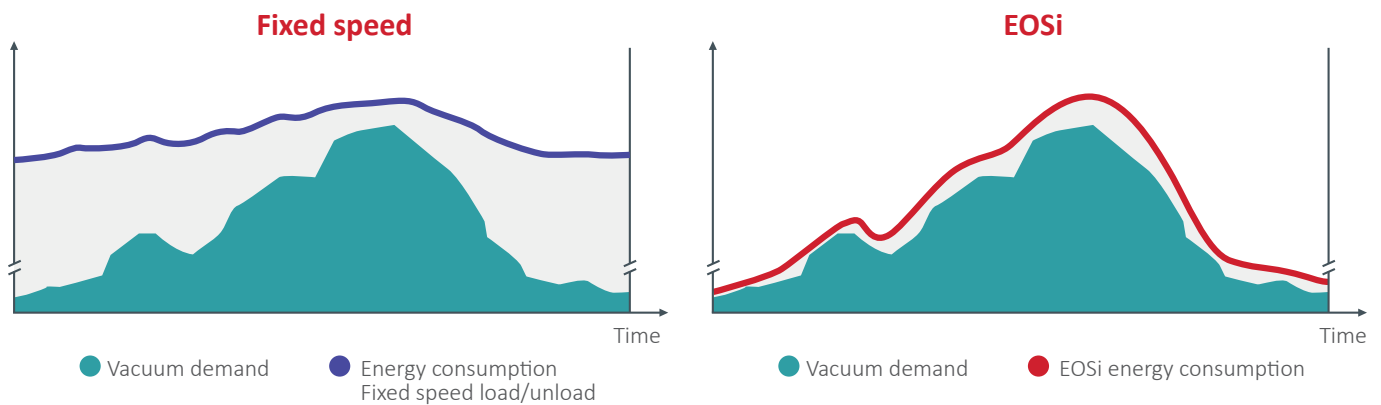
- **Booster control**

Controls the added booster

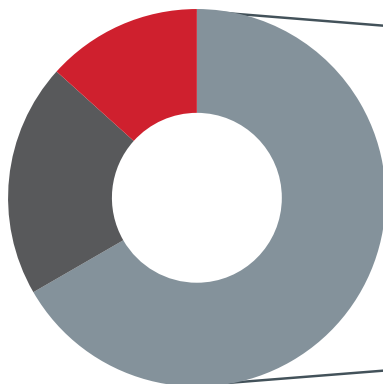
EOSi: DESIGNED TO DELIVER ENERGY SAVINGS

With intelligent controller EJGO and the high efficiency inverter, the EOSi can maintain a set point pressure during process and adjust its speed to meet the demand at that setpoint. With an extensive flow range (10%-100%), potential energy saving of 50% or more can be achieved using EOSi technology compared with conventional technology.

We've designed the pump to limit the motor speed when the process starts. This helps reduce the power consumption required to kick-start the process. EOSi has a smaller motor size compared to a fixed speed machine. Eliminating peak current also benefits the electrical installation (cable and fuse size). In most product environments, a vacuum system is not required to perform to its fullest for the entire time – whether that is during a process cycle, during a pumpdown cycle or during machine idling time. The intelligent EOSi delivers peak performance only when required, thereby ensuring significant energy savings and lower maintenance cost.



Fixed Speed Vacuum Pump



EOSi



50%*
SAVINGS

● Energy ● Maintenance ● Investment

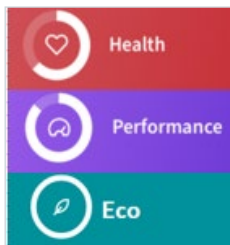
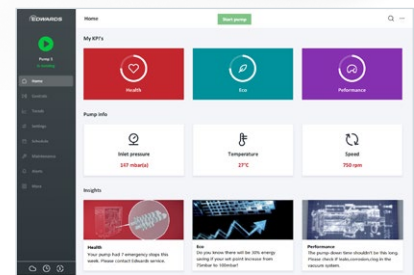
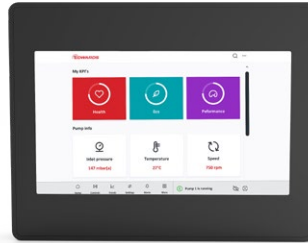
**In most applications compared to traditional fixed speed vacuum technologies based on measurement with our Vbox energy audit tool.*

EJGO INTELLIGENT CONTROLLER

EJGO is Edwards' new generation controller which takes vacuum control to the next level.

USER-FRIENDLY INTERFACE

- ▶ Front panel
 - Clear and ease of use
 - Basic and reliable
- ▶ 7" HMI
 - Graphic design and configurable homepage
 - Completed onboard control
- ▶ Web browser (PC, tablet, mobile)
 - Monitor and take control from any connected device
 - Remote control possible when the pump is connected to network or cloud

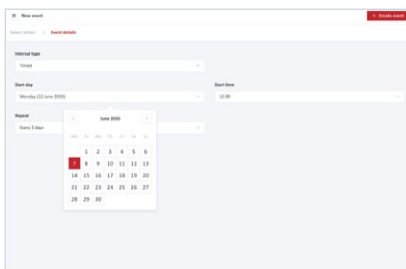


KPI INSIGHT AND MANAGEMENT

- ▶ Assess your pump health, vacuum performance and operating economy
- ▶ KPI score and insight cards give deep understanding of the systems beyond on/off and pressure setpoint

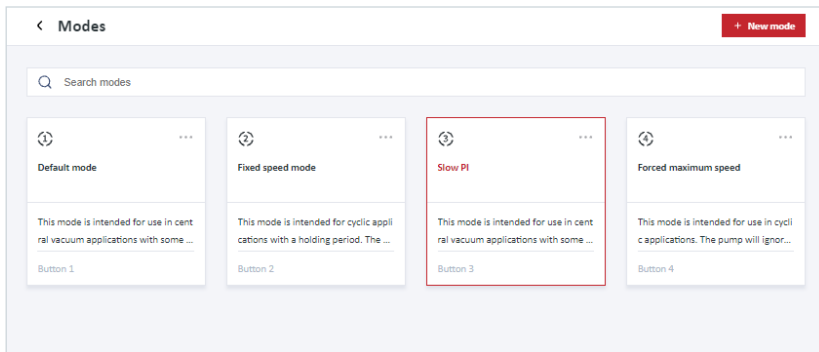
TREND MAP FOR DATA MONITORING

- ▶ Monitor pump operation continuously and get all the information for everyday management
- ▶ Graphic curve of pump parameters including Inlet Pressure, Motor Speed, Power Consumption, Outlet Temperature and more. (Day, week, month)
- ▶ In-depth examination of data and comparison of multiple metrics/cycles



INTELLIGENT SCHEDULING

- ▶ Plan a series of events into calendar, not limited to pump start/stop, purge cycle and auto clean
- ▶ Easily set up actions that repeat continually to fit the process



OPERATING MODE MANAGEMENT

- ▶ Default and other setting modes to fit different applications. E.g., forced maximum speed mode, fixed speed mode to get pump down optimisation
- ▶ Customise operation modes according to process requirement



NOTIFICATION AND AUTOMATIC UPDATE

- ▶ Safety: warning, fault, and shutdown indications and screen view
- ▶ Cloud access allow email notification in case of pump failure
- ▶ Automatic software update



SECURITY

- ▶ TPM2 chip and ECC certificate used on the controller
- ▶ Operation system and application software is signed and encrypted
- ▶ Partitioned memory to protect sensitive data
- ▶ Different levels set-up and user authentication required for identity management



Ethernet cable

CONNECTIVITY AND FIELD BUS COMMUNICATION

- ▶ Various options for network connection. E.g., stand alone, internal enterprise network only or fully connected to cloud
- ▶ Support all Ethernet-based protocols and connect directly even without gateway



WiFi bolt fitted



- ▶ Gateway as options to enable communication with the other protocols



GENIUS box



EOS350-5400i RANGE OF OIL-SEALED ROTARY SCREW VACUUM PUMPS



EOS350i
EOS585i
EOS730i
EOS900i



EOS1400i
EOS1700i
EOS2000i



EOS3800i
EOS4600i
EOS5400i

EOS350-900i

Oil-sealed screw pumps range at 350m³/hr to 900m³/hr capacity with Variable Speed Drive (VSD) technology and EJGO intelligent control. The EJGO controller offers more derating functions to increase the pump uptime including current speed derating, outlet temperature derating, outlet pressure derating, and weak grid derating.

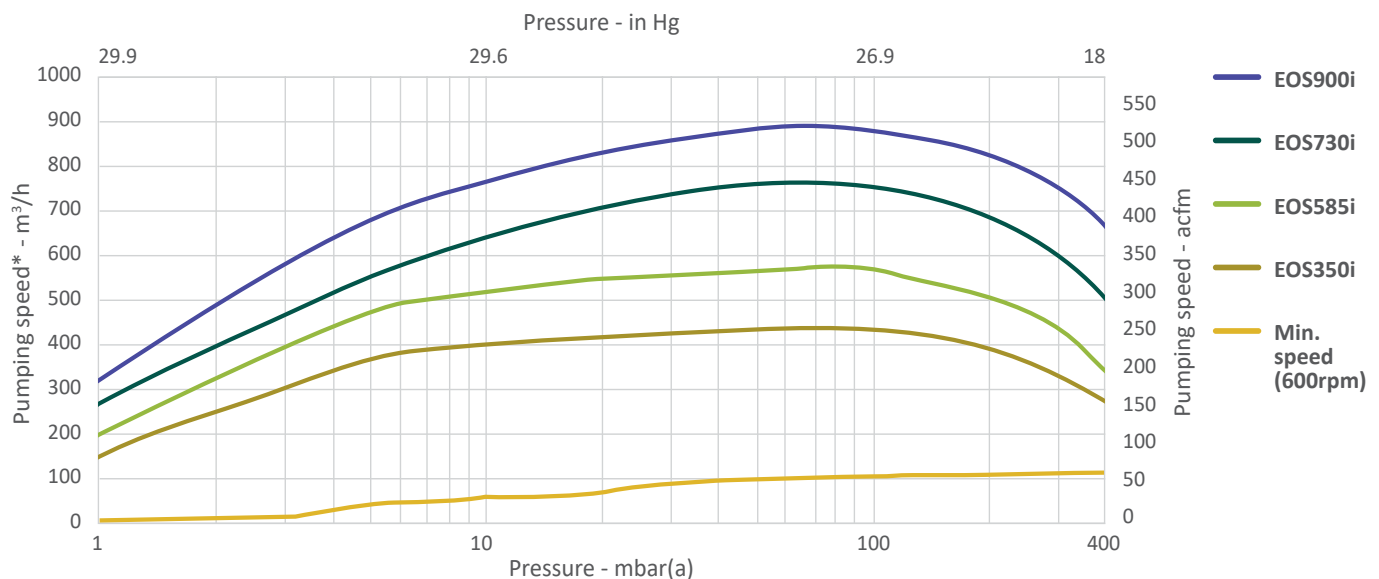


TECHNICAL SPECIFICATION

	Units	EOS350i	EOS585i	EOS730i	EOS900i
Nominal displacement	m ³ /h / cfm	400 / 240	560 / 330	730 / 430	900 / 530
Ultimate vacuum	mbar / torr	0.35 / 0.26	0.35 / 0.26	0.35 / 0.26	0.35 / 0.26
Frequency range	Hz	20-116	20-150	29-200	20-233
Inlet connection	-	DN 80	DN 80	DN 80	DN 80
Outlet connection	-	DN 60	DN 60	DN 60	DN 60
Shaft power	kW	5.5	7.5	11	15
Permissible ambient temperature	°C	0-46	0-46	0-46	0-46
Noise level range	dB(A)	51-65	51-68	51-73	51-76
Oil quantity	L	16	16	16	16
Dimensions (L x W x H)	mm	1266 x 934 x 1083	1266 x 934 x 1083	1266 x 934 x 1083	1266 x 934 x 1083
Weight	kg	495	500	510	520
Electrical specification	380-460V 50Hz/60Hz CSA/UL				

Air-cooled and water-cooled versions are available for models.

PERFORMANCE CURVE



*Pumping speed at element inlet at steady state- according ISO 21360-1:2012 (E).

EOS1400-2000i

The new generation oil-sealed screw vacuum pumps. An innovation which brings together an efficient new element and IE5 Permanent magnet motor, provides a significant enhanced performance. And the new EJGO controller takes the pump to a new level of intelligence.



NEW GENERATION

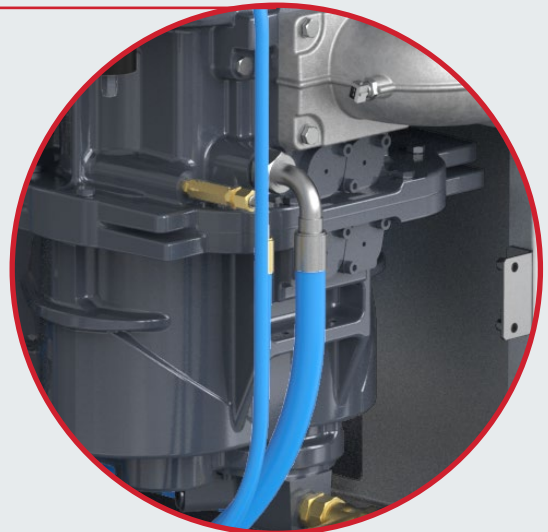


PERMANENT MAGNET ASSISTED SYNCHRONOUS RELUCTANCE MOTOR

- ▶ The ultra-premium efficiency – IE5
- ▶ Efficient at all the speeds to minimise energy loss
- ▶ Optimal cooling by oil of the pump without the need for an extra fan, resulting in less power consumption and less noise
- ▶ Oil lubricated bearing, no re-greasing needed, leading to reduced maintenance
- ▶ IP66 design- total protection from dust

OPTIMAL PERFORMANCE SCREW ELEMENT

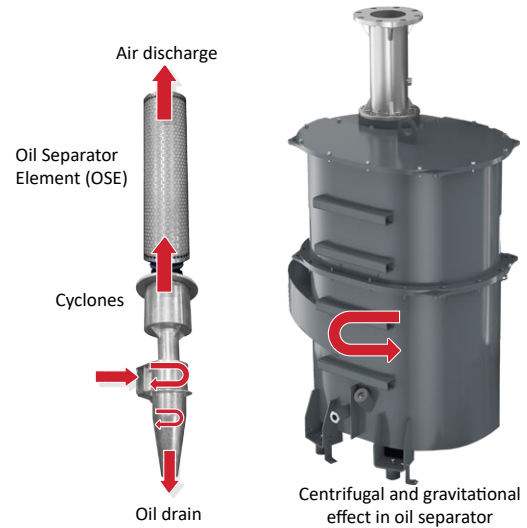
- ▶ Innovative screw profile improves pumping performance
- ▶ 4 blow-off valves to allow increased pumping speed at high pressures with lowest power consumption
- ▶ Extend overhaul interval to 1000 hours for normal applications



EXCELLENT OIL RETENTION

► Excellent oil retention

- 3 stage oil separation- Centrifugal and gravitational effect, cyclones filtration and OSE (Oil Separator Element)
- Booster control
- Optimal exhausted air quality and environment friendly
- Low back pressure for lower power consumption
- OSE can be changed without disassembling the exhaust piping

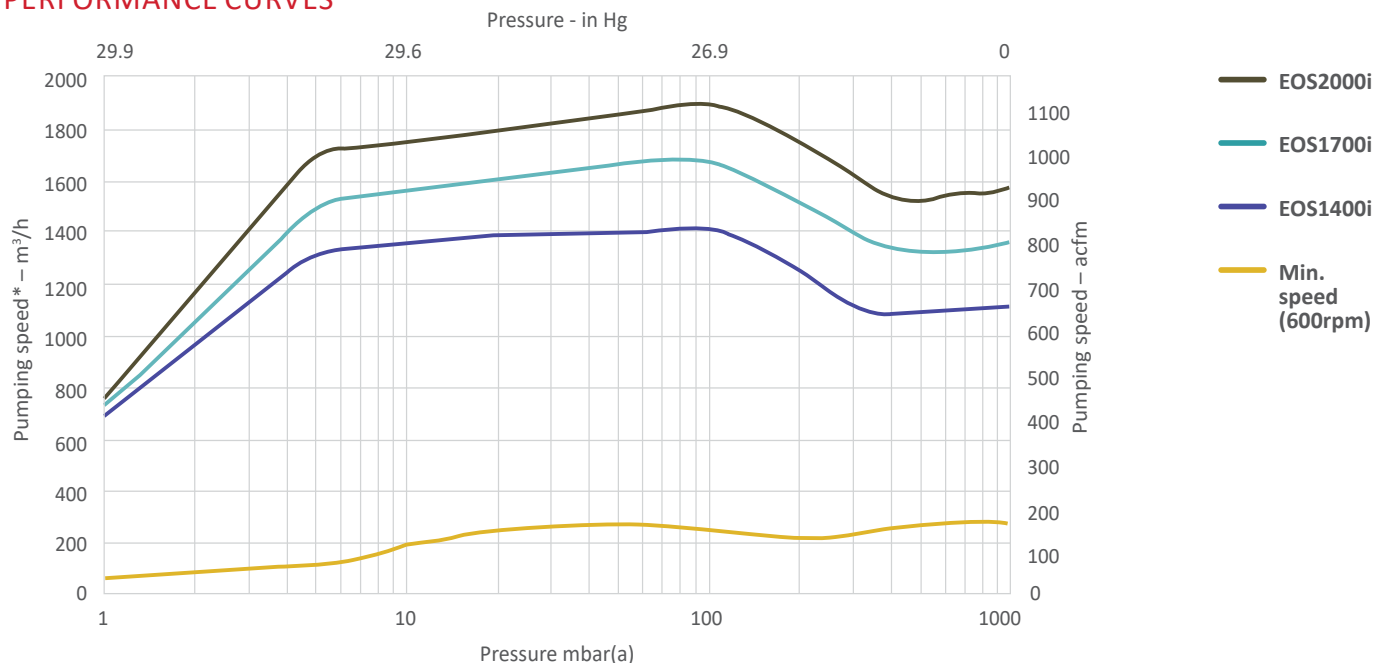


TECHNICAL SPECIFICATION

	Units	EOS1400i	EOS1700i	EOS2000i
Nominal displacement	m³/h / cfm	1400 / 824	1620 / 953	1818 / 1070
Ultimate vacuum	mbar / torr	0.35 / 0.26	0.35 / 0.26	0.35 / 0.26
Frequency range	Hz	20-166	20-200	20-233
Inlet connection	-	DN150	DN150	DN150
Outlet connection	-	DN125	DN125	DN125
Shaft power	kW	22	30	37
Permissible ambient temperature	°C	0-46	0-46	0-46
Noise level range	dB(A)	55-74	58-77	58-78
Oil quantity	L	45	45	45
Dimensions (L x W x H)	mm	1460 x 1361 x 1665	1460 x 1361 x 1665	1460 x 1361 x 1665
Weight	kg	1180	1190	1200
Electrical specification	380-460V 50Hz/60Hz CSA/UL			

Air-cooled available for all the machines.

PERFORMANCE CURVES



*Pumping speed at element inlet at steady state- according ISO 21360-1:2012 (E).

EOS3800-5400i

Optimised temperature control with Quarter Mixing Valve combined with a VSD fan for the air-cooled versions which allow to control electronically the temperature of the pump with high accuracy and additional energy savings.



QUARTER MIXING VALVE (QMV)

- ▶ Electronically controlled pump temperature
- ▶ Temperature sensor in the pump inlet for the QMV algorithm
- ▶ Optimised temperature control with high accuracy
- ▶ Contributes to efficient water handling capability

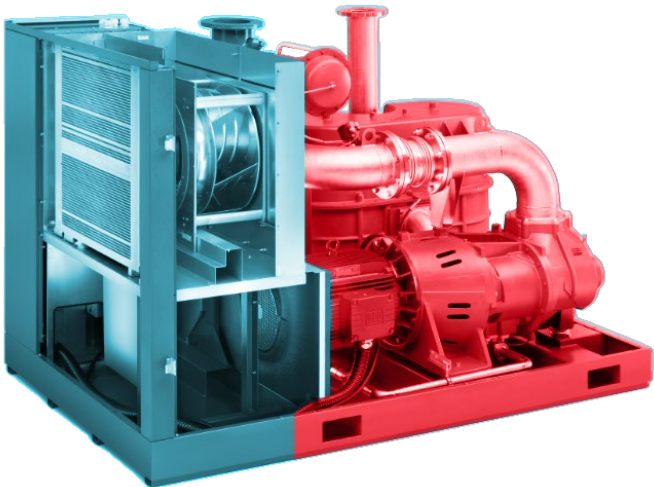
CENTRIFUGAL VSD FAN

- ▶ Variable Speed Drive (VSD) controlled
- ▶ With oil temperature algorithm to allow on-demand cooling
- ▶ Additional energy savings
- ▶ More durable and resistant to harsh environments



ENCLOSURE WITH HOT-COOL ZONES

The EOS3800-5400i range features an enclosure with a hot-cool design. It isolates all heat producing and temperature critical components (oil separator and element) from all other components. As cool running means higher reliability, this feature extends the lifetime of electronic components and leads to a longer Mean Time Between Maintenance (MTBM).

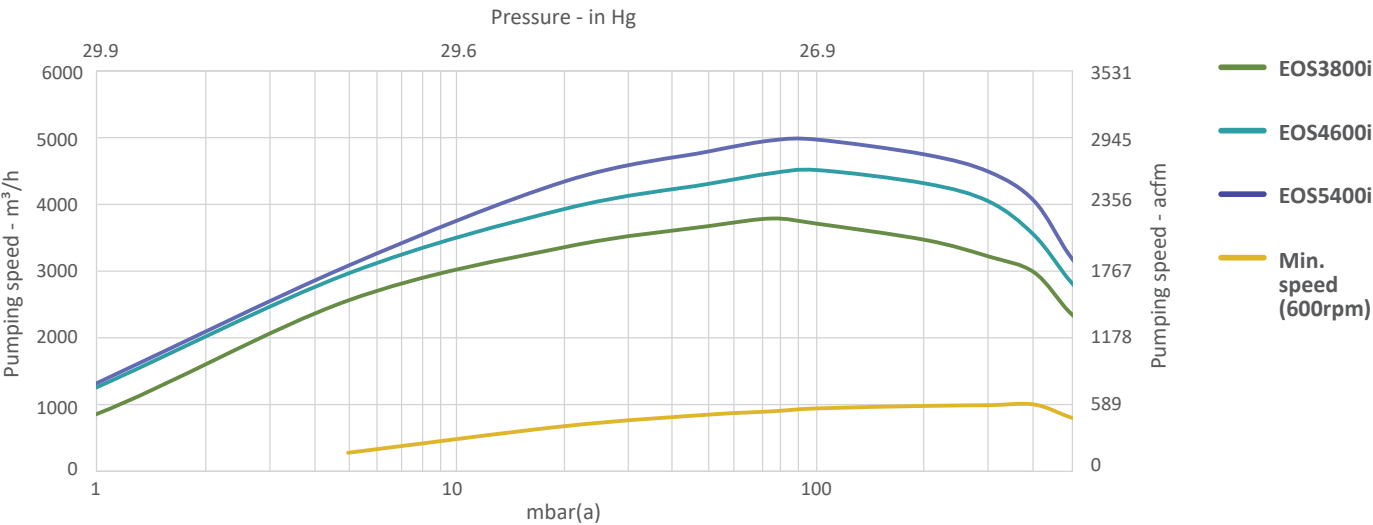


TECHNICAL SPECIFICATION

	Units	EOS3800i	EOS4600i	EOS5400i
Nominal displacement	m³/h / cfm	3828 / 2253	4478 / 2636	5004 / 2945
Ultimate vacuum	mbar / torr	0.35 / 0.26	0.35 / 0.26	0.35 / 0.26
Frequency range	Hz	25-97	25-117	25-133
Inlet connection	-	DN200(PN10)	DN200 (PN10)	DN200 (PN10)
Outlet connection	-	DN150 (PN10)	DN150 (PN10)	DN150 (PN10)
Shaft power	kW	55	75	90
Ambient temperature	°C	0-46	0-46	0-46
Noise level range	dB(A)	83 (+/-3)	84 (+/-3)	85 (+/-3)
Oil quantity	L	85	85	85
Dimensions (L x W x H)	mm	2850 x 1939 x 1893	2850 x 1939 x 1893	2850 x 1939 x 1893
Weight	kg	3945	3980	4000
Electrical specification	380-460V,3ph, 50Hz/60Hz, CSA/UL			

Air-cooled and water-cooled versions are available for all the machines.

PERFORMANCE CURVE



CENTRAL VIEW OF EVERYTHING

Edwards' revolutionary central controller allows you to monitor and control multiple EOSi vacuum pumps simultaneously. Two EJGO MC models are available in standard and premium versions tailored to applications as needed.



Without screen - Web access supported



With 10" touch HMI - Onboard control

SOFTWARE OPTIONS, TAILORED TO YOUR APPLICATION

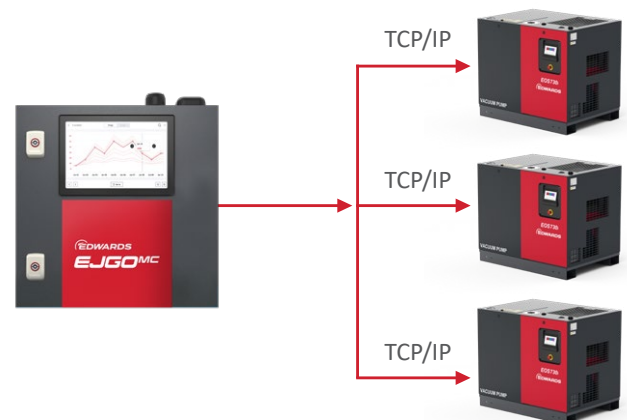
Standard version

- ▶ Up to 8 Variable Speed Drive (VSD) or Fixed Speed (FS) pumps
- ▶ ~10% energy saving vs traditional sequencer

Premium version

- ▶ Up to 20 Variable Speed Drive (VSD) or Fixed Speed (FS) pumps
- ▶ Innovative algorithm to maximise energy saving
- ▶ ~20% energy saving vs traditional sequencer

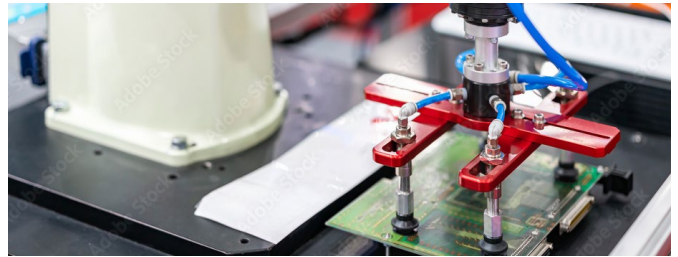
CENTRAL VACUUM SYSTEM



APPLICATIONS

► Holding and lifting

- Pick and place (e.g., electronics, flat-panel display, automotive glass)
- Paper conveying (e.g., envelope manufacture, printing)
- General packaging
- Load lock (e.g., CNC/machining, woodworking)



► Forming and shaping

- Plastic (e.g., bathtubs, shower trays, white goods internals, extrusion)
- Thermoplastic packaging
- Glass bottle
- Lamination



► Food processing and preserving

- Meat and poultry packaging (e.g., flat, vacuum packs, controlled/modified atmosphere packing)
- Freeze drying
- Canning



► General industrial application

- Furnaces – Heat Treatment and Metallurgy
- Altitude simulation
- Coating
- Pneumatic conveying
- General evacuation duties



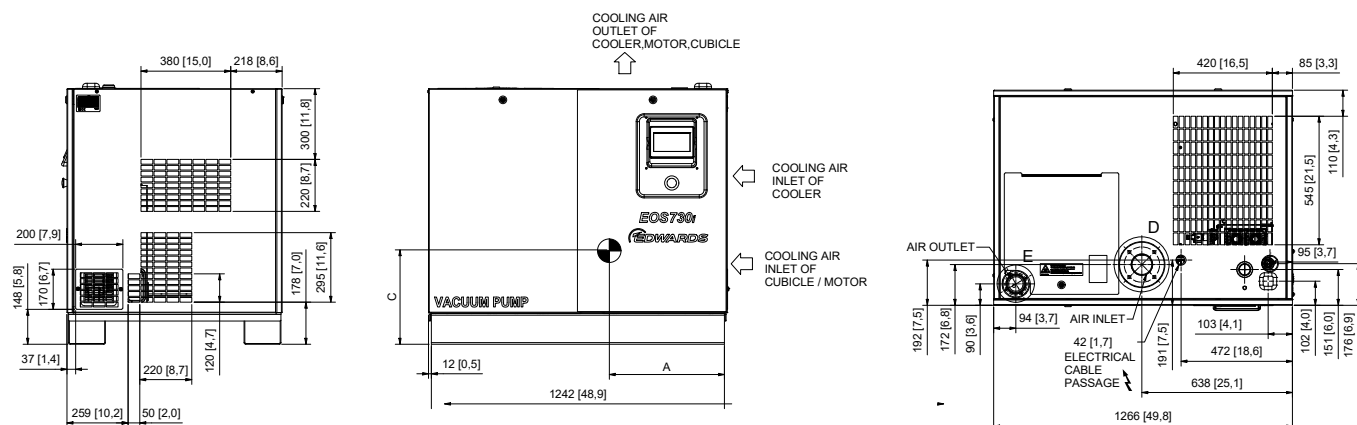
► Wet application

- Food cooling
- Ceramic tile and brick degassing
- Pipeline drying

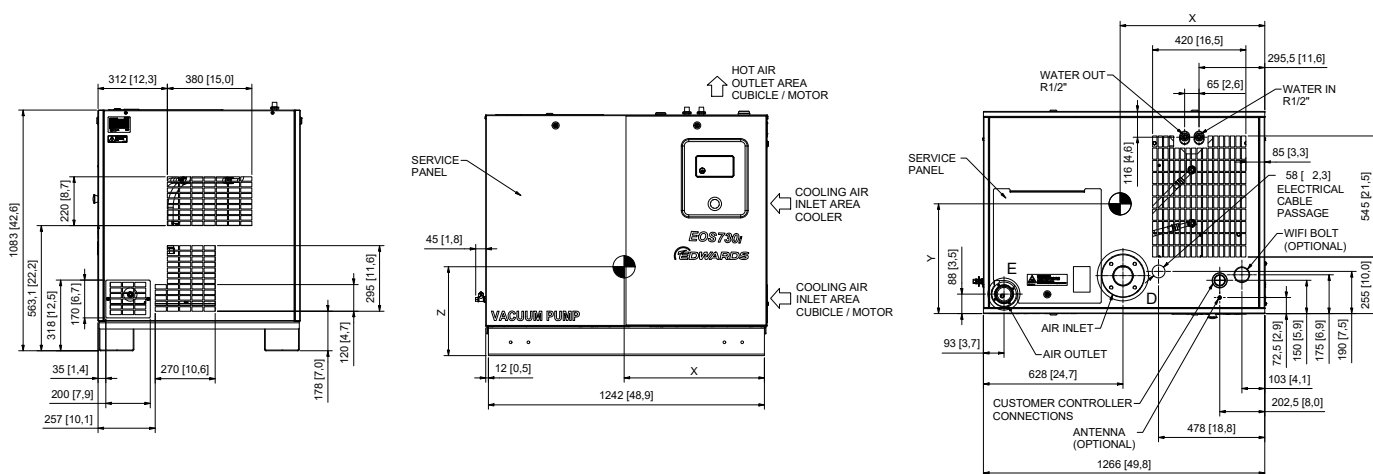


DIMENSIONS

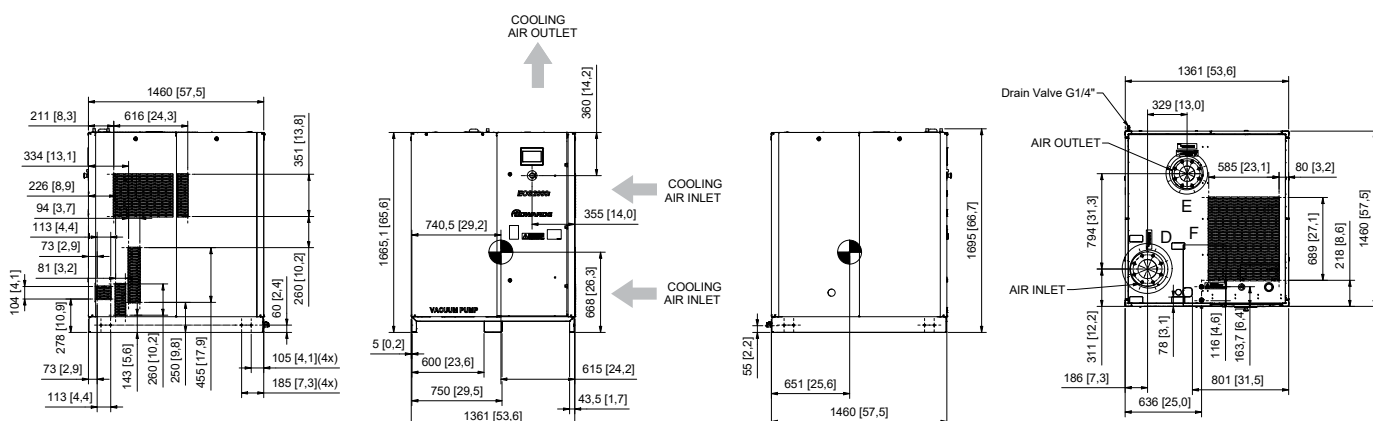
EOS350-900i (7" HMI)



EOS350-900i (Front Panel)



EOS1400-2000i (7" HMI)



Technical drawings of the Smartbox unit showing dimensions in mm and inches.

Front View:

- Top width: 820 mm [32 in] and 380 mm [15 in]
- Left height: 545 mm [21 in] and 273 mm [11 in]
- Right height: 875 mm [34 in], 120 mm [5 in], and 923 mm [36 in]
- Bottom width: 470 mm [19 in], 307 mm [12 in], and 736 mm [29 in]
- Internal width: 248 mm [10 in]

Side View:

- Top width: 1939 mm [76 in]
- Right height: 100 mm [4 in], 178 mm [7 in], and 1893 mm [75 in]
- Label: E

Top View:

- Left height: 1000 mm [39 in]
- Top width: 370 mm [15 in], 439 mm [17 in], and 320 mm [13 in]
- Right height: 149 mm [6 in] and 178 mm [7 in]
- Bottom width: 755 mm [30 in] and 1260 mm [50 in]
- Left height: 247 mm [10 in] and 223 mm [9 in]
- Bottom width: 759 mm [30 in], 976 mm [38 in], 445 mm [18 in], and 760 mm [30 in]
- Labels: X, Y, A, B, C, D, K

Smartbox Position:

- Top width: 60 mm [2 in] and 499 mm [20 in]
- Right height: 98 mm [4 in]
- Bottom width: 60 mm [2 in]
- Labels: K (1:10), G, H, J



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