

EDWARDS PUMPS FOR SILICON CRYSTAL GROWING

Giving you a clear edge

PRODUCT DATASHEET

Edwards has over 90 years of experience in harsh process vacuum applications, including dust and process contaminants handling, with more than 150,000 dry pumps installed worldwide.

The latest dry pump from Edwards, the GXS, addresses the challenges and vacuum considerations associated with the creation of crystalline silicon. Delivering ease of use, low noise and incredibly low vibration the pump is designed to work with both the Czochralski (CZ) crystal puller and the Bridgman furnace (directional solidification of silicon), and can accept an argon purge for easy integration into a customer's argon recycling system. Incorporating innovative, patented design features, environmentally conscious customers will find that the low utility consumption and small footprint of the GXS pump makes it an ideal pump for the silicon crystal growing furnace.



Innovative technology

1

Double ended shaft support

- Non-cantilever design provides secure rotor support for extremely low vibration and superior starting reliability, especially on harsh processes
- Superior liquid and powder handling. Tests demonstrate a five litre water slug and one kilogram fine powder slug handling capability

3

Bearing and lubrication

- Oil lubricated gears eliminate grease and the need for periodic maintenance
- Uses advanced quality bearings and special purpose oil with low vapour pressure for application compatibility and greatly improved life

2

Advanced pumping mechanism design

- Enhanced screw-type rotor design results in smooth, gradual compression along the length of the rotor for improved thermal control and optimised pumping at all inlet pressures
- Integrated heat management and unique rotor and stator design features provide argon gas pumping capability at full concentration
- Advanced machining techniques and design features eliminate the need for rotor coatings while maintaining superb ultimate vacuum performance
- Improved manufacturing technology and design contributes to low vibration and extremely quiet running without a silencer

4

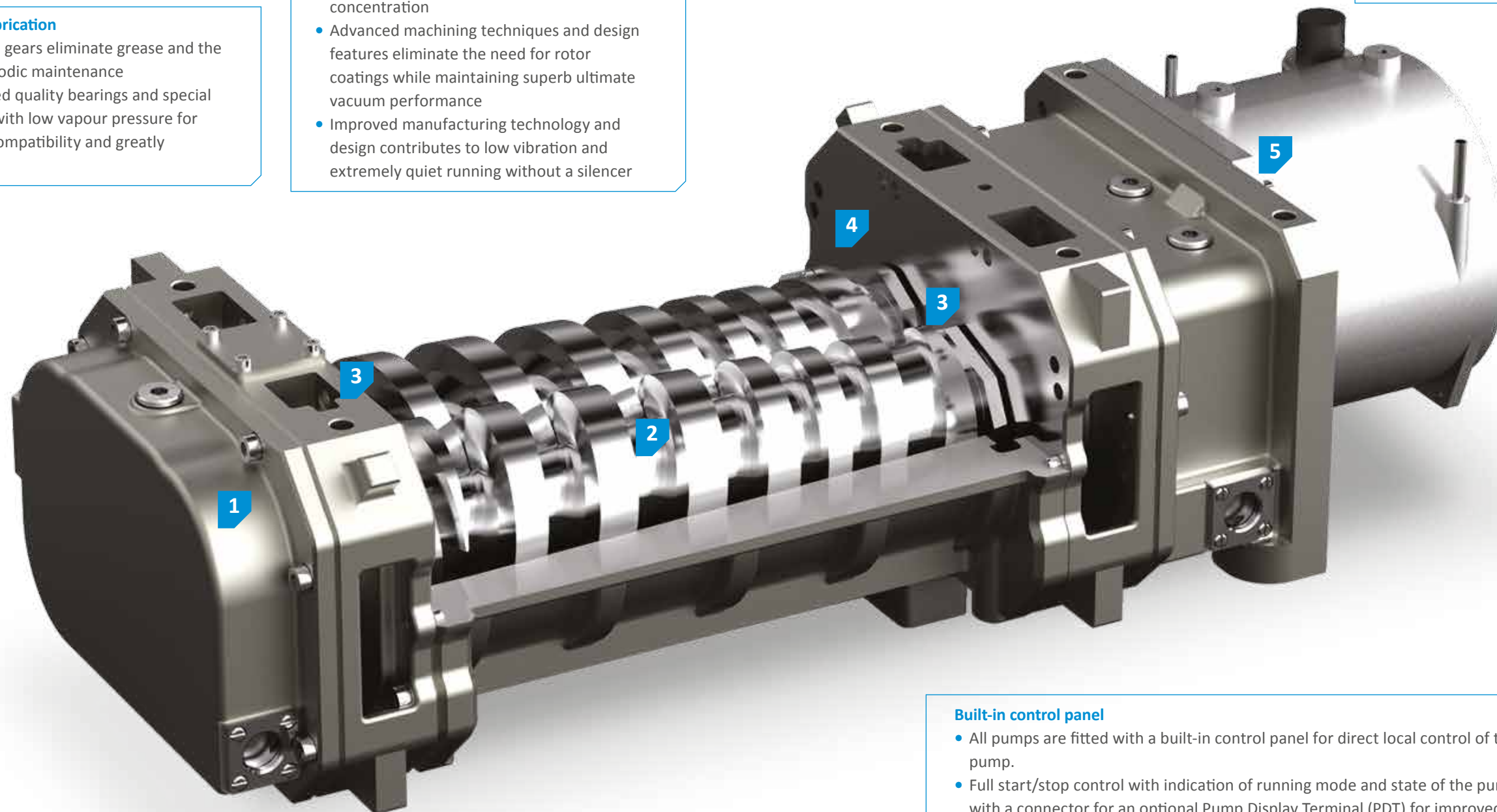
Advanced shaft sealing technology

- Non-contacting long-life seals with integral oil blocking labyrinth seal provides for highly effective sealing
- Combined with a six litre per minute seal purge the gearbox is protected from contamination and the vacuum space is kept free of oil

5

World leading motor and drive technology

- Extremely high efficiency motors with electronic drives deliver maximum torque performance for difficult processes
- Hermetically sealed motor eliminates oil leaks and improves pump reliability
- Water-cooled motors and drives provide for improved reliability and long life to reduce service costs



Built-in control panel

- All pumps are fitted with a built-in control panel for direct local control of the pump.
- Full start/stop control with indication of running mode and state of the pump with a connector for an optional Pump Display Terminal (PDT) for improved diagnostic and configuration capability.

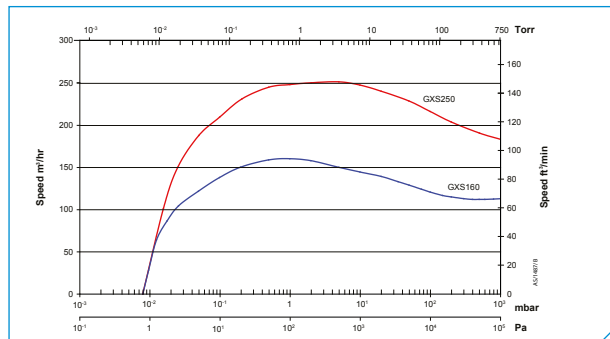


Technical data

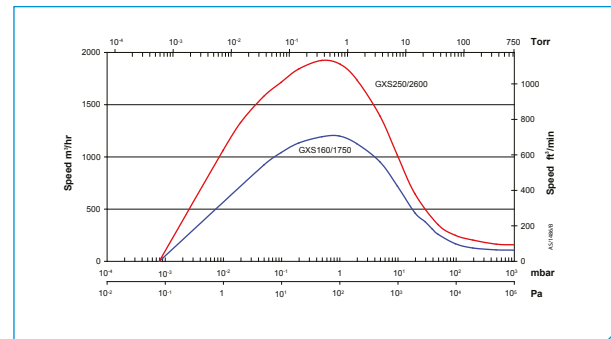
	Unit	GXS160	GXS250	GXS160/1750	GXS250/2600
Peak Pumping Speed	m ³ /hr (cfm)	160 (94)	250 (147)	1200 (706)	1925 (1133)
Ultimate Pressure	mbar (Torr)	<1x10 ⁻² (<7.5x10 ⁻³)		<1x10 ⁻³ (<7.5x10 ⁻⁴)	
Full Load Power	kW (hp)	5.8 (7.6)	7.7 (10.3)	6.7 (9)	8.5 (11.4)
Electrical	Supply options	200-230V 3Ø 50/60Hz or 380-460V 3Ø 50/60Hz			
	Connection	Harting Han K 4/4-F			
Vacuum Couplings	Inlet	ISO63		ISO100	ISO160
	Exhaust			NW40	
Cooling Water	Flow	l/min (gal/min)	4 (1)		7 (1.85)
	Supply pressure (max)	bar (psig)		6.9 (100)	
	DP across pump (min)	bar (psig)		1 (15)	
	Temperature	°C (°F)		5-40 (41-104)	
	Connection			¾" BSP Female (G ¾")	
Purge Gas*	Pressure	bar (psig)		3-10 (45-145)	
	Light Duty	sl/min	4		
	Medium Duty	sl/min	10-44		
	Connection		Swagelok® Ø ¼" tube with olive		
Dimensions	L x W x H	mm (in)	1092x390x568 (43x15.4x22.4)	1092x390x830 (43x15.4x32.7)	
	Footprint	m ² (ft ²)		0.43 (4.63)	
Mass	Kg (lbs)	350 (772)		510 (1124)	550 (1213)
Noise	dB(A)		<64		
Operating Temperature	°C (°F)		5-40 (41-104)		
Exhaust Back Pressure (MAX)	mbar (psia)		1400 (20)		
System IP rating	Standard	31			
Lubrication	Type	PFPE Drynert® 25/6			
	Volume	l (gal)	0.7 (0.2)	1.4 (0.4)	
Monitoring & Control	Standard	Control	Front panel "Dashboard"		
			Serial - RS232		
		Monitoring	Ethernet Webserver		
		Control	Parallel I/O - MicroTim		
	Option	Control/Monitoring	Profibus DP		
			Pump Display Terminal (PDT)		
	Monitoring	FabWorks®			

* Purge Gas information
 Light duty - shaft seal purge only
 Medium duty - Shaft seal purge, inlet purge, variable gas ballast & exhaust purge (with exhaust pressure sensor)

Performance curves



Pumping Speed Curves for GXS160 & GXS250



Pumping Speed Curves for GXS160/1750 & GXS250/2600

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