Evolution 2G

DATA SHEET

Description

The Evolution 2G Gas Fuel Throttle Valve (EVO 2G) is a mechatronic assembly consisting of a valve, position servo and digital flow controller with associated redundant pressure instrumentation. In application, the assembly is usually mounted between pipe reducers as part of a complete fuel system. An optional temperature sensor can be fitted in the upstream pipe section to permit the flow controller to compensate for changes in gas fuel temperature.

The valve is normally fitted in a line between a safety shut-off system and the gas turbine fuel manifold. In use the flow controller receives a process demand signal from the turbine control system which may be calibrated in terms of heat, mass or volume flow units. The Evolution 2G simply positions its throttle valve to deliver the demanded flow to the turbine manifold independently of fuel supply pressure or temperature so long as the fuel supply pressure is sufficient.

For multistream dry low emission systems, an EVO 2G valve is required for each stream.

Application range

- Gas fuelled gas turbines
- DLE gas fuelled gas turbines

Certificates

Independently SIL rated and certified for use in hazardous areas (ATEX and CSA)

Features

- High accuracy, flow fully compensated for fuel pressure and temperature, suitable for DLE systems
- Absolute repeatability
- Highly responsive and stable
- Reliable and tolerant to dirty fuel supplies, does not use flow sensor, self cleaning valve
- User configurable and maintainable using free PC application
- Network enabled for Profibus, DeviceNet, Modbus or Ethernet field busses
- 24 VDC power source only required
- Competitive for wide range of turbine sizes
- Lifetime self adjusting seals protect against leakage

Technical data

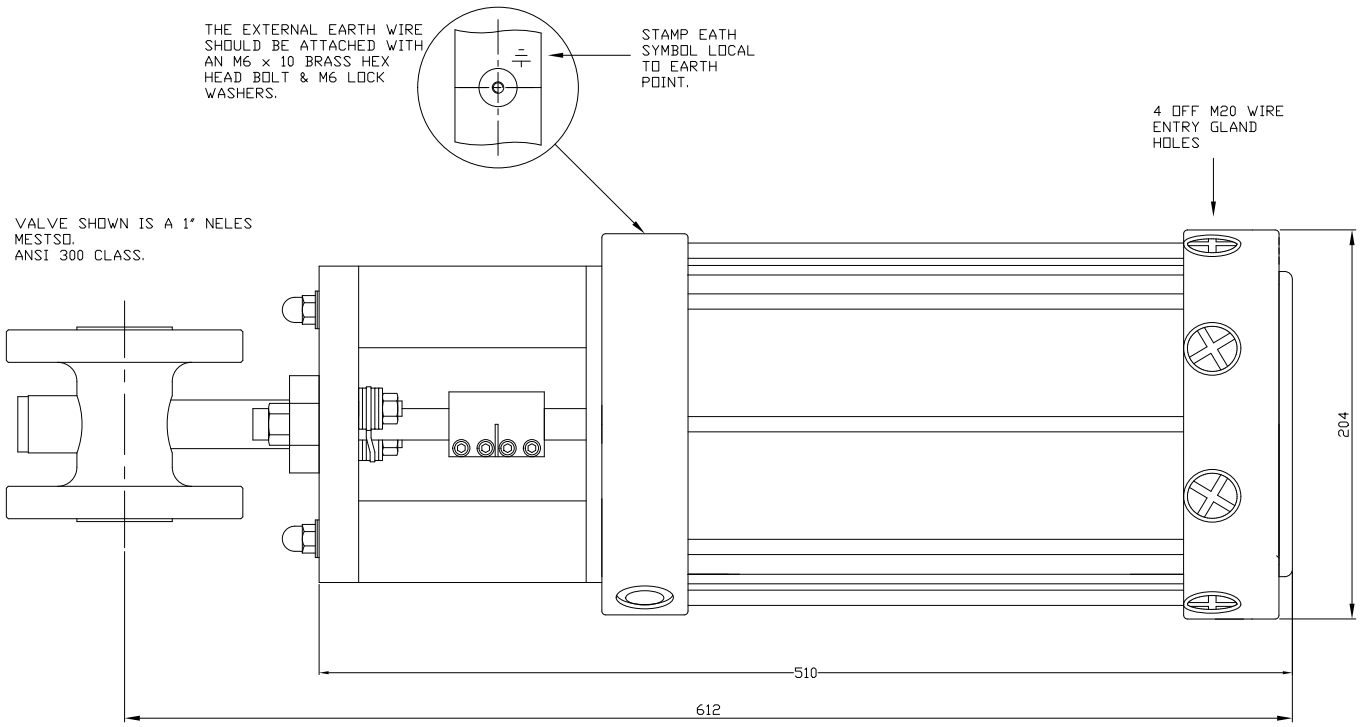
Designation	Evolution 2G (EVO 2G)
Overall weight	30 kg
Electronic controller/positioning servo	
Power supply voltage range	18 through 32 VDC
Power supply current range	<1 A (steady state) through 6 A (accelerating)
Ambient temperature range	-20 up to +60 °C
Environmental rating	IP56
Hazardous area certification	Ex'd' IIC T4 Zone 1 ATEX and Class 1 Division 1 IIC T4 CSA
Maximum torque	40 Nm
Maximum power	250 W
Small signal bandwidth	5 Hz
10-90 % position transit time	300 ms
Fuel gas pressure measurement range	0 through 25 bara standard, other pressures to special order
Fuel gas temperature measurement range	-40 up to +150 °C (with optional external 2 wires PT1000 sensor) otherwise fixed to customer defined temperature
Position feedback accuracy	Accuracy 0.024 % with no short or long term drift (measured at valve shaft)
Signal demand	4-20 mA isolated user scalable to heat (kW thermal), mass (kg/min) or volume (ncm/h) flow units.
Position achieved feedback	4-20 mA isolated equivalent to 0 through 90 degrees valve position
Dry contact output 1	Throttle valve open (NC)
Dry contact output 2	Fault detected (NC)
Faults monitored	Watchdog timeout
	Upstream pressure sensors disagree
	Downstream pressure sensors disagree
	Upstream pressure sensor out of range
	Downstream pressure sensor out of range
	Upstream temperature sensor out of range (if configured)
	Valve position sensor out of range
	Valve position error
Fault log	Event counter for each fault type since last reset
Fieldbus network types available	DeviceNet, Profibus, Modbus RTU, Ethernet IP, CAN Open (1)
Flow metering algorithm	IEC S75.01 standard for real gases
Flow control recursion rate	10 milliseconds
Position servo recursion rate	1 millisecond
Final drive type and frequency	Four quadrant pulse width modulated 5kHz
Transient maximum current limit	10 A at motor
Steady state current limit	1 A at motor (after 5 seconds at max)
Servo gearbox type and ratio	20:1, two stage planetary low backlash
Field electrical connections	Screw terminals at non valve end accessed through threaded cover in end plate. Cable entry through four radial M20 x 1.5 threaded gland holes
Pressure connections	Four ¼" BSPP female ports in valve end plate
Maintenance connection	Ex'd' connector, RS232 protocol, for freeware PC application supplied by HEINZMANN UK
Valve actuation shaft	15 mm keyed

Throttle valve	
Valve adapter	Three legged type to suit standard valve yokes
Valve coupling	Keyed solid type supplied to suit standard valve shaft diameters
Valve type	Fisher V300 or Metso RE Flanged V ball valve
Valve size	1" with four reductions through 3"
Valve characteristic	Approximately equal percentage
Turbine application (natural gas)	500 kW through 100 MW shaft power
Valve body material	Cast steel standard, stainless steel optional
Valve shaft and trim material	Stainless steel
Valve seal	Heavy duty metal:metal spring loaded
Valve stem packing	PTFE chevrons spring loaded and adjustable for valve lifetime
Valve pressure and temperature rating	To ANSI class 300

Notes:

DeviceNet and Ethernet IP are trade names of Allen-Bradley Inc. Profibus is a trade name of Siemens.
Must be specified at the time of ordering.
Where the protocol is master-slave type, all implementations are slave type.

Dimensions



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