

ESGTV-25-40-50

DATA SHEET

Description

The HEINZMANN evolution throttle is an integrated product consisting of a valve, actuator and flow controller with instrumentation designed principally for gas turbine applications. Valves are available in 1 inch (plus 4 trim reductions), 1.5 inch and 2 inch sizes, rated ANSI class 150 and 300 and in cast or stainless steel. These sizes suit any kind of gas turbine from less than 1 MW up to around 50 MW. All valves are of the 90 degree, rotary ball type and feature a heavy duty metal:metal seal which preserves the valve flow characteristic over very long service intervals and self-cleans the valve of contamination by solids as the valve operates.

The actuator consists of a HEINZMANN servo motor driving through a precision epicyclical servo gearbox. Actuator position feedback is obtained by a 14 bit absolute digital encoder ensuring the highest levels of accuracy without drift. As the encoder senses valve position directly, this allows the servomechanism to correct for the low backlash in the gears.

The servo drive is an advanced pulse width modulated electronic type which is so efficient that under normal conditions the current consumption of the actuator is less than 1.5 amps with a nominal 24 VDC supply.

The position setpoint for the actuator is derived from the client system's 4-20 mA fuel demand signal by a digital flow controller. The flow controller references programmed characteristics of the valve and fuel gas and performs the ISA compressible flow algorithm to calculate the valve position required to flow the demanded gas under the current conditions. These are measured by electronic pressure and temperature transmitters sensing in the pipes upstream and downstream of the valve.

The actuator, servo drive, flow controller and pressure transmitters are all built into one explosion-proofed casing. Electrical connections are made through screw terminals in a junction box which is also part of the valve assembly.

The electronic module comprising the servo drive and flow controller includes a 4-20 mA feedback circuit repeating valve position to the client equipment. There are also dry contact outputs to inform the client equipment the valve is in the closed position and failsafe "controller failed".



Features

Requires only electrical power supply

Compensates for changes in gas supply pressure and temperature

Assured long term repeatability and accuracy

Configurable for wide range of fuel and turbine characteristics

Many valve sizes and materials available to suit any application

Easily applicable in multi-stream systems for dry-low-emissions turbines

Reliable and cost effective

Certified flameproof for use in Division 1 hazardous areas (all gas groups)

Installation

The evolution throttle fits in the pipe line between ANSI flanges like any other valve. The valve "across flanges" dimensions are industry standard. We recommend the provision of a "steady" bracket to support the valve casing. The necessary electrical connections may be made through conduit or steel wire armoured cable. These include connections to an optional Pt100 resistance temperature detector which measures gas temperature upstream of the valve assembly.

Finally, there are compression fittings provided on the flameproof casing to accept 3/8" (10 mm) impulse tube connections to pressure tapings on the local pipe work upstream and downstream of the valve.

Commissioning and Adjustment

Provided the necessary safety precautions are taken to ensure the area is free of dangerous gas/air mixture, a laptop computer may be connected to maintenance electrical terminals in the junction box.

Through a free software application supplied with the evolution throttle, the flow controller may be monitored, adjusted or configured. Adjustments are provided to match the controller to the gas fuel characteristics and to scale the client systems demand to be in terms of thermal power in units of kilowatts thermal or flow in units of normal cubic metres per hour or kilograms per hour.

Applications

The evolution throttle can be used to control gas fuel on any gas turbine and, because of its accuracy, provides reliable light off and maintain governor adjustments over long periods of operation. Because it requires only electrical supplies, in many cases the hydraulic systems can be removed from the turbine, thus further increasing reliability.

Because the evolution throttle is compensated for changes in gas fuel supply pressure and temperature, it may be used in applications where either of these parameters changes over time. The evolution throttle will maintain the correct demanded fuel flow with the lowest possible supply pressure in applications where fuel supply is limited.

Because they each include a flow controller, several evolution throttles may be applied dry-low emissions systems on modern turbines. Such a system is very cost effective compared with premium systems on the market today.

Ordering

HEINZMANN will propose an evolution throttle for your application upon receipt of your enquiry with the following information:

- Gas turbine manufacturer, type and approximate year of production (data plate information if possible)
- Gas fuel lower heating value and density
- Any special requirements ie.: materials, minimum fuel pressure etc.

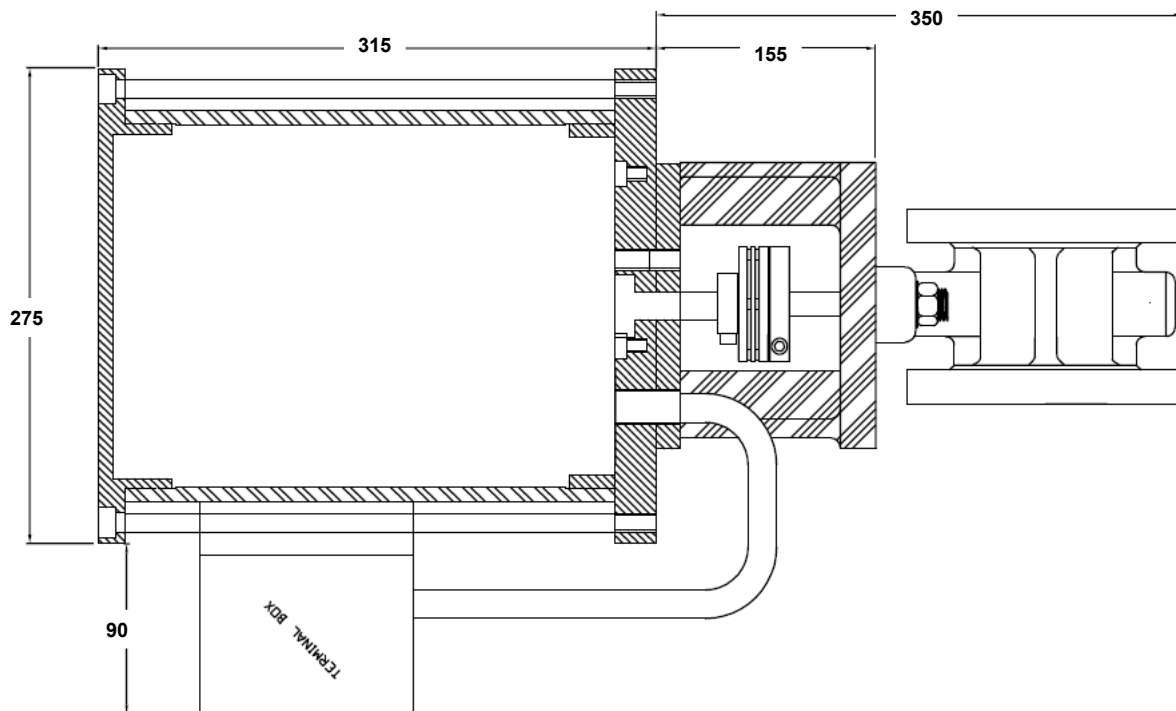
HEINZMANN

HEINZMANN UK is an independent manufacturer of control equipment for prime movers and is member of the Heinzmann Group with a head office in Germany. HEINZMANN operates worldwide and does not depend on other companies for technology. The HEINZMANN evolution series throttle valves use multi-sourced components to ensure security of supply.



Application: Avon Gas Fuel Skid

Dimensions



Technical data

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Ambient temperature	-20 °C to +70 °C
Response time	1300 ms (0 °C ... 90 °C)
Protection class	ATEX
Vibration	+/- 1 mm at 1 ... 20 Hz max. 0.24 m/s at 21 ... 63 Hz max. 9 g at 64 ... 2000 Hz
Shock	30 g at 11 ms half sine wave
Humidity	Permissible humidity up to 95 % at 55 °C
Compliances	CE , ATEX, further compliances on request
Weight	ESGTV~ 40 kg
Finish	Stainless case with black anodised ends

Electrical connections	
Voltage supply	24 VDC / 10 A Operating range 20 ... 34 VDC
Current consumption	6 A maximum 1.5 A under control
Position set point 4 mA = zero fuel demand	4 ... 20 mA Input resistance 240 Ohm
Actual position value	4 ... 20 mA Max. load resistor 350 Ohm
Wiring	4 mm ² screw connectors

Certificates

On request

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