

Intelligent Electronic Valve for Static and Dynamic Measurement

Intelligent Electronic Valve Configured for Measuring Permeability, Damage, and Reservoir Pressure in Static Mode, and Injection Flow Rate and Pressure in Dynamic Mode

The TRGV-IS/ID intelligent electronic valves, developed and designed to acquire information on reservoir response and behavior during water or polymer injection, as well as to monitor the stability and evolution of injection pressure and flow rate over time for each specific zone.

The valve includes an electronic module with onboard memory (recommended for up to 100 hours of recording for a complete evaluation) that can record reservoir pressure when the valve is sealed in static mode, or injection pressure and flow rate in dynamic mode.

The ILT (Injection Logging Test) records provide an instantaneous snapshot of the

injection process, while the valve enables

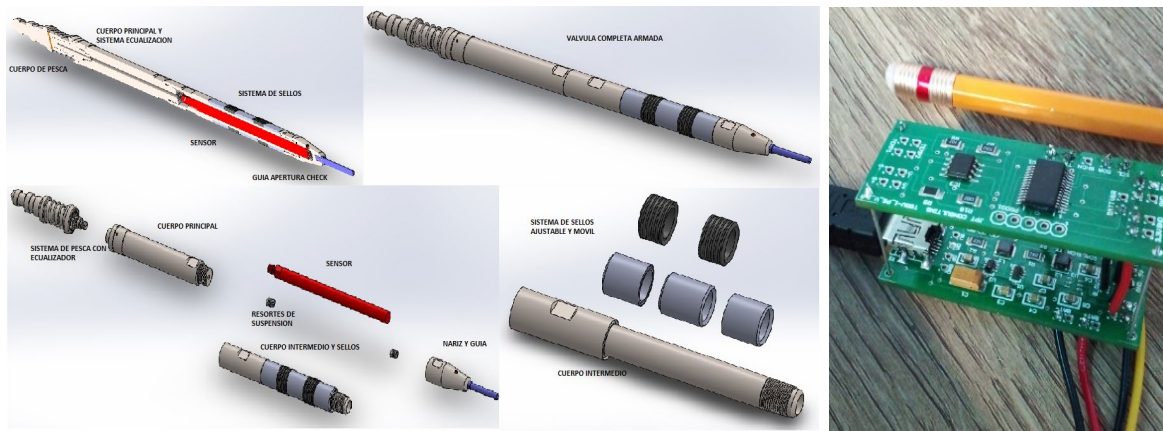
observation of stability and variations over time.

The static intelligent valve incorporates a special equalizing fishing system to ensure easy retrieval without hydrostatic pressure lock-in after testing.

A variable sealing system guarantees a tight seal under high differentials (requiring up to 8–10 V-packs).

A flexible opening guide is also included.

The valve can accommodate up to two conventional $\frac{3}{4}$ -inch memory gauges, or the standard dynamic electronic module, which additionally integrates a high-resolution temperature sensor to estimate flow rate via friction-induced heating effects.



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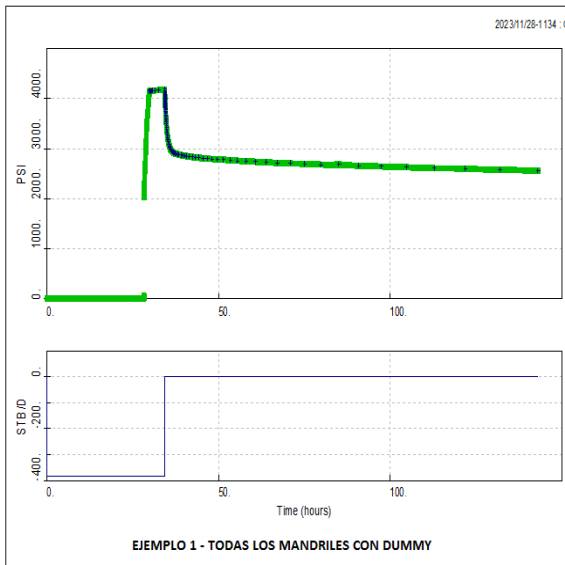
Applications

- Measurement of static reservoir pressure, indicating changes and pressure buildup due to injection; evaluation of permeability and formation damage behind the mandrel using fall-off tests.
- Monitoring and data acquisition for EOR (Enhanced Oil Recovery) process tracking.
- Dynamic monitoring of injection stability at each mandrel, measuring injection pressure and flow rate to assess inter-zone interaction.
- Evaluation of injection stability and secondary recovery process using real-time data.

Advantages and Benefits

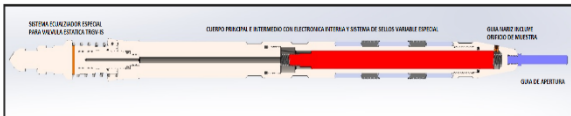
- Same geometry as control valves, allowing safe, standard installation and retrieval operations.
- Equipped with special sealing and equalization modules, ensuring high-quality static data acquisition.
- Dynamic valve enables evaluation of stability and inter-zone interaction within the well.
- Stainless-steel construction ensures long service life in hostile environments, optimizing service costs.
- Proprietary technology with local technical support.

Technical Specifications and Selection



SELECTION OF PRESSURES DATA (PSI)
 Gauge-Data ID: GAU001
 Analysis-Data ID: GAU001
 Total Raw points = 103517
 Set 2 rates (max=100000)
 Loaded 140 points (max=100000)
 Pressure Select Mode: MANUAL
 Rates Cum. Prod. = -550.87085 STB

Static-Data and Constants
 Volume-Factor = 1.000 vol/vol
 Thickness = 54.00 FEET
 Viscosity = 1.010 CP
 Total Compress = 0.0008800 1/PSI
 Storivity = 0.006653 FEET/PSI
 Gauge Depth = N/A FEET



Especificaciones Técnicas Generales	
Parámetro	Especificaciones y comentarios
Diámetro de las Valvulas	1.5 inches estándar
Material	SST ANSI 316 para valvulas - PEEK para aislamiento electronico y sensores, VITON y NITRIL-KEVLAR para sellos tipo V-pack
Máxima Temperatura de Operación Recomendada	350dF condiciones estandar para los sensores - 500dF en condiciones extremas
Maxima Presion Diferencial de Operación Recomendada	3000psi condicionada por las bridas de inyeccion utilizadas y la presion de bomba
Maximo Caudal de Operación Recomendado	5000BWPD para cada modulo en agua, 2000BWPD en el caso de polimeros se recomienda mantener el daño menor a 10%
Maximo Daño o Degradacion del Polimero	Para una presion diferencial de inyeccion de 500psi y un caudal de 1000BWPD se estima un daño maximo menor al 10%
Desgaste Maximo	1% por 10.000 horas a 1000 BWPD
Sellos	El sistema utiliza unicamente un Oring para sello interno y roscas NPT para sello externo
Conexiones	El dispositivo utiliza bridas para las conexiones
Seguridad	Intrinsicamente Segura

