

Polymer Injection Control Module (TRGV-P)

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Modular Tandem Multiple Regulator System for Polymer Injection Control in Selective Strings with Mandrels

The TRGV – P modular device (**Tandem Regulator Injection Module for Polymers**) for control and regulation of polymer injection in fields with multiple zones under secondary recovery of reservoirs in strings that use regulator valves and mandrels, was developed and patented by **Ecopetrol and JPT**. This device is based on multiple controlled pressure drops and allows stabilizing, optimizing, and making polymer injection more efficient in mature fields and secondary recovery operations.

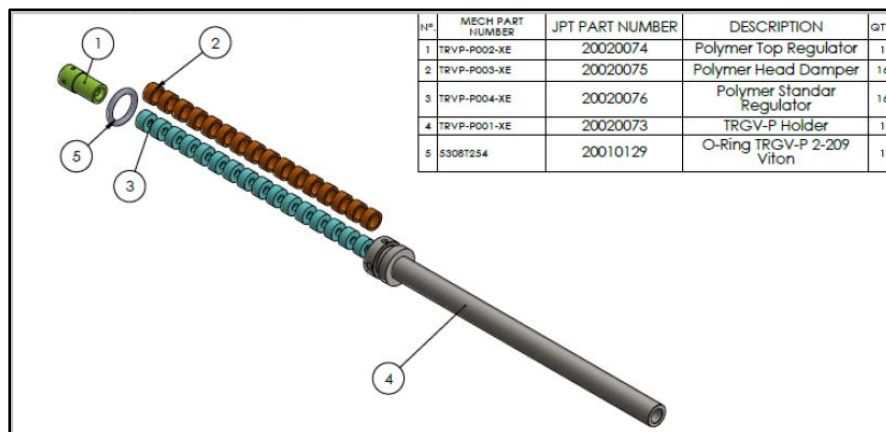
The device allows controlling the maximum volume of polymer injected per zone based on the specific differential pressure, the maximum required damage, and the maximum flow rate required for each zone, using

multiple selection tables resulting from advanced testing and modeling.

The reducer array is encapsulated in a stem, with standard configurations of 9 and 17 reducers. Each reducer has a special bell-shaped design to prevent polymer shear, and each section is separated by an expansion chamber-type spacer (damper).

Each complete module is inserted into the special valve, which can be run into the well and placed in each mandrel using a wireline. This allows for efficient and cost-effective adjustment of the design for each zone.

The system is a national technology developed by Ecopetrol with continuous support from JPT Consulting and Services.



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Applications

- Control and regulation of polymer injection in mature fields with sands and multiple reservoirs using selective completions (mandrels).
- Stabilization of injection in each well zone by controlling polymer damage.
- Minimization and prediction of polymer-related damage in the injection control system.
- Economical and simple system to design and use.
- Selection of reducers for the required injection flow based on differential pressure and maximum damage required per zone, using tables derived from testing and advanced modeling to cover most field needs.

Advantages and Benefits

- Optimization of efficiency and stability in injection, reaching the maximum volume per zone in a stable manner, which should lead to increased long-term production.
- Stabilization of the injection process in each well and control of polymer damage.
- Manufactured in stainless steel for hostile conditions and long service life, thus optimizing service-related costs.
- Modular design allows for updates, optimization, and replacement of modules based on specific conditions.
- Simple system, easy selection of regulators, and straightforward field installation.
- National technology with local technical support.

Technical Specifications and Selection

