

Terrus™ retrofit water-injection system

The Terrus injection system provides cost-effective, retrofit wellbore segmentation and injection regulation to improve waterflood sweep efficiency. The system combines regulated injection sleeves with hydraulically actuated zone-isolation packers deployed on production tubing for installation in existing production casing. Unlike bullhead injection or conventional injection-control devices (ICDs), the Terrus system allows individual zone injection to be adjusted post-installation using wireline- or coiled-tubing-deployed shifting tools.

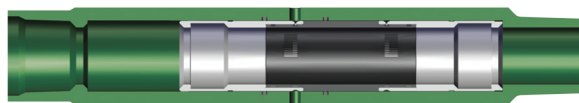
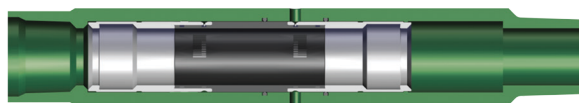
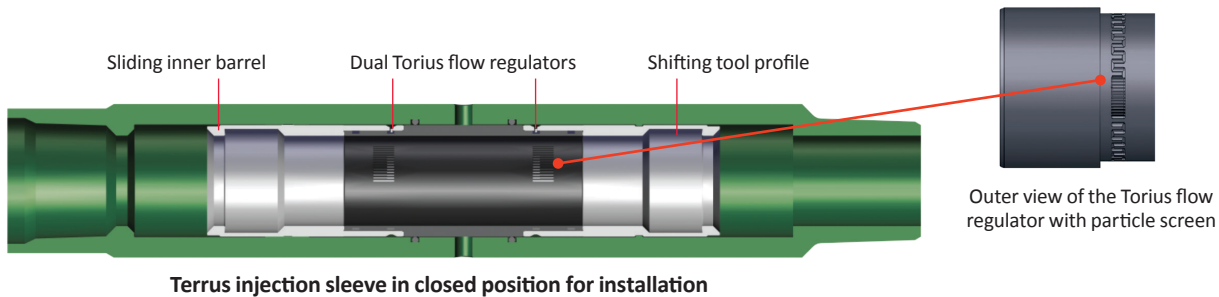
Benefits

- Enables individual zone injectivity and injection profile management to balance flowrates along the wellbore.
- Reduces efficiency loss due to short-circuit break-throughs and thief zones.
- Mitigates plugging and erosion to assure reliable injectivity.

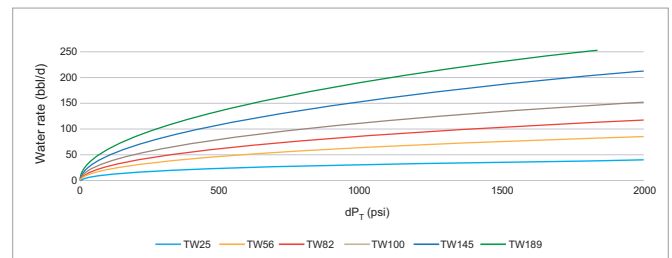
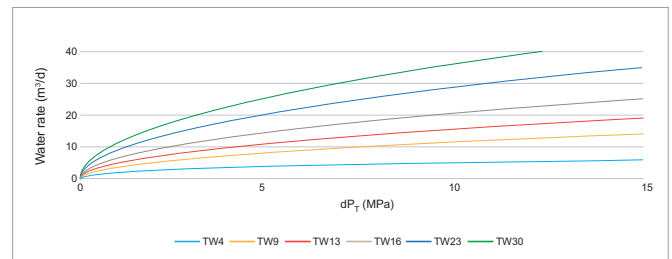
Features

- The Terrus system is deployed on production tubing inside existing production casing.
- Inner sleeve is positioned using a flow-activated shifting tool deployed on coiled tubing or wireline.

- Injection flow control is provided by the Torius™ flow regulator, a proprietary tortuous path that induces calibrated back pressure without relying on small-diameter orifices or nozzles that are prone to erosion and plugging. An integral screen prevents large particles from entering and obstructing the flow path (fines will not cause plugging).
- Dual Torius regulators in each sleeve provide redundancy for the initial injection rate or an alternate rate.
- Multiple Terrus sleeves can be installed in a zone to enhance injection control flexibility.
- Nonregulated, open/close Terrus auxiliary sleeves can be installed in tandem with regulated flow injector sleeves to provide higher injection capacity when needed for fill-up, evaluating injection index, or acid treatment.
- The entire injection string is full tubing drift to accommodate production logging and fiber optic tools.
- The Terrus system is compatible with CO₂ injection and is suitable for both horizontal and vertical wells.



Dual selectable Torius flow regulators



Water injection rates for standard Torius flow regulators

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