

# Application story



**HYDRA-CELL**<sup>®</sup>  
SEAL-LESS PUMP TECHNOLOGIES



## Polymer Injection for EOR (1)

<b>Location</b>	USA	<b>Hydra-Cell model</b>	G25XKSTHFECA
<b>Type of application</b>	Polymer Injection for Enhanced Oil Recovery (EOR)	<b>Flow rate</b>	Up to 30 l/min (8 gpm)
<b>Liquid</b>	Polymer	<b>Pressure</b>	Up to 70 bar (1000 psi)
<b>Application details</b>	<p>A global designer, fabricator and installer of injection plant and other process equipment for oil and gas production broke with established practice in 2004 when it used seal-less Hydra-Cell H25 pumps rather than triplex plunger pumps in a 21-pump polymer injection facility for a Wyoming oilfield. An expected advantage was the absence of wear-prone dynamic seals in the Hydra-Cell design.</p> <p>Six years later the pumps were still running 24 hours a day and more Hydra-Cell pumps had been added. Each pump is individually controlled to match varying conditions in its own well.</p> <p>Polymer injection plays an important role in enhanced oil recovery (EOR), which is usually the tertiary stage of an oil field after primary production and waterflooding. Polymers are used to improve the viscosity and distribution of the injection water through the formation, contacting previously bypassed oil and improving field recovery. But the same chemical properties that make the polymer viscous also make the polymer difficult to dissolve and pump. Proper handling of the polymer solution is imperative. Preventing degradation due to shear through pumps and pipes, as well as degradation due to chemical incompatibility with brines, are of paramount concern.</p> <p>Low-shear handling is therefore essential and the system designers did not take pump performance claims on trust. A company executive confirmed this. "We had to design for pumping a viscous solution containing 800 ppm of high molecular polymers and up to 350 ppm of soda ash (Na<sub>2</sub>CO<sub>3</sub>). Not until we had run shear degradation tests with the Hydra-Cell pump in the lab did we move to the next stage."</p> <p>Following the Wyoming success the company installed injection plants with Hydra-Cell pumps in Canada and Oklahoma.</p>		
<b>Advantages of Hydra-Cell pump on this application</b>	Low-shear pumping. Low heat input. Low pulsation flow. Good controllability. Long-term reliability.		

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