

Application story



Polymer Injection for Enhanced Oil Recovery (EOR) (6)

Location	TBA (Installation: July 2021)	Hydra-Cell model	T100KRDGHFESAC x 3
Type of application	Polymer Injection for Enhanced Oil Recovery (EOR) (6)	Flow rate	10 m ³ /hr (2 642 GPH)
Liquid	Polymer (Hydrated)	Pressure	170 bar (2,466 psi)
Application details	Chemical EOR focuses on injecting high pressure water into an oil reservoir to recover additional oil. The water is chemically modified typically by a polymer to increase the viscosity of the injected fluid. Process Challenges: • High molecular weight polymers are used in chemical EOR applications. These polymers are susceptible to shear by mechanical abrasion. If the polymer chains are broken more polymer will need to be added to achieve the desired end viscosity. • The start up of these pumps need to be properly designed. Mechanical Challenges: • NPSH acceleration is specific to these type of diaphragm pumps and needs to be considered in the piping design to avoid pump cavitation. • Discharge crack pressures need to be included in the design of these pumps to avoid diaphragm pump rupture when the pumps are not in operation. An additional selection criterion was to minimise product loss from leakages around the plunger. Current methods have packed glands that are extremely messy and require a separate sump to contain the leaking fluid. Leaking fluid is highly viscous so does not easily flow to drain points. The customer considered these other pump manufacturers for this project: Ruhrpumpen, NOV, Prominent, Lewa, Wepuko, Uraca, Novaplex. these Hydra-Cell pumps installed within the ProProcess E5M Modular Process Plant		
Advantages of Hydra-Cell pump on this application	• Low shear pumping action ensuring no degradation of the polymer viscosity • Acceleration head losses on the suction side ARE greatly reduce due to the multiple diaphragm pumping elements with short stroke lengths • 100% leak-free eliminates expensive polymer wastage • Multiple diaphragms in a single pump head enables a virtually pulse-less flow resulting in no variation of the process and eliminating the need for pulsation dampeners Lower lifetime cost compared to plunger pumps		

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