

Rod Pump Solution Using LS Drive

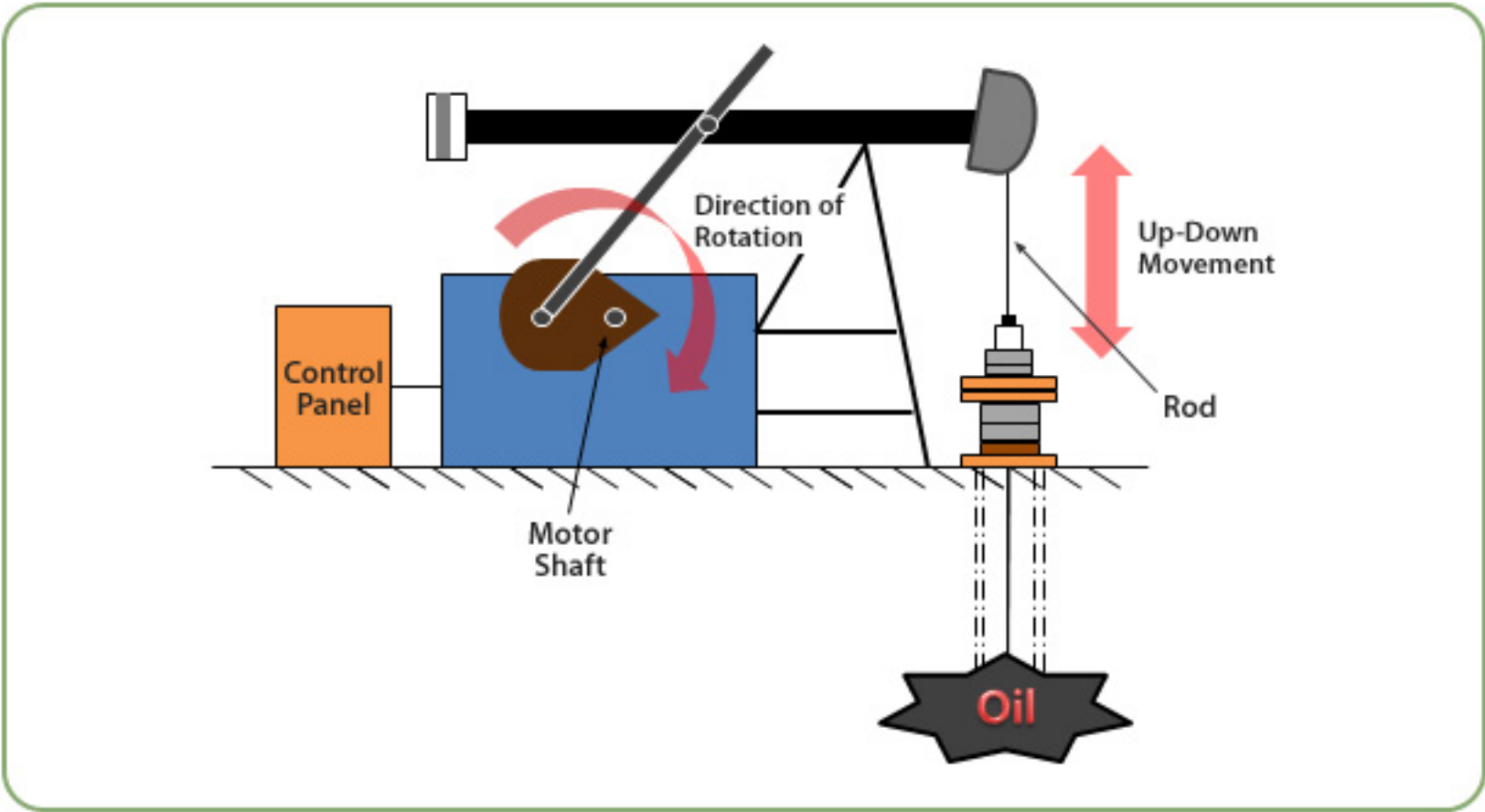
• Rod Pump System

A transferring system of motor to make up and down movement of rod.

• System Characteristics

- 1) A bar is connected on the end of the rotary plate, and when the motor starts running, the rod starts moving up and down.
- 2) When the rod moves to downward direction, regenerative energy occurs. Methods of preventing overvoltage should be used.
- 3) On the initial run, high torque is needed due to high viscosity.
- 4) High energy saving can be possible due to variation in viscosity.

• System Diagram



• Adapted Application

Oil Pump

• Requirements

Issue & Requirements	LS Solution
High Torque on Low Speed Area	Sensorless Vector Control INV
Noise & THD Reduction	DC Reactor, EMC Filter embedded Drive INV Embedded Option
Cyclical Regenerative Energy Control	Regeneration Evasion Function INV
OC&OV Prevention while Acc/Dec	Stall Preventing Movement INV
Protection when Mechanical Damage	Light Load Alarm Selection INV

• Applied Product

IS7 45kW (60HP) – NOFD Type

• Adapted Function

- 1) Sensorless Vector Control
 - Requirement of torque were matched in high viscosity and low speed area.
- 2) Regeneration avoiding
 - Speed were raised in regenerative period to avoid overvoltage trip.
 - By controlling DC-Link effectively, additional DB Unit and Resistor would not be used.
- 3) Stall Prevention Function
 - Output current are controlled under given value while accelerating and on steady speed.
 - Voltage can be controlled under overvoltage level when decelerating.
- 4) Light Load Alarm Function
 - When the rod is damaged, drive would notice by the difference in load rate.
 - By setting the minimum load level, drive can stop running to prevent more damage.