

Drive for Sucker Rod Pumps SynchroGear™

Meeting standards



SynchroGear™ advantages compared to V-belt systems with Asynchronous Motor

- Power saving up to 35%
- OPEX down by 20–30%
- Wide operating range 86–550 rpm
- Programmable upstroke/downstroke rate
- Smart control algorithms
- No sync issues
- Failure risks down
- Minimized downtime

SynchroGear™ technology is a drive for sucker rod pumps with up to 98% efficiency. The system integrates power-efficient Universal Permanent Magnet (PM) Motor and smart Variable Speed Drive. Conventional V-belt transmission is not applicable.



The sucker rod pump is normally used in shallow and medium-depth marginal wells. The sucker rod pump with the asynchronous motor and V-belt transmission associates with low efficiency of the "motor - V-belt - gearbox" system, insufficient controllability, overheating when the speed deviates from the nameplate values, and risk of premature failure

SynchroGear™ is a surface motor with permanent magnets and smart control. This is an effective and efficient replacement of the traditional V-belt transmission and the asynchronous motor. Since the rotor is mounted on the gearbox input shaft, and the stator is mechanically attached to the gearbox housing, the **SynchroGear™** Technology eliminates the need for the V-belt system.

The complete installation process (including dismantling, installation of **SynchroGear™**, VSD check/set-up) takes approximately 3 hours, with PM motor installation taking a maximum of 1 hour only.

The smart control system with an auto-adaptation algorithm description can:

- enhance production by real-time adjustment of the average pumping speed
- program the downstroke speed as a percentage of upstroke speed with programmable speed change
- reduce pumping speed to minimum / to zero upon receiving equipment operation alarm
- optimize stepwise within load range, set by the operator when exceeding load trip (wax/paraffin, low flowline pressure, etc.)

Figure 1. Performance curves of PM Motors

