

## **Variable Speed Drive:**

The use of a variable speed drive allows the production of the well to be optimized. Since the flow rate is proportional to the rotating speed, it is possible to choose a rotational speed compatible with a minimum submergence level, hence a maximum flow rate.

Besides, when pressure drops are difficult to determine with precision, it is possible to adapt the rotating speed with respect to the producing rate of the pump.

In the case of high viscosity crude, the VSD is practically a must. Viscosity is, then, a critical factor of the production because of the high pressure drops it generates in tubing and flow line and because of the stress it induces in the rod string through frictional torque.

Down-hole viscosity is difficult to evaluate because it is very sensitive to temperature, down-hole and well-head temperatures varying significantly with flow rate, principally between shut-in and flowing conditions. Furthermore pressure drops in the flow line (wellhead back-pressure) may also vary broadly with changes of ambient temperature.

For all these reasons optimizing the flow rate of a producer of heavy, high viscosity crude can only be achieved experimentally, thereby requiring a VSD.

The variable speed is provided by a frequency converter. The usual frequency range extends from 25 to 70 Hz, thereby providing a 1 to 3 speed range ratio. A speed reducer installed between the motor and the drive head enables the speed range to be adjusted.

Powers available (HP): 5,5 ; 7,5 ; 10 ; 15 ; 20 ; 25 ,  
40 ; 50 ; 60 ; 75 ; 100

Panels may be air-conditioned when ambient temper  
exceeds 40°C.

