

PROBLEM: Pump-Jack motors are often too costly. In the oil field, operators select a motor that can start their pump jack. This start-up current for this motor is 6 to 10 times higher than the standard running current. In order to meet this current requirement, oil field operators are purchasing a motor larger than the running current requirements. During normal operation, the motor is producing only a small portion of its available power. This practice lowers the power factor and the utility company penalizes the operator with higher electricity cost.

Electric motor power efficiency has taken center stage and high power factor means less energy loss. The power factor relates to energy supplied to the motor not being used optimally. In an unloaded motor, there is very little slip and very little torque produced. The motor is only performing a very small amount of useful work. Thus, the motor is operating at very low efficiency. In a heavily loaded motor, most of the energy input is used to move the load therefore motor is operating very efficiently. The power factor is therefore an indicator of how large the load is and how efficiently the motor is operating.

Power factor contributes to the cost of electricity. The lower the power factor, the higher the electricity cost. Power factor ranges from 0.0 to 1.0. Most utilities' contracts impose a power factor penalty when the factor falls below .95.



SOLUTION: Turbo Trac's Infinitely Variable Transmission (IVT) is an all mechanical torque multiplying device. This frequently allows use of a smaller high efficiency motor to start the pump jack, provide variable speed operation at highest possible motor efficiency, and use the least amount of electrical energy. A reduction of 20% to 25% in motors size is often possible.

BENEFIT: The horsepower reduction increased the power factor. While eliminating the utilities' power factor penalty charge, use of a smaller more efficient motor also reduces the operating electrical cost. And as a further benefit motor capital equipment cost is also reduced by as much as 35%.