

## Metering on a grand scale.

A major oil company resolved that their refining facility should have the flexibility to process alternative crude feed stocks, such as acid crude from the North Sea Grane and Captain fields. The plant's production chemistry could not

be changed, therefore a project was set up to investigate and install equipment to allow this flexibility in the refinery's processing capabilities.

### **The starting situation**

The refinery's project management team worked with consultants Jacobs to design, procure and install process equipment. Pumps were required to feed the acid crude into the main oil line (MOL) and amine injection packages were required to deal with corrosion in the refining column, resulting from the processing of acid crude.

Metering the acid crude at a variable and controlled rate into the MOL would require a pump capable of delivering an accurate and repeatable flow. The combination of viscosities at 1250 cSt, combined with a long suction pipe from the tank farm to the pump suction inlet, could result in an NPSHa as low as 0.5 m (1.64 ft).



seepex pump range N

### The solution

A seepex progressive cavity pump has many key characteristics which suited this project. Variable flow is easily dealt with; as flow is directly proportional to speed a simple control philosophy using a variable frequency drive motor was installed. The high viscosities did not pose any difficulties for the selected pump and the low NPSHa could be overcome by its characteristic flexibility, which allows for slow rotational speeds. A pump manufactured in corrosion resistant material and constructed according to international Standard API 676 was provided, capable of pumping between 30 and 150 m<sup>3</sup>/hr (~4500 to 22,500 bpd) into the MOL at up to 19 bar.g (276 psi).

### The benefit

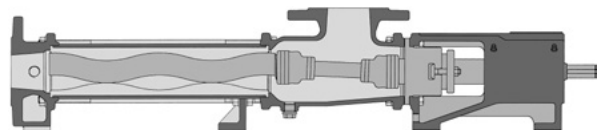
We worked with the refinery to take their concept design through to commissioning and successful operation of a seepex API 676 compliant progressive cavity pump. This project illustrates the strengths of the seepex progressive cavity pump, which can handle variable flow with a simple control philosophy and provide stable flow rates despite changing pressures. Low NPSHa can be resolved by careful pump sizing and seepex can manufacture in virtually any metallurgy. Comparisons with other technology highlighted many design benefits; including the requirement for only one mechanical seal, slow rotating shaft speeds which extend bearing and seal life, and the operational benefits of a smooth, quiet, slow running and robustly constructed pump.

### Key Facts

- Viscous acid crude oil 1250 cSt
- Low NPSHa
- Variable speed, variable flow
- Repeatable accurate flow

### Significant Cost Savings

- Simple control philosophy, flow proportional to speed
- Modular design employed uses stock items even on a 'special designs'
- Low spares inventory



### Installed Pump Type

- Range N

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