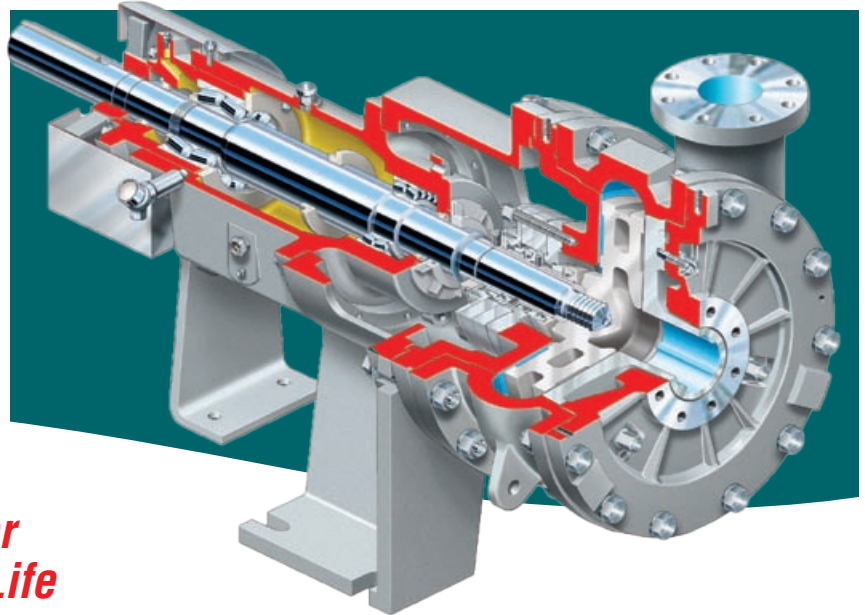




Type M Well Pad Pumps For In-Situ Bitumen Recovery



True Slurry Design for Extended Operating Life

For more than 150 years, Flowserve has pioneered virtually every significant advancement in petroleum-related pumping technology. Recognizing the need for a reliable well pad pump that could handle the demands of underground recovery of bitumen when sand is present, Flowserve developed the Type M Well Pad Pump. High temperatures and pressures combined with the abrasive solids of the oil sands significantly reduce the operating life of typical pumps equipped with traditional shaft sealing technology. To withstand these rigors, the Type M Well Pad Pump features a severe duty slurry pump design for exceptional abrasion resistance. It also integrates superior shaft sealing technology capable of handling the solids as well as the widely fluctuating temperatures and pressures typical of the service. The end result is a pump that provides extended operating life while reducing total life cycle costs.

Operating Parameters

- Flows to 800 m³/h (3525 US gpm)
- Heads to 200 m (650 ft)
- Pressures to 35 bar (500 psi)
- Temperatures to 200°C (390°F)

Shaft Mounted Fans cool both inboard and outboard ends of the bearing frame without extra utility demand or a separate heat exchanger

Slurry Type Double Mechanical Seal is designed for suspended-solids applications. Features open product circulation clearances and barrier fluid cooling system

Abrasion-Resistant Volute Parts made of hardened chromium iron boast thick wall sections and includes a renewable suction wear plate

Pedestal Mounted Casing allows unrestricted thermal expansion over 360°

Robust Shaft and Minimized Impeller Overhang limit deflection in the seal chamber area

Full Front- and Rear-Impeller Pump-Out Vanes reduce seal chamber pressure and promote solids recirculation

High-Load Thrust Bearings are capable of handling varying suction pressures

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Superior Shaft Sealing Technology

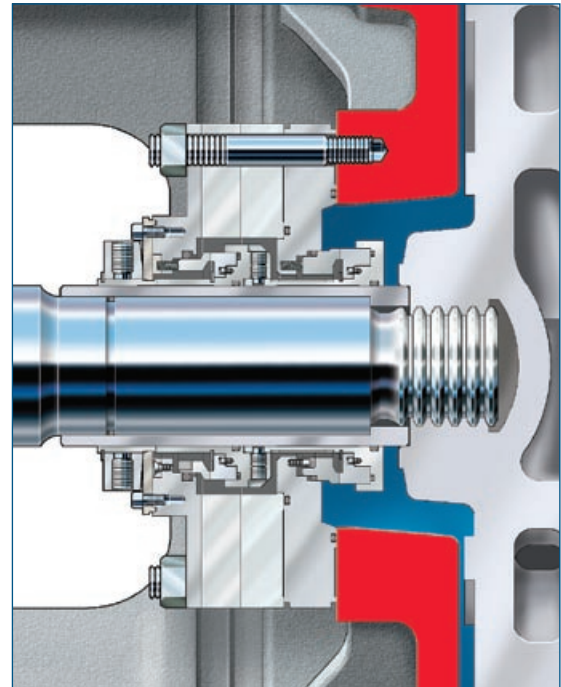
In-situ bitumen recovery requires shaft-sealing solutions with extraordinary capabilities. To maximize seal reliability under such extreme conditions, Flowserve brought together its leading pump and mechanical seal design engineers. The result is a double slurry seal arrangement operating in a special seal housing environment developed for the Type M Well Pad pump. A supporting external cooling and heating system completes the most advanced slurry sealing technology available today.

Optimized Seal Housing Design

The proper seal environment is just as important as the seal itself. The seal housing of the Type M Well Pad pump creates an ideal seal environment. The short, tapered housing locates the inboard seal close to the impeller for effective recirculation around faces.

Advanced Slurry Sealing Technology

The Type M Well Pad Pump is equipped with the SLM-6200 seal. A double, balanced multi-spring pusher cartridge seal, the SLM-6200 was specifically engineered to operate in slurry services in which corrosive, toxic or volatile liquids are present. Flexible stators address shaft deflection and run-out with pressurized barrier fluid preventing process liquid from reaching atmosphere.



Optional Barrier Fluid Cooling System

The Type M Well Pad Pump can be equipped with a state-of-the-art barrier cooling system incorporating:

- API Plan 54 recirculation system with air-to-air cooler and reservoir heater to manage fluctuating temperatures
- Explosion proof instrumentation with no need for CRN or ABSA certification
- Easily visible operator interfaces

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