SULZER

Pumps and pumping systems

# **MPP** high performance multiphase pump

# Main industries and applications

Sulzer multiphase pumps (MPP) are used to pressure boost oil well effluent without upstream separation. As such, they are able to withstand a wide and variable range of process conditions such as:

- variable oil flows
- changing water cut
- variable gas void fractions, fluid pressures and temperatures

They are deployed onshore, offshore, and subsea, in a variety of environments and climates.




## An experienced partner

Sulzer is a well-recognized supplier of multiphase pumping solutions. Customers worldwide have successfully turned to Sulzer for their applications.

# Features and benefits

### 1 Heavy duty pressurized double mechanical seals

- Ensures reliable operation whatever the GVF being pumped

### 2 Decades of balance drum experience

- Allows the pump to make high dP with reasonable thrust bearing loads

### 3 Tapered shaft end

- Fast coupling removal for ease of mechanical seal maintenance

### 4 Anti-friction or hydrodynamic bearings

- Anti friction bearings up to 3’600 rpm
- Hydrodynamic bearings > 3’600 rpm

### 5 Radial inner casing and split diffuser

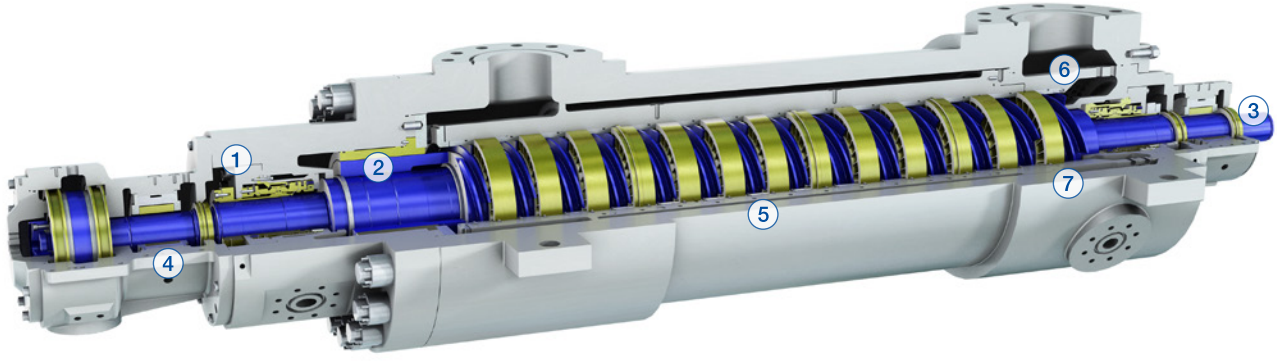
- Simplifies maintenance and ensures excellent rotordynamic behavior (no need to disassemble rotor after balancing)

### 6 Helico-axial hydraulic

- Allows high gas volumes to be pumped, sand tolerant design due to large clearances and abrasion resistant material/coatings

### 7 Full cartridge pull-out with bolted cover closure

- Reduces downtime and assures pressure tightness




## Materials

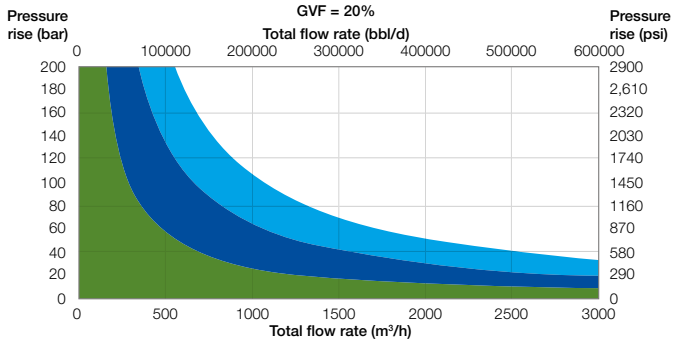
| Material classes | Material |
|---|---|
| API | Since Sulzer multiphase pumps are used to pressure boost well effluent without separation, Super Duplex SS with Sulzer Metco SUME abrasion resistant coatings are often supplied.<br><br>Other materials available upon request. |

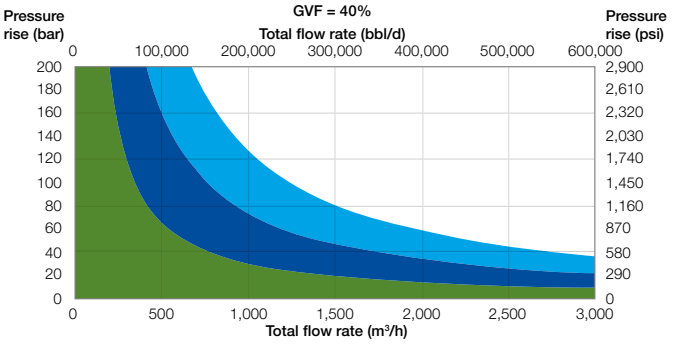
# Specifications

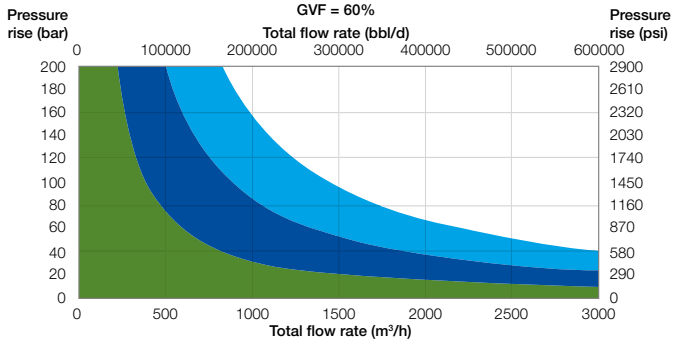
## Operating data

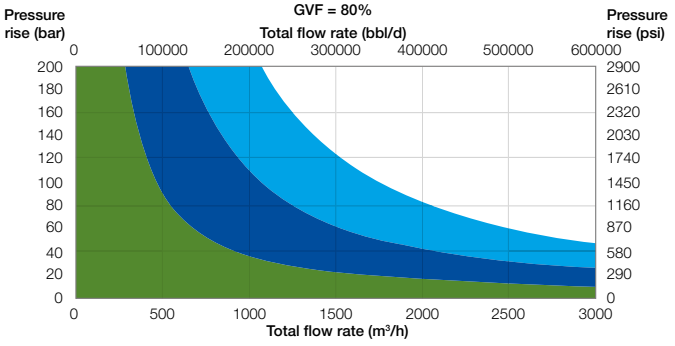
| | 50 Hz | 60 Hz |
|---|---|---|
| **Capacities** | up to 3’600 $m^3/h$ | up to 500’000 BPD |
| **Heads** | up to 200 bar dP | up to 3’000 psi dP |
| **Gas Void Fractions** | 20 to 100 % GVF | 20 to 100 % GVF |
| **Power** | 0.4 to 6 MW | 1’000 to 10’000 HP |
| **Speeds** | up to 6’500 rpm | up to 6’500 rpm |

## Performance ranges




Drive power = < 2 MW (2680 BHP)

Drive power = < 4 MW (5360 BHP)

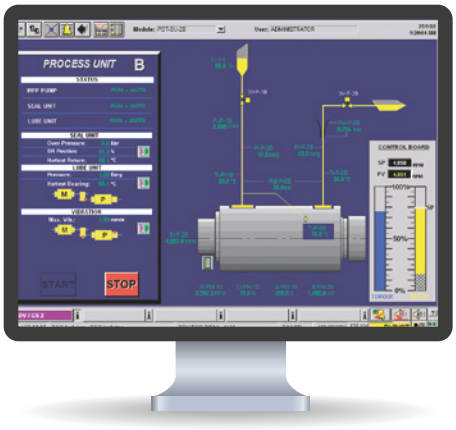
Drive power = < 6 MW (8050 BHP)

### Assumptions

| | |
|---|---|
| Suction temperature | 20°C |
| Suction pressure | 30 barA |
| Liquid density | 800 $kg/m^3$ |
| Gas density | 36 $kg/m^3$ |

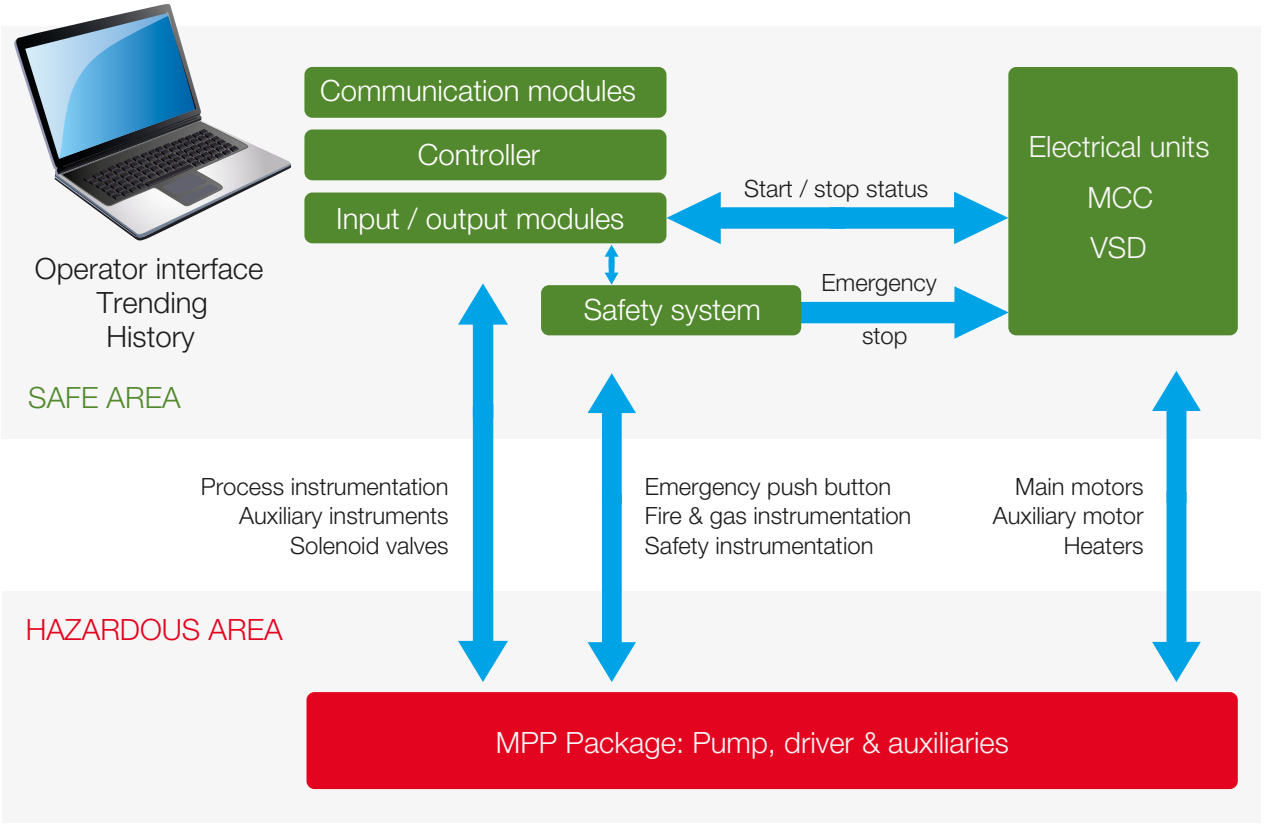
# Monitoring and control

Helico-axial MPPs have a self regulating capability to adapt to gas volume changes under normal operating conditions. They have a wide operating envelope with a large turndown capability.




The pump and its auxiliaries are controlled by a PLC via an operator interface (local and/or remote and allowing for unmanned operation). Trending and history functions are provided.

MPP's are normally operated at a constant speed selected by the operator to achieve the desired output. The operating process control can be effected by changing the speed set point (using a process parameter for control). Variable speed drive (mechanical or electrical) provides a high degree of operational flexibility and suits process changes due to field evolution over time.



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**The Sulzer Flow division keeps your processes flowing. Wherever fluids are treated, pumped, or mixed, we deliver highly innovative and reliable solutions for the most demanding applications.**

The Flow division specializes in pumping solutions specifically engineered for the processes of our customers. We provide pumps, agitators, compressors, grinders, screens and filters developed through intensive research and development in fluid dynamics and advanced materials. We are a market leader in pumping solutions for water, oil and gas, power, chemicals and most industrial segments.