

IMO AB OptiLine

Three screw pumps with magnetic coupling



A Colfax Business Unit

IMO AB OptiLine Pumps

IMO AB'S THREE SCREW PUMP

Since its conception over 75 years ago, IMO AB has supplied its customers with quality pumps, based on their specifications and demands. We have devoted ourselves to selecting pumps that match our customers needs and requirements.

With changing applications, industry standards, and fluid parameters, the time has come for a new solution that is safer, requires less maintenance and has a lower life-cycle cost. To meet this challenge, IMO AB has developed the OptiLine series of leak-proof three-screw pumps.

COMPACT DESIGN

The IMO AB three screw pump and its driver are assembled with a connecting frame. This ensures good alignment and a compact unit with a small footprint.

BUILT-IN SAFETY VALVE

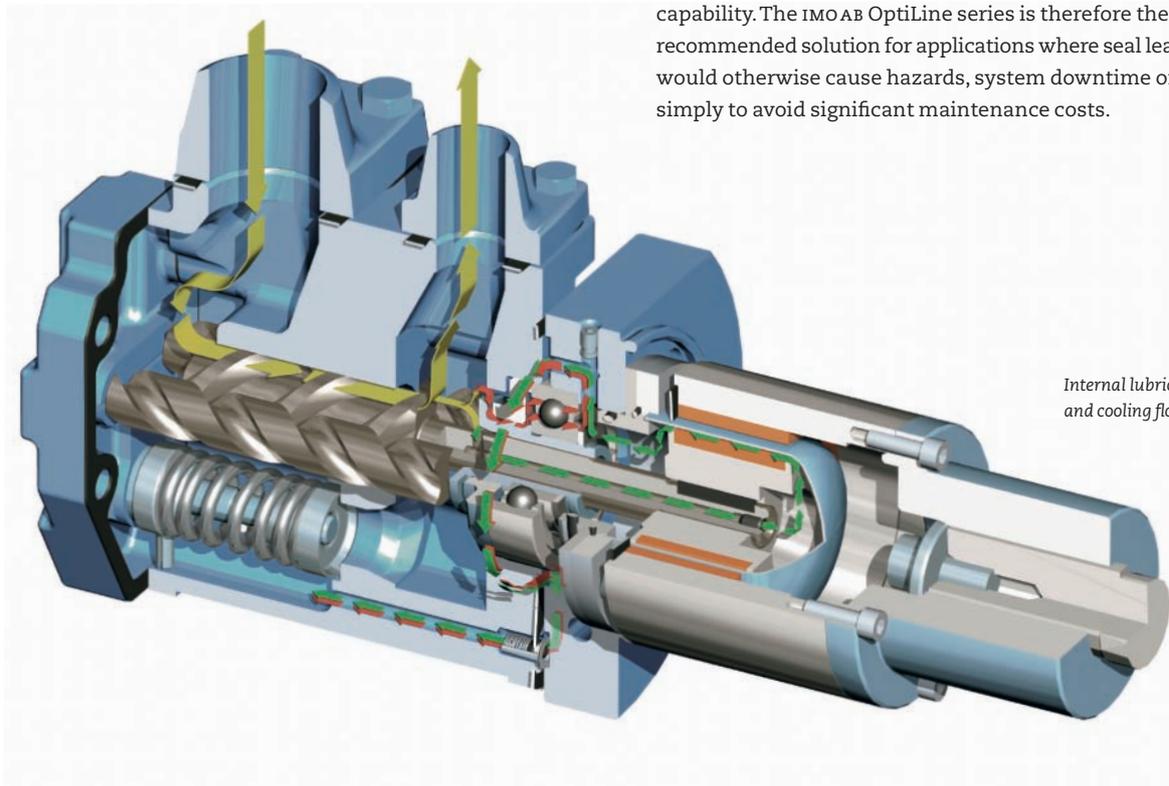
All IMO AB three screw pumps designed to handle outlet pressure of up to 16 bar are equipped with an internal, adjustable pressure relief valve. This is preset just above the required system pressure so as to ensure safe operation.

IMO AB OptiLine

DEVELOPMENT OF A LEAK-PROOF PUMP.

A packing box, a mechanical seal or a lip seal are the most common methods for avoiding leakage around a rotating shaft extending through the wall of a pump. Such seals are lubricated by the pumped liquid and a slight leakage can always be expected. Certain liquids may form deposits when in contact with the outside air and these deposits can easily disturb the proper function of the seal, causing severe leakage.

In order to meet regulations and customer demands for a leak-free pump, IMO AB has developed a seal-less solution – the IMO AB OptiLine series. There is no shaft extension into the open air and thus no need for a conventional seal. Instead, power is transmitted into the pump over a magnetic coupling and the pump shaft is completely enclosed by a static, non-magnetic metal can. A number of extremely strong rare earth permanent magnets affixed to the pump shaft inside the can are driven by a similar set of permanent magnets on the driver shaft outside the can. The attraction force between the two sets of magnets ensures a perfectly synchronous rotation of the two shafts with a high power-transmission capability. The IMO AB OptiLine series is therefore the recommended solution for applications where seal leakage would otherwise cause hazards, system downtime or simply to avoid significant maintenance costs.



Internal lubricating and cooling flow

BENEFITS OF THE OPTILINE

In addition to the normal benefits of an IMO AB three screw pump, there is no costly downtime. The IMO AB OptiLine offers a leak-free operation that is significantly more environmentally friendly due to its improved safety and low maintenance cost. This is especially recommended for exposed applications where safety is an issue.

COST BENEFITS

The cost of spare parts and maintenance are significant contributors to the life cycle cost. Since there is no wear on the parts of a magnetic coupling arrangement, the maintenance cost for a such a pump is reduced to a minimum. Return on investment for an IMO AB OptiLine compared to a corresponding pump with a mechanical seal is often less than two years.

OptiLine Design

FULLY ENCLOSED

With the OptiLine design, torque is transmitted from the driver to the pump without any mechanical contact.

The design features a completely sealed-off pump consisting of an inner rotor with permanent magnets coupled to the pump and sealed by a non-magnetic can. On the atmospheric side, an outer rotor, also with permanent magnets, is coupled to the driver.

As this design does not have any sliding contact seals, there is simply no way for the confined liquid in the pump to escape.

NO NEED FOR EXTERNAL COOLING

The magnet assembly is designed to withstand temperatures of up to 350°C without jeopardizing their function. In order to remove the heat generated by viscous friction and eddy current losses in the coupling and also to lubricate the bearing, a small fraction of the main pump flow is diverted into the can of the magnetic coupling and then returned to the pump inlet. Thus, there is no need for any external cooling or holes in the connecting frame that could allow debris from the outside to cause wear on the magnets or seal-can.

STEAM TRACING

On cold, start-up conditions high viscosity could cause the rated torque for the coupling to be exceeded. To facilitate such situations, the larger range of OptiLine pumps have a way to allow steam tracing adjacent to the magnets which can be easily connected to the steam system aboard a ship.

SOLAS REQUIREMENT II-2 REGULATION 4

As far as possible, oil fuel lines should be arranged far away from hot surfaces, electrical installations or other sources of ignition and should be screened or otherwise suitably protected to avoid oil spray or oil leakage...

Technical data – OptiLine

MODEL	ACE	ACG	UNIT
CAPACITY	8.33-185	167-1170	L/MIN
DIFF. PRESSURE	16	16	BAR
VISCOSITY	1.6-1500	1.6-1500	CST
TEMPERATURE RANGE	20 TO +160	-20 TO +180	°C
MAX. SPEED	3600	3600	RPM
VALVE BLOCK	YES	NO	

SUMMARY

For rough duty pumping such as heavy fuel oil and orimulsion applications IMO AB OptiLine pumps are the optimal solution for minimizing the risk of oil leakage that could be hazardous to the environment, human safety or process function.

OPTILINE MOUNTED ON A VALVE BLOCK

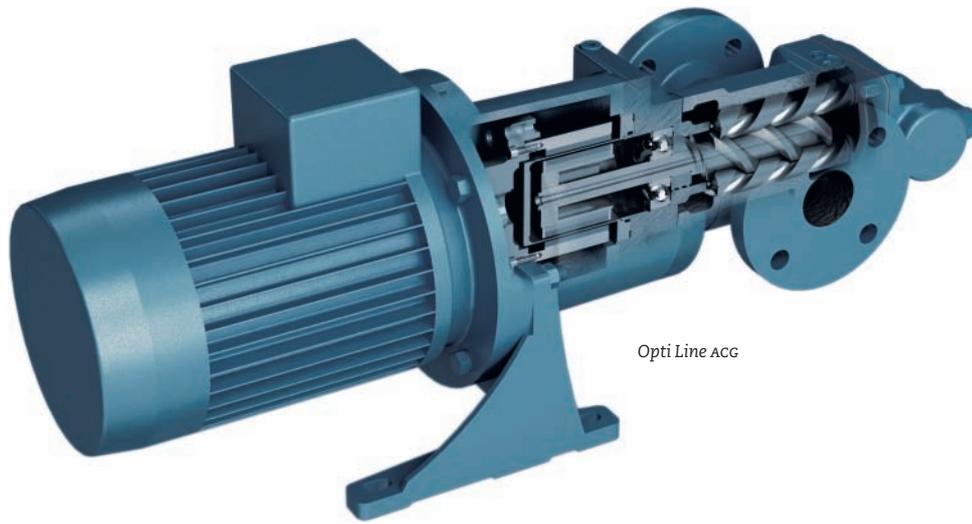
A valve block can be utilized to save space as well as reducing the cost of pipe work and installed components when the pump is installed with a stand-by. The new IMO AB Valve Block features a design where each component and its operation has been evaluated to meet different operation modes.

UPGRADING

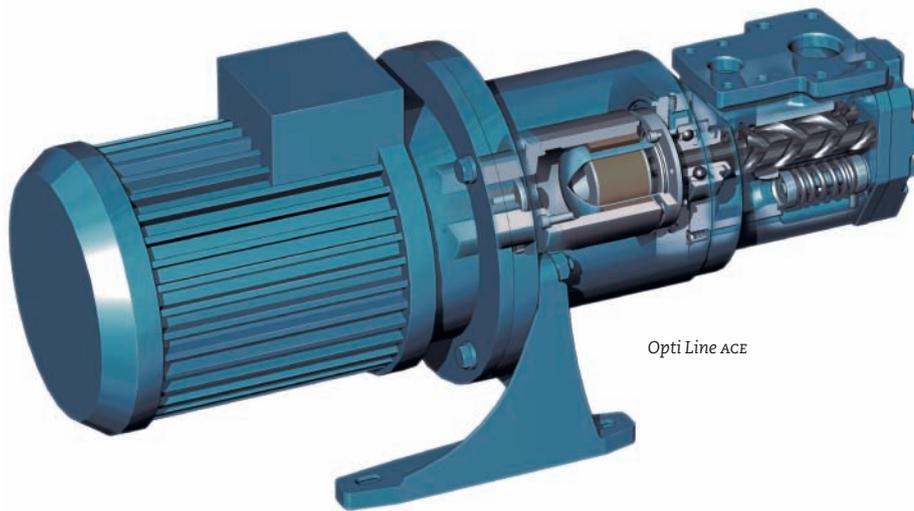
The IMO AB OptiLine pump is ideal for upgrading a pump system equipped with an older generation of IMO AB pumps or other oil pump models. With few exceptions it is virtually a drop-in replacement between the IMO AB standard three screw and an OptiLine pump. This keeps the cost of piping and re-structuring to a minimum.



IMO AB Valve block configuration



Opti Line AC6



Opti Line AC8



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