

copenhagen  
atomics

# Molten Salt Pump

5kW motor, up to 700°C molten salt pump,  
Flow rate: 50 – 300 liter / minute



# OVERVIEW

Copenhagen Atomics' molten salt pump is a unique pump design, which are developed for molten salt reactors. The design has no dynamic seals and the build in motor can operate up to 700°C.

In order to make the pump work reliable in corrosive salts, at high temperatures and in radioactive environments, the pump is constructed to work with 3 phase AC voltages between 10 - 20V. Therefore the pump require a step down transformer and a typical variable frequency drive (VFD) to operate.

The pump are sold including transformer and VFD and the VFD can be controlled manually with a round dial (volume nub). Alternatively the VFD can be controlled via modbus over USB or RS485.

Open source software exists for this:

<https://github.com/copenhagenatomics/SpindleTalker2>

The pump are designed to work with fluoride, chloride or nitrate molten salts from 200°C to 700°C. But the pump can also operate with some molten metals, please inquire for more information.

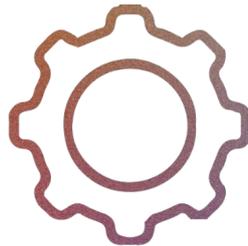
To reach long service life the pump typically requires a bypass flow through a filter to remove impurities in the molten salt or metals. Filters are available in different volume and grain sizes.

Typical service life depends heavily on temperature, type of salt, purity of salt, flow rate etc. Customers typically have one standby pump, which they can swap in and send the first back to Copenhagen for service at regular intervals.

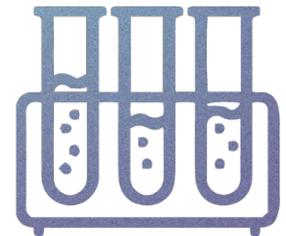
# PUMP VERSION 1.1 HIGHLIGHTS



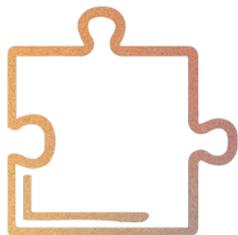
700°C



Controlled by VFD  
RPM: 400 - 2500



Pump flow rate: 50  
- 300 L/min



No dynamic  
seals



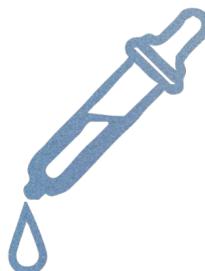
Service life:  
1000 hours



Made from  
stainless steel 316



Low cost gaskets  
available for fluoride,  
chloride and nitrate salts



100% leak proof



Controlled via modbus  
over USB or RS485



# ENGINEERING



**It is possible to buy flanges and gaskets which fit the Copenhagen Atomics pump or get custom flanges mounted on the pump inlet and outlet**

It is possible to adjust the flow rate outside the standard range, by using adjustable valves and flow restrictors, or adjusting bypass flow. Copenhagen Atomics also sell flow meters. Please contact us for more information.

Copenhagen Atomics plans to develop versions of this pump in larger sizes later, but this require significant tooling cost. Please inquirer if you are looking for a different size.

# Dimensions



PUMP TECHNICAL SPECIFICATIONS	
Max motor power	5kW (180Amp - 3phase - 16Volt)
Max temperature	700°C.
Max flow speed	300 liters per minute
Min flow speed	50 liters per minute
Pump weight	30 kg
Transformer weight	40 kg
VFD weight	2 kg
Inlet flange outer diameter	76 mm
Outlet flange outer diameter	64 mm

# CONTACT



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