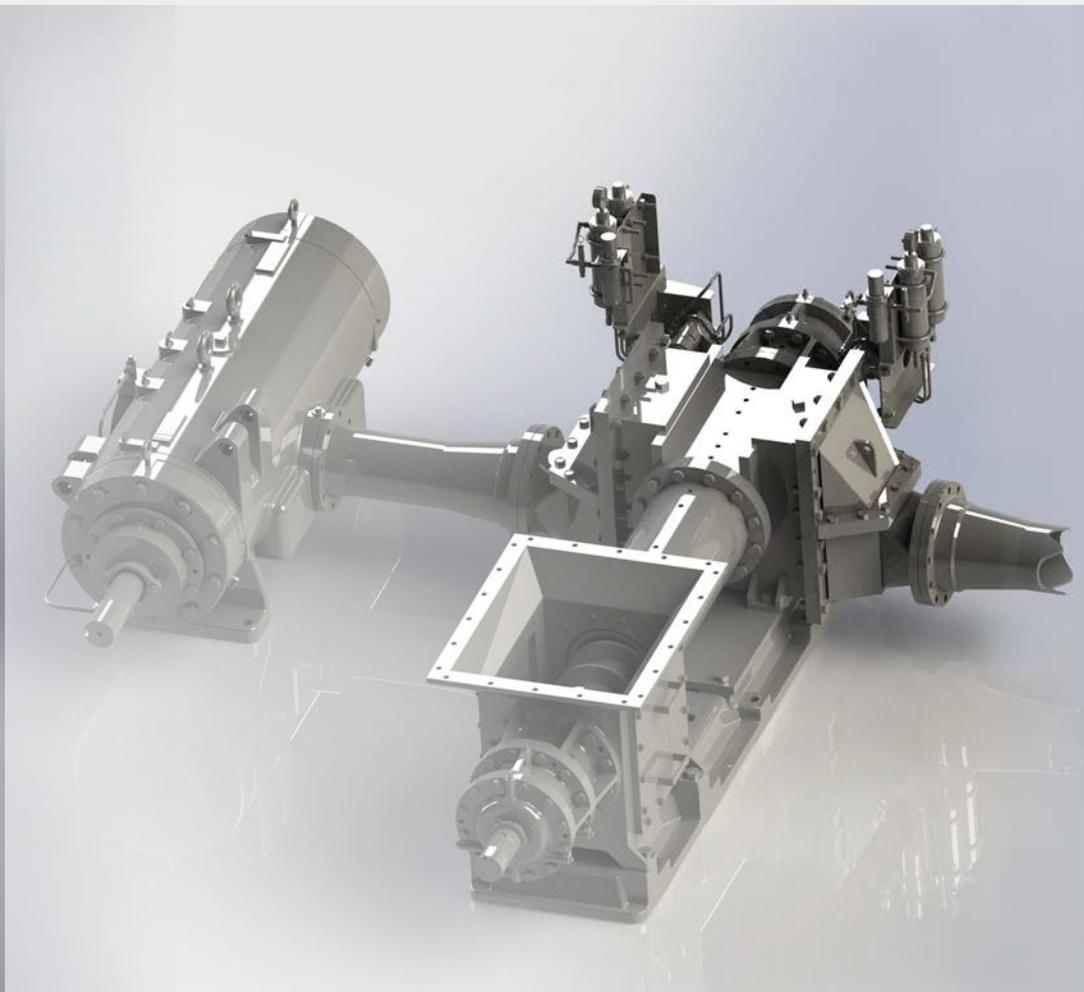


# The ultimate pneumatic conveying solution

Pairing the FK N Pump with the FV Compressor



# Better together

The FLSmidth Fuller-Kinyon screw pump works efficiently to push material from its gravity-fed hopper through the barrel into the discharge body, where the FLSmidth Ful-Vane™ Compressor provides the required compressed air to convey the material through the transport line. Both machines are durable and easy to maintain, with the capability to be installed in any plant environment.

## Key benefits

■  
Simple  
maintenance

■  
Cost  
effective

■  
Suitable for  
high capacities

■  
Versatile  
and flexible

■  
Energy  
efficient

■  
Robust,  
durable design

■  
New: suitable  
for ship and  
barge unloading

Originally designed in 1919 as a way to safely transport pulverized fuels, the Fuller-Kinyon® screw pump has proven itself to be a must-have component in materials handling systems worldwide.

The latest generation, the FK N Pump, is based on the same design principles as the M Pump, but includes upgrades that enable higher convey line pressure with greater energy efficiency, as well as the ability to serve ship and barge unloading applications.

### Where is it used?

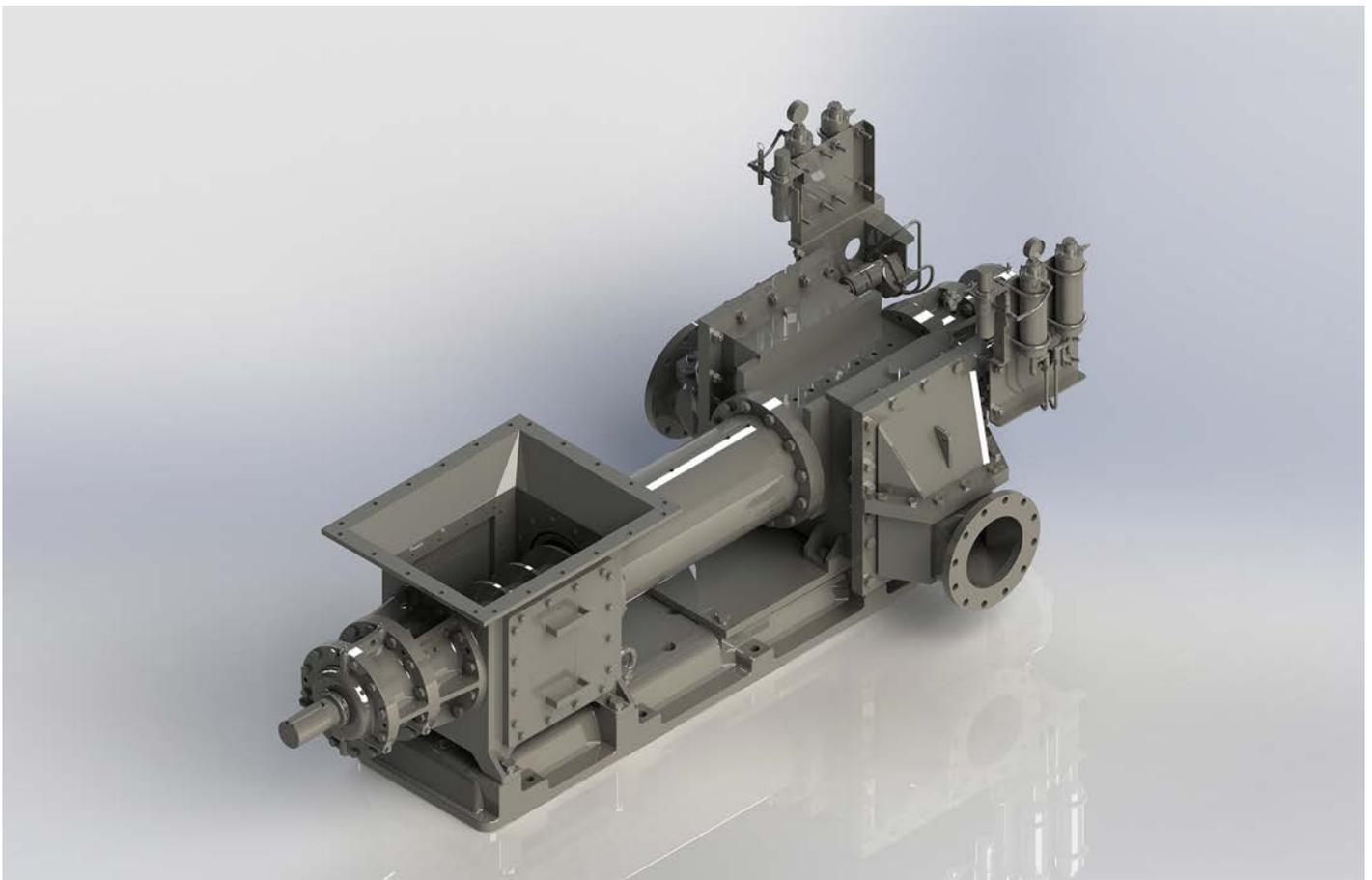
Common applications include conveying dry, free-flowing pulverized materials from grinding mills, between silos, transport from dust collectors, and for loading and unloading railcars, ships and barges. But materials can be conveyed literally anywhere a pipe can be run. Long conveying distances are not uncommon, including in excess of 5000 ft (~1525 m).

### How does it work?

The screw pump hopper is gravity-fed. Materials are pushed through the barrel by the screw, which compacts the material as it advances. The material density is further increased in the space between the terminal flight of the screw and the face of the non-return valve, forming a seal against the transport line pressure, which prevents blowback. When the material enters the discharge body it is fluidized by compressed air and conveyed into the transport line.

### Standard features

- Cast iron and steel construction, with a cast iron base.
- Ball bearings support a pump screw at both ends for smooth, balanced operation.
- Critical parts that come into contact with material to be conveyed are made of hardened, wear-resistant material and special hard surfacing.
- Screw is coupled to the driving motor but can be v-belt driven.
- Easy, low-cost maintenance thanks to the 3-piece screw.
- Diameters from 150 mm – 350 mm with capacities up to 600 mtpd depending on bulk density.
- Conveying air pressure range up to 35 psig (~2.4 Bar)
- Built to withstand material temperatures up to 400 °F (~200 °C) as standard.



## Simple, reduced maintenance with the 3-piece screw

All new FK Pumps are equipped with the 3-piece screw, which splits the pump screw into three sections – the centre section being the replaceable wear part. This eliminates the need to disconnect the coupling to perform maintenance, saving the bearings and seals from being exposed to a dusty, dirty plant environment. Now a screw change takes two technicians just 3 – 4 hours, about a third of the person hours of the old one-piece screw type.

## FK N Pump upgrades

To further improve efficiency, the FK N pump comprises four main improvements from the previous model:

### 1. Improved throughput

The inlet housing was initially designed as an open chamber that collects the material for the screw to begin conveying. We have added a trough inside the inlet housing, which enables the pump to better collect the material and improve throughput through the inlet hopper.

### 2. Higher volumetric efficiency and higher convey line pressures

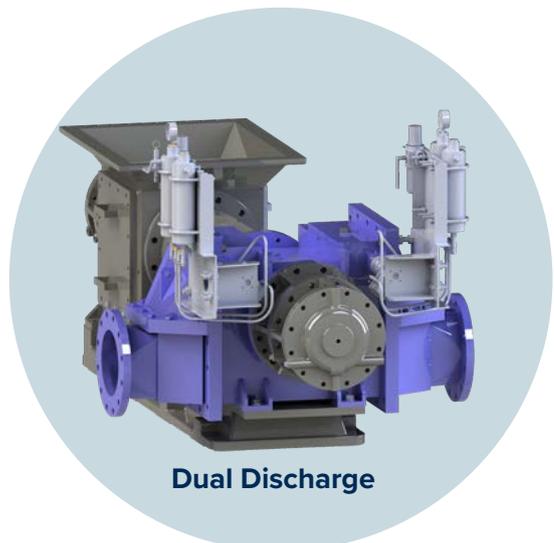
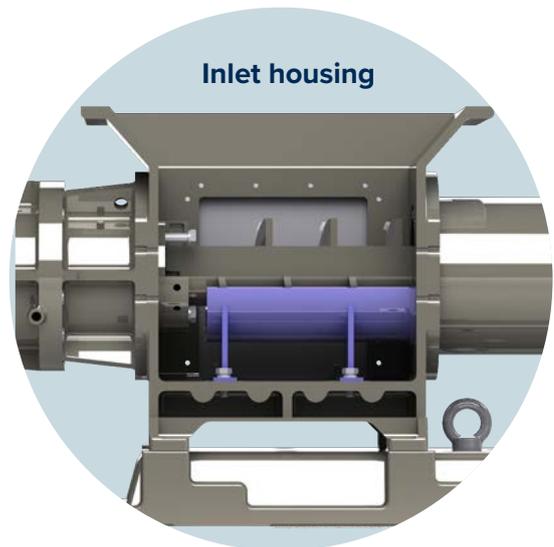
The length of the barrel and screw have been increased, enabling us to put the seal inside the barrel. We've also revised the flights on the screw and achieved a better seal. This improves volumetric efficiency by more than 15% and enables higher-pressure capabilities.

### 3. Power savings

The improved seal also results in greater energy savings on the higher-pressure applications (20 – 25 psi and higher) and power savings of up to 15% in like-for-like applications.

### 4. Dual discharge housing as standard

This gives you flexibility on the direction of the convey line and air supply. We've also been able to eliminate nozzles for acceleration, as the new discharge air chamber has a smaller cross-section while still allowing material to be picked up and accelerate out of the pump.



# Cutting the cost of compressed air with the upgraded FV Compressor

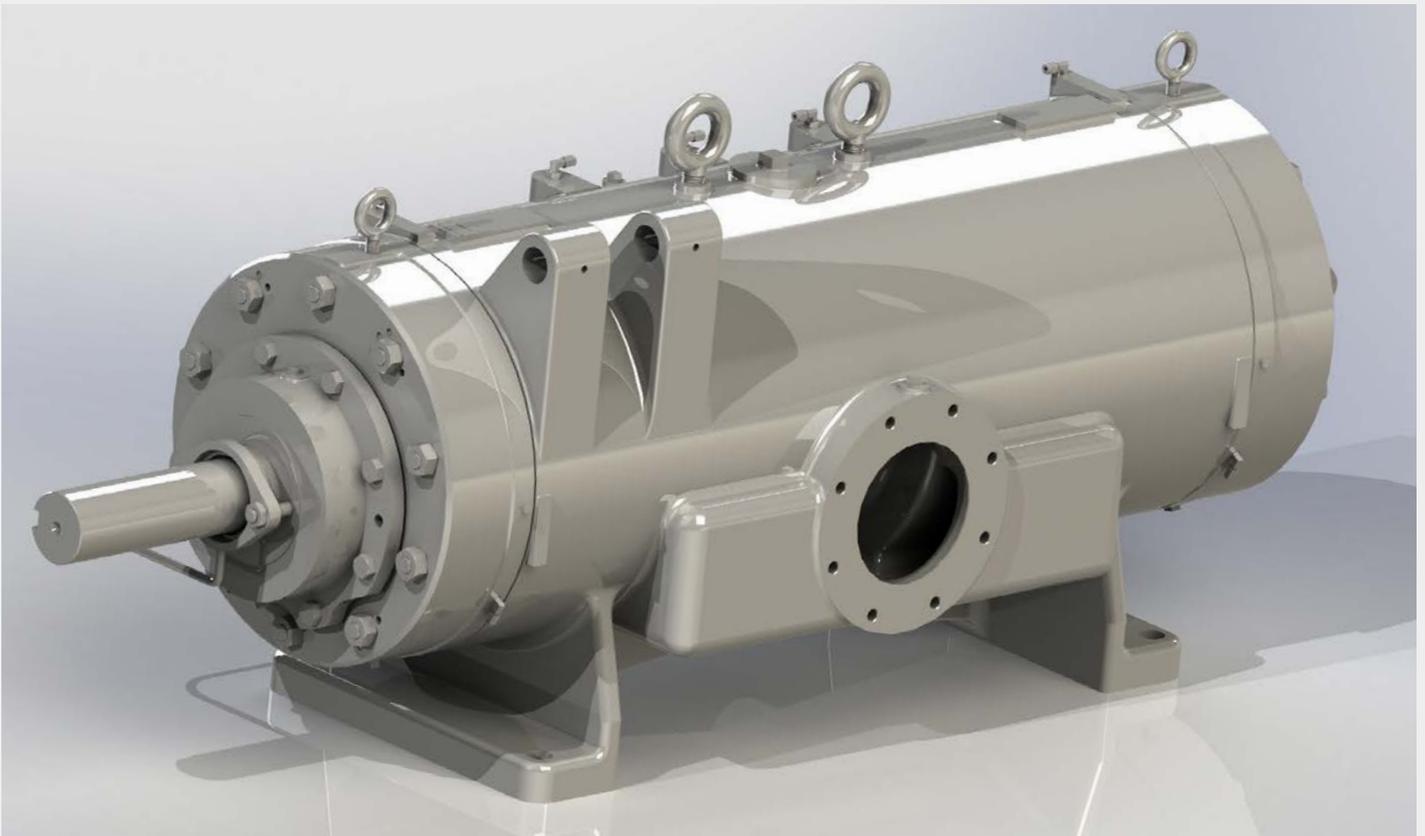
## Benefits

- Long life
- Low maintenance
- Suitable for harsh, dirty plant environments
- Energy efficient
- Low total cost of ownership

Compressed air is one of the biggest energy consumers in any heavy industry process. But pneumatic conveying is an excellent way to move materials. For decades, we've dedicated our expertise to creating a solution that lowers the cost of compressed air. And with the latest upgrade we bring you the world's most cost-effective compressor.

## Where is it used?

The FV compressor can be used for cement and minerals plants and terminals and gas applications. Typical processes include: providing convey air to pump applications in cement and minerals plants and terminals; vacuum applications; refrigeration and gas applications including vapor recovery and transfer.



## Straightforward design maximises efficiency

The design of the FV compressor has long focused on straightforward, logical engineering. A large inlet area enables the efficient capture of large air flows. By keeping moving parts to an absolute minimum – just three – we've minimised mechanical losses. And the constant blade-to-cylinder contact results in constant compression efficiency. The compressor is also suited for operation with a variable frequency drive, for increased energy efficiency. The upshot? More compressed air with less energy.

## Benefits

- Cast or Ductile iron cylinder allows for up to five re-bores
- Solid one-piece rotor and shaft can be re-slotted several times for different blade thicknesses
- Shaft and bearing design minimises drive losses
- Integral cooling water jacket
- Inlet/outlet configuration eliminates internal compression losses
- Mechanical seal for gas applications

## Upgrades that reduce capital costs and offer increased volumes

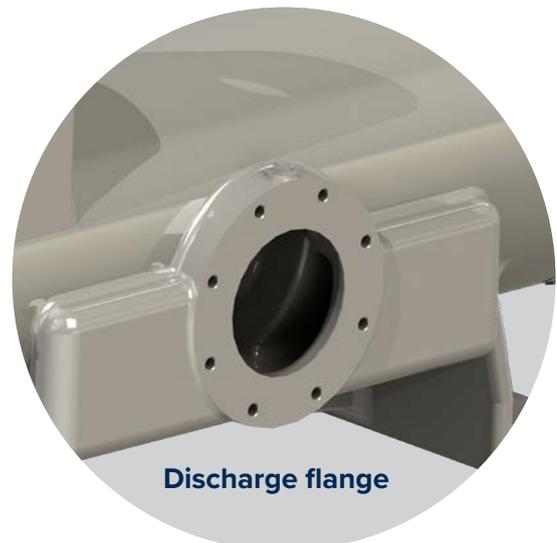
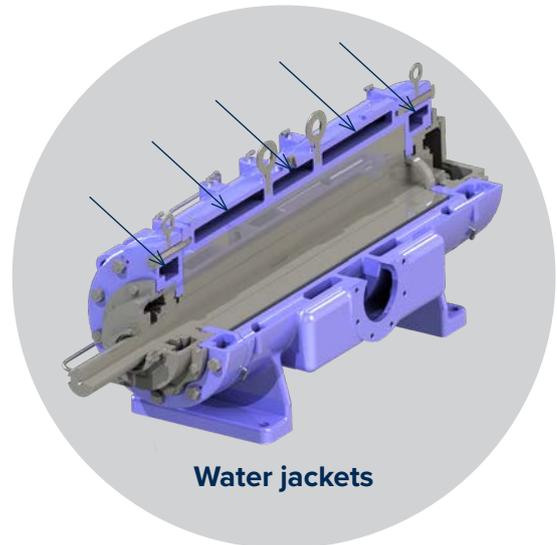
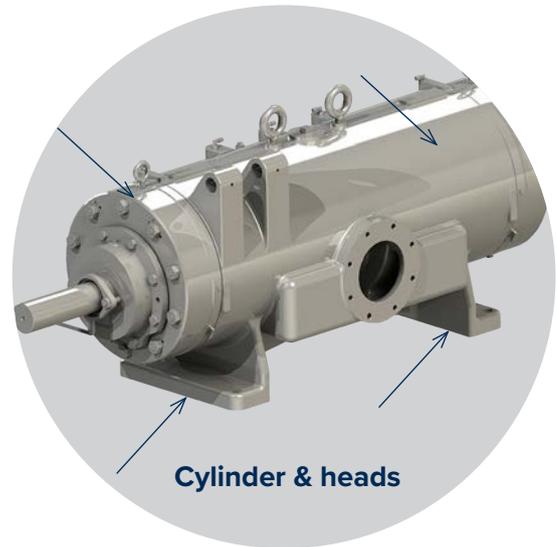
Recent upgrades make the FV compressor even more cost-effective.

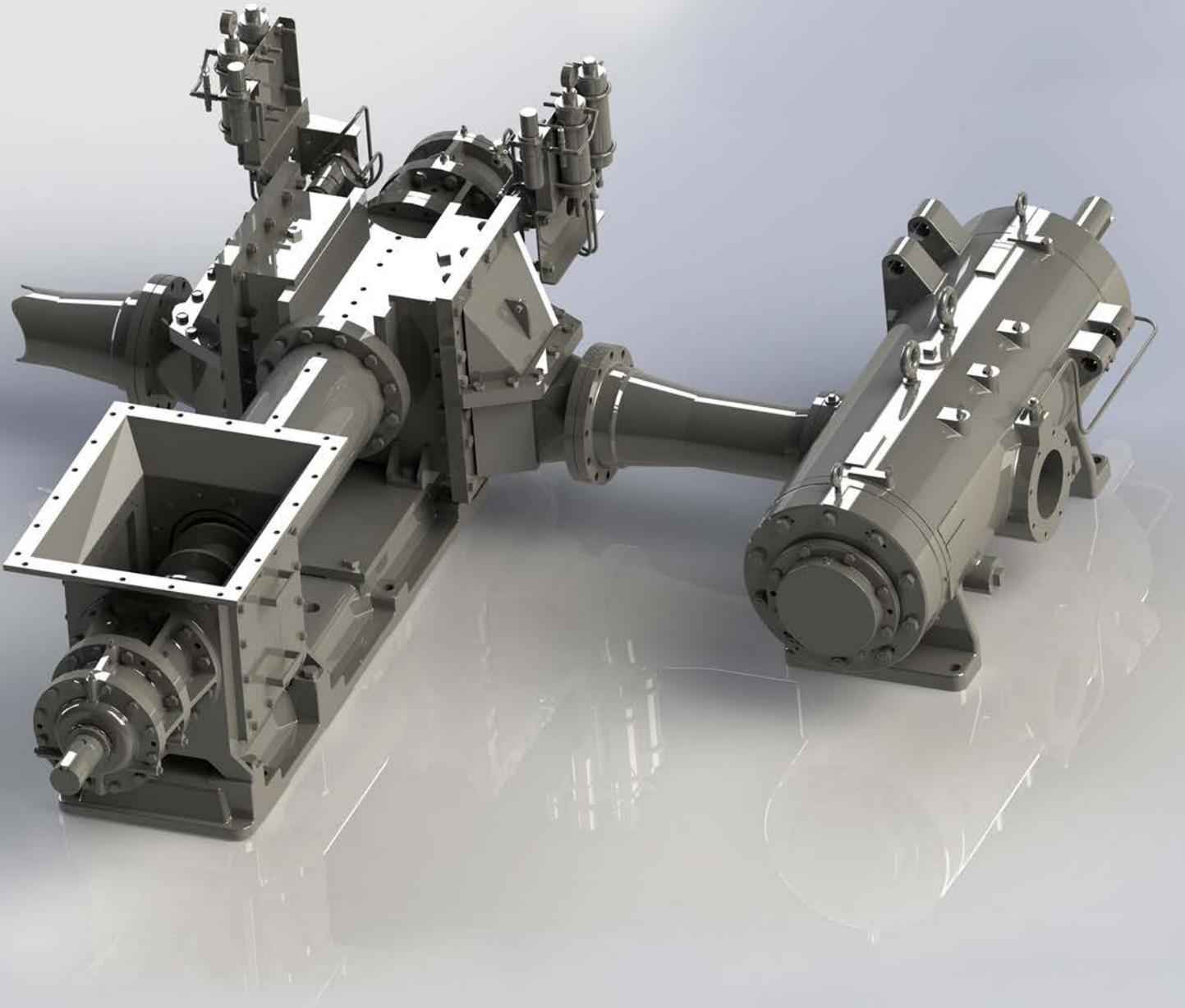
- The compressor cylinder and heads have been redesigned to simplify the castings, which, for most designs, reduces build costs – a saving that ensures you get the lowest possible total cost of ownership. We've also standardized the compressor design across all sizes so that all have round profiles, but kept the mounting position the same so that you can more easily upgrade from an older model.
- The cooling water jackets have also been redesigned, reducing weight and minimizing costs.
- On the larger models, we have standardized to a single discharge flange.

These changes enable the compressor to run at a higher RPM, giving you the option of more volume in a smaller size compressor.

## The perfect partner for the FK N Pump

The FV Compressor is the perfect marriage with the FK N Pump for ultimate reliability. Choose from a full range of single-stage and two-stage compressors, from critical parts to complete self-contained packages. Packages may be custom built to project specifications or FLSmith standards. Auxiliary components are available upon request.





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