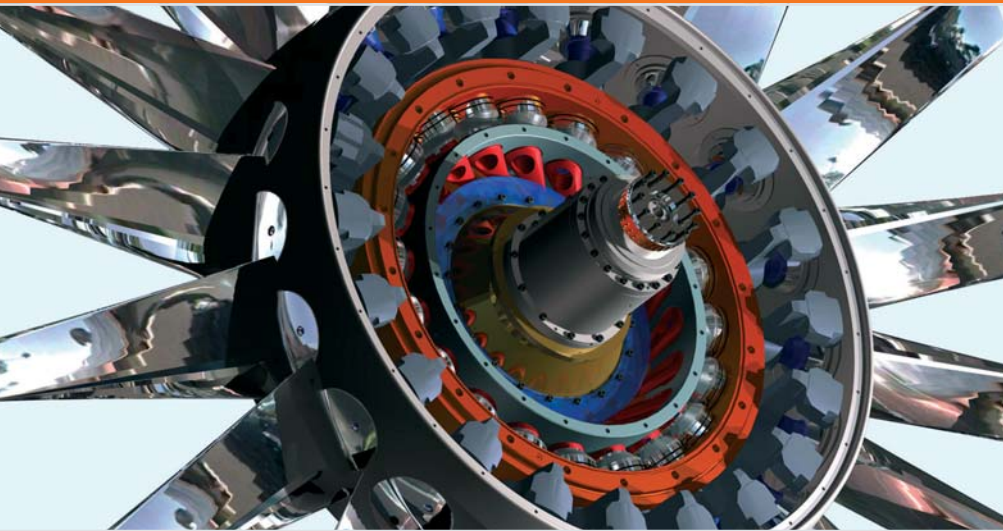


From mechanical to hydraulic regulation



For further information on axial fan retrofit solutions please visit www.howden.com or contact your local Howden company.

When upgrading from mechanical to hydraulic regulation you increase the accuracy of the blade control and you avoid regulating problems. You extend the maintenance intervals, reduce the external regulating torque to factor 10 or more and you avoid hysteresis in the control system.

The hydraulic regulating system for the VARIAX® fan provides precise control of fan blade angles during operation. It is developed by Howden and since the 1960s it has been running for billions of operating hours. Older design of VARIAX® fans – built until the mid 1960s – are provided with mechanical regulation which demand frequent service and change of mechanical parts.

Since the regulating torque needed for the hydraulic blade control is as low as 50 Nm/68 lb ft (compared to more than 1500 Nm/2040 lb ft for a mechanical regulation) the broad hysteresis band is reduced to an insignificant figure. The only force transferred to the hydraulic cylinder is the force to move a small cylinder valve.

Furthermore, all regulating forces are kept within the impeller and they are not transferred to the main bearing assembly. Therefore the lifetime of the main bearing assembly increases significantly as the axial forces from the blade control are eliminated.

An upgrade can be done on most fans and Howden can evaluate the fan to give you an overview of which parts to renew and which to preserve.

Revolving Around You™

Many advantages when changing to hydraulic regulation:

The Howden designed hydraulic cylinder has a continuous oil flow through the piston. This ensures an immediate response, avoids any delay in reaction, and secures that the hydraulic system is kept cool during operation and standstill.

It is not necessary to build up pressure in the system as it works like a servo system – it reacts immediately because of the continuous oil flow.

The oil is cooled in the hydraulic cabinet (skid) and takes care of cooling the hub.

Operation under extreme cold conditions is possible because the hub is kept warm by the circulating oil.

During plant blackout (or power failure) the blades are kept in position because of the accurate balancing of the centrifugal moment of the blades.

The hydraulic cylinder assures that the loads on the regulating parts are kept to a minimum.

Bigger regulating forces are obtainable.



Mounting of the hydraulic cylinder.



Mounting of the hydraulic cylinder.



The actuator is placed on the outside of the fan moving the external regulating arm and changing the position of the hydraulic cylinder.