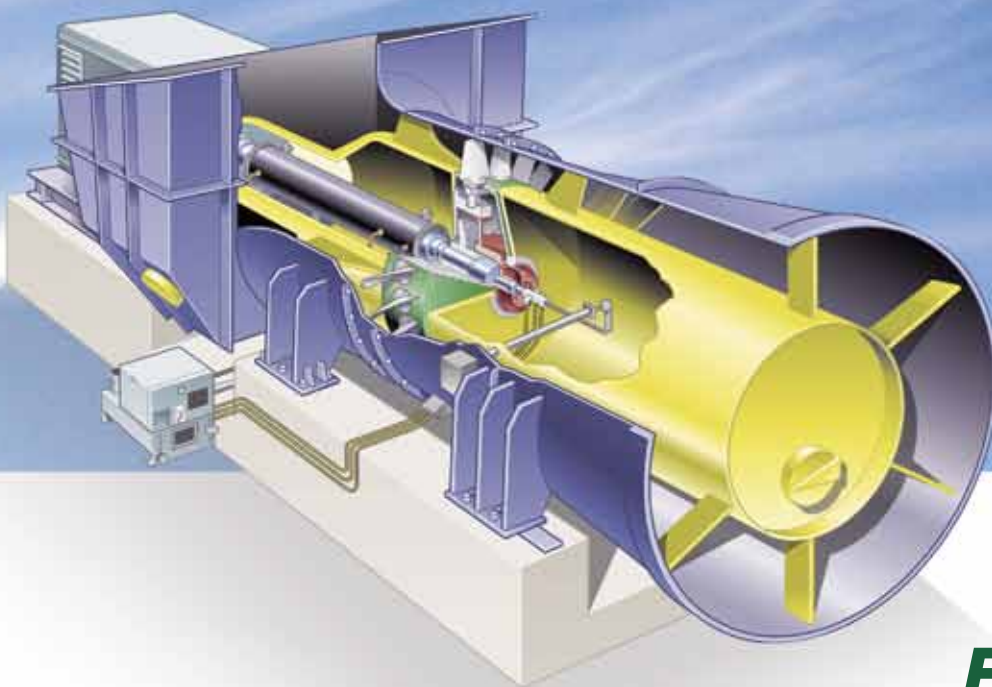
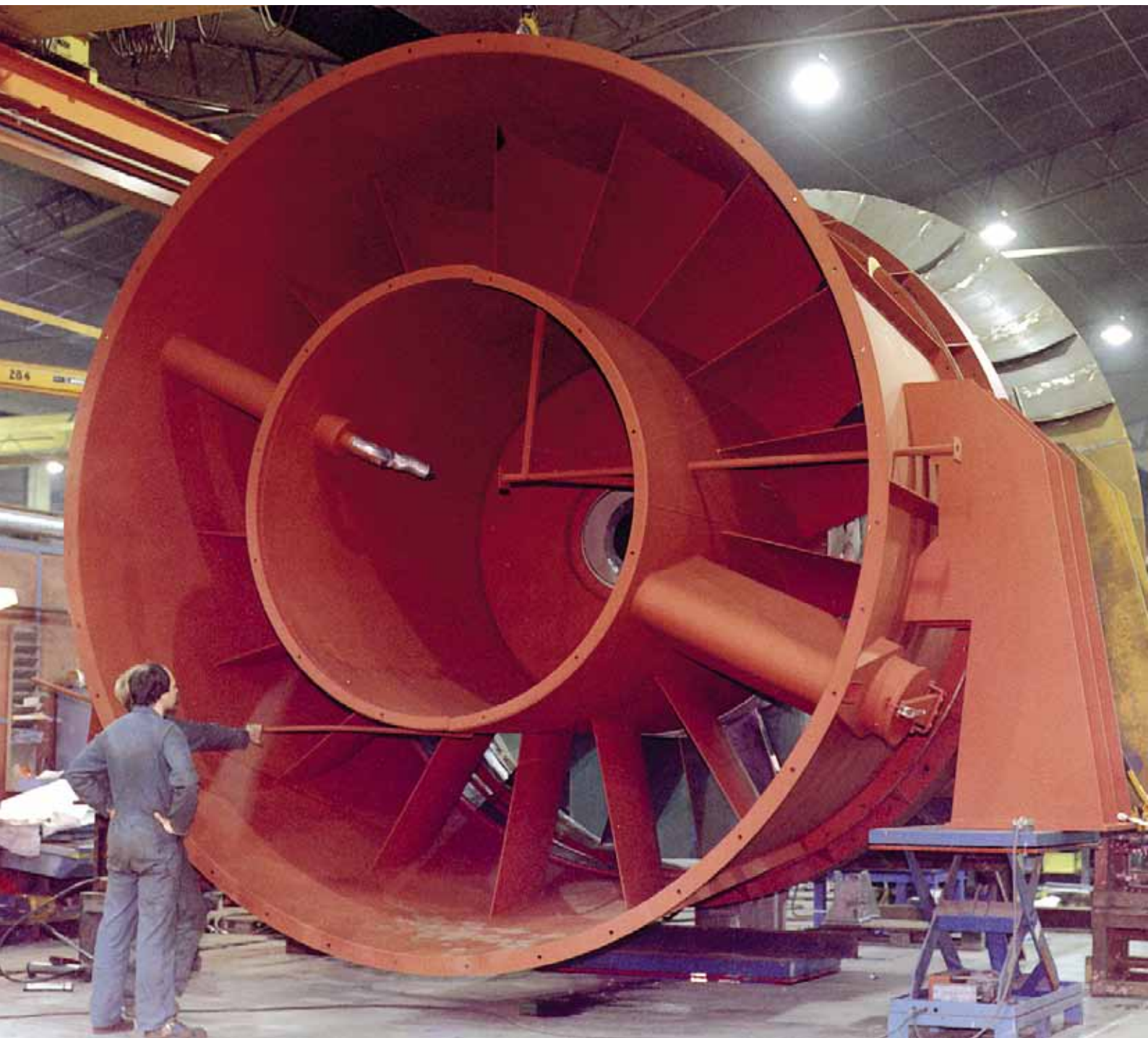


PFS - Single stage axial fan
The axial fan for modern boiler plants



FläktWoods



This large axial fan, type PFS- 400-236, was installed in 1987 at the Salmisaari coal-fired power station in Helsinki, Finland. The photo shows the fan undergoing test assembly; today, the axial serves as a booster fan in the plant's flue gas desulfurization system. The impeller has a diameter of 4.0 meters and the installed motor power is 2000 kW.

PFS – the boiler fan for tough performance requirements

The name Fläkt Woods is synonymous with leading air movement application systems and boiler fans to everyone associated with the design, installation or operation of boiler plants.

Today, Fläkt Woods is one of the world's largest fan manufacturer, and boiler fans have become an increasingly significant line of business ever since the company was founded in 1920.

Fläkt Woods PFS series of fans is designed for boiler plant applications ranging from medium size up to the very largest (50-1000 MW).

The PFS is a single stage, axial flow fan in which the blade angle can be varied during operation by an integrated hydraulic cylinder. Fan performance is therefore continuously adjust-

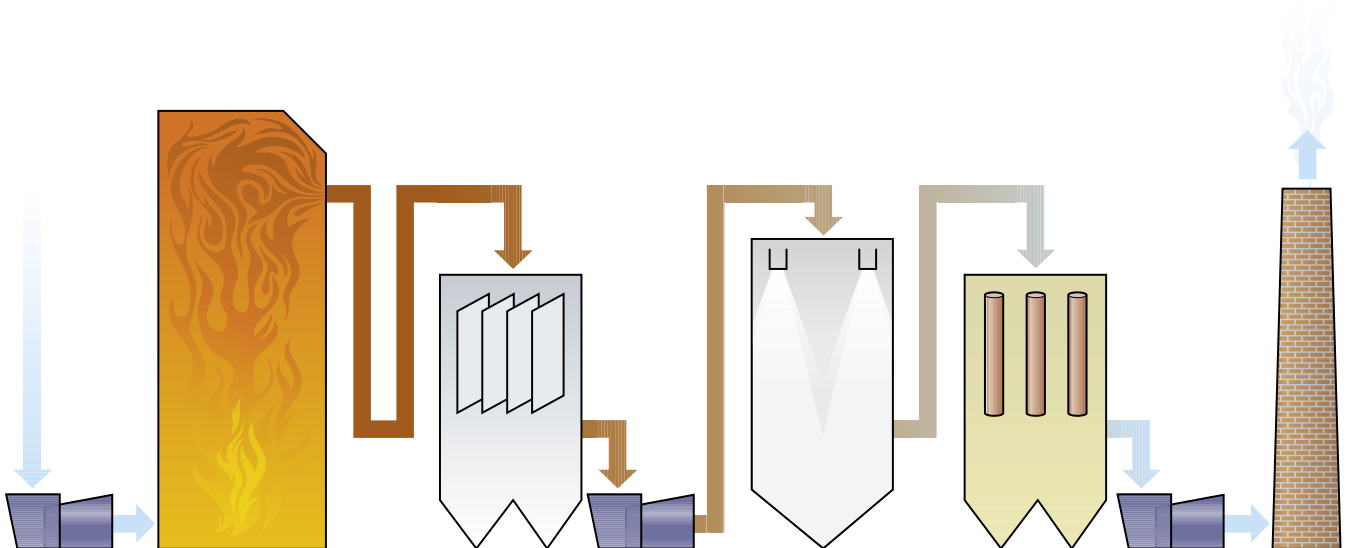
able to meet the immediate needs from varying boiler loads.

The PFS axial fan is designed to meet the demands of a forced or induced draft fan. Other recognized key features of the PFS are:

- high availability
- excellent stability
- superior ease of maintenance

The PFS axial is a boiler fan offering good economy, simple installation, proper and problem-free control and low maintenance costs.

Make the right choice: Install a PFS fan in your next boiler plant!

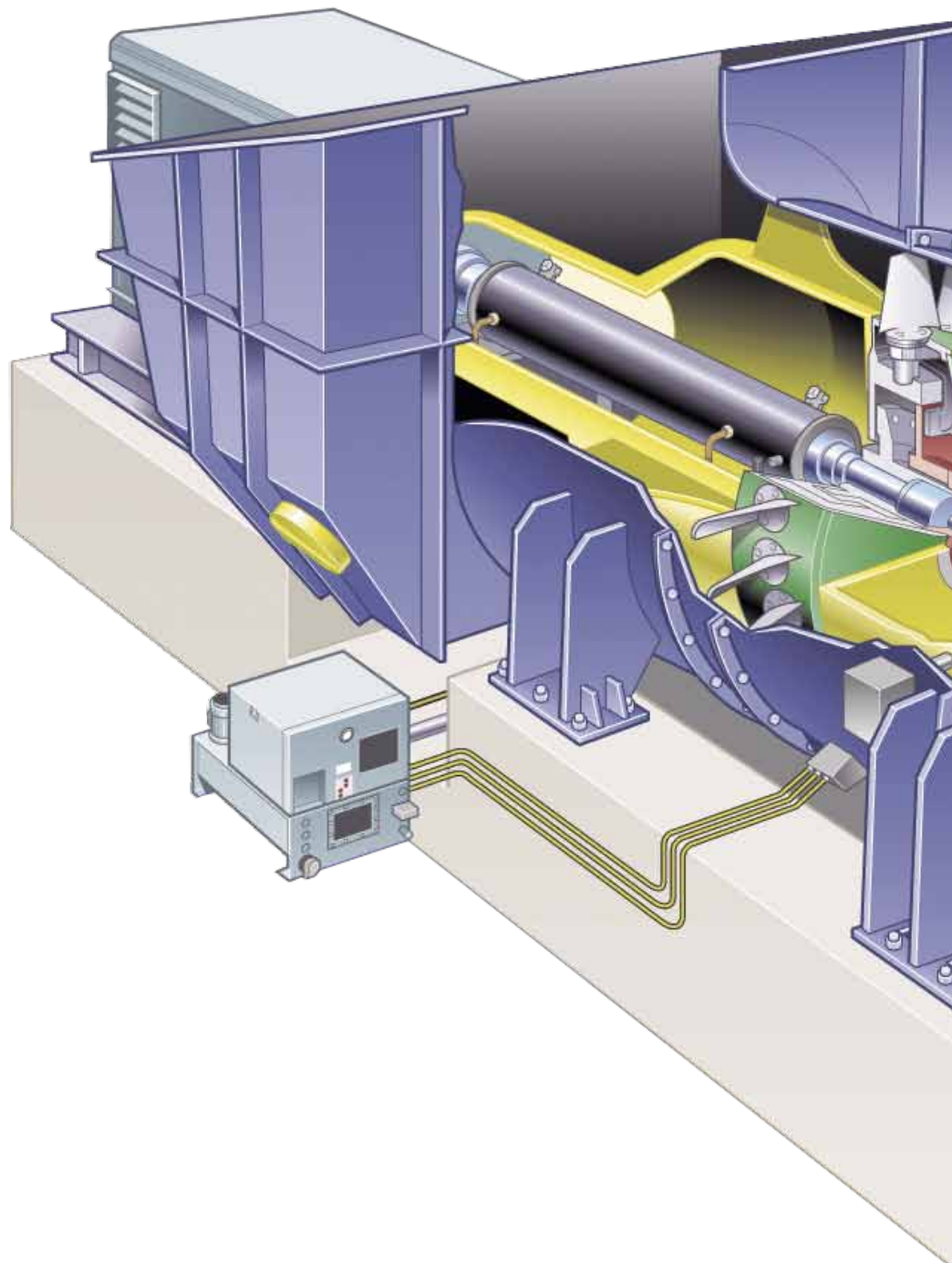


Principle sketch of a coal-fired power plant with FD/ID applications of Fläkt Woods PFS axial fan.

PFS – the axial fan with the

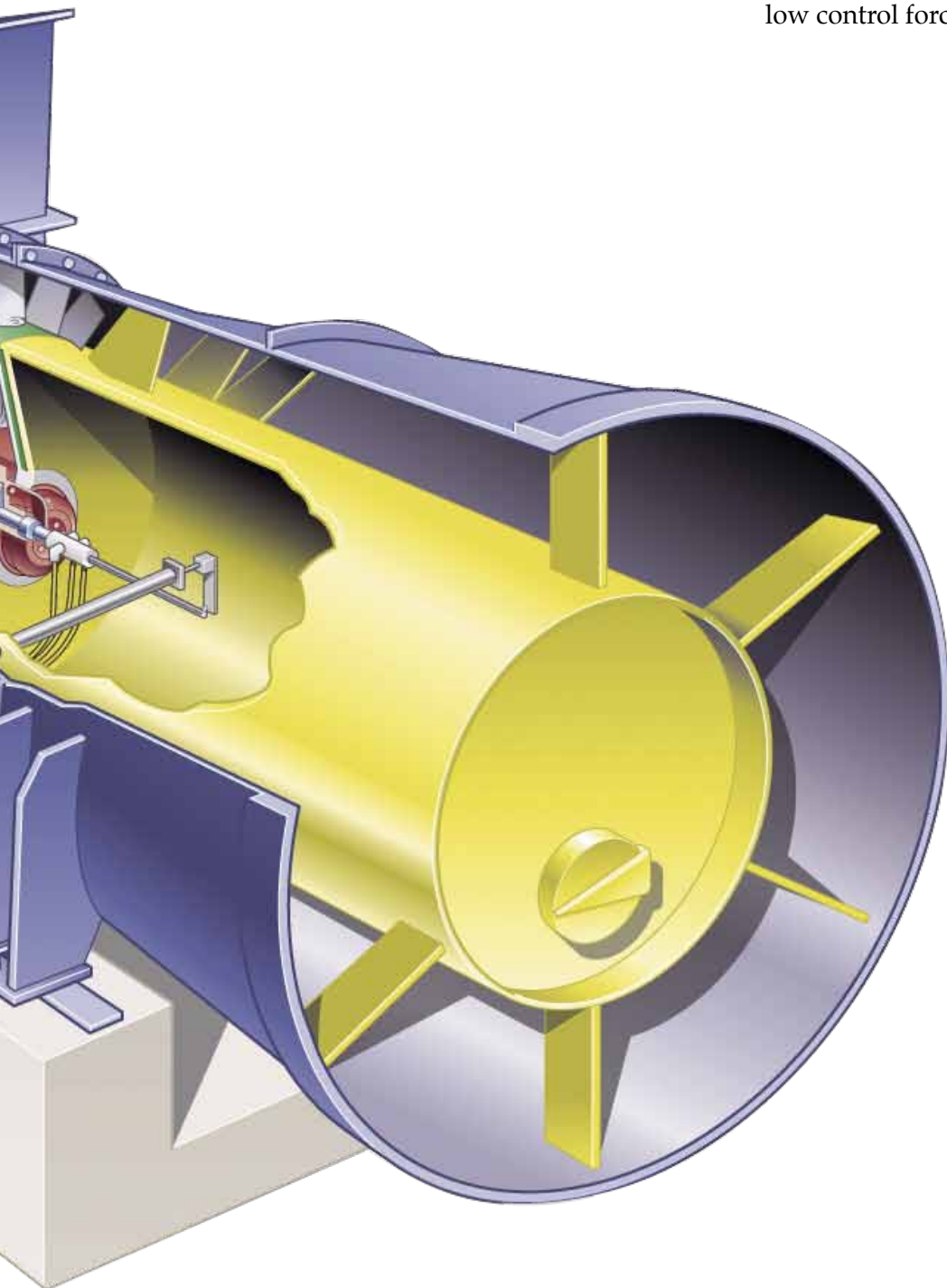
The PFS fan's overall design features makes it a unique axial. Here's why:

- The fan's design ensures high aerodynamic performance throughout its entire operating range, as documented from numerous installations around the world. The fan will be equipped with Fläkt Woods Stall Warning System for safe operation.
- You always choose the optimal fan for your installation. This is due to the large range of PFS models with varying impeller diameters, hub sizes and speeds. The operating range covers duties up to 1000 m³/s and 15 kPa.
- The shaft bearings are oil-lubricated and designed as a separate unit to facilitate ease of installation and service.

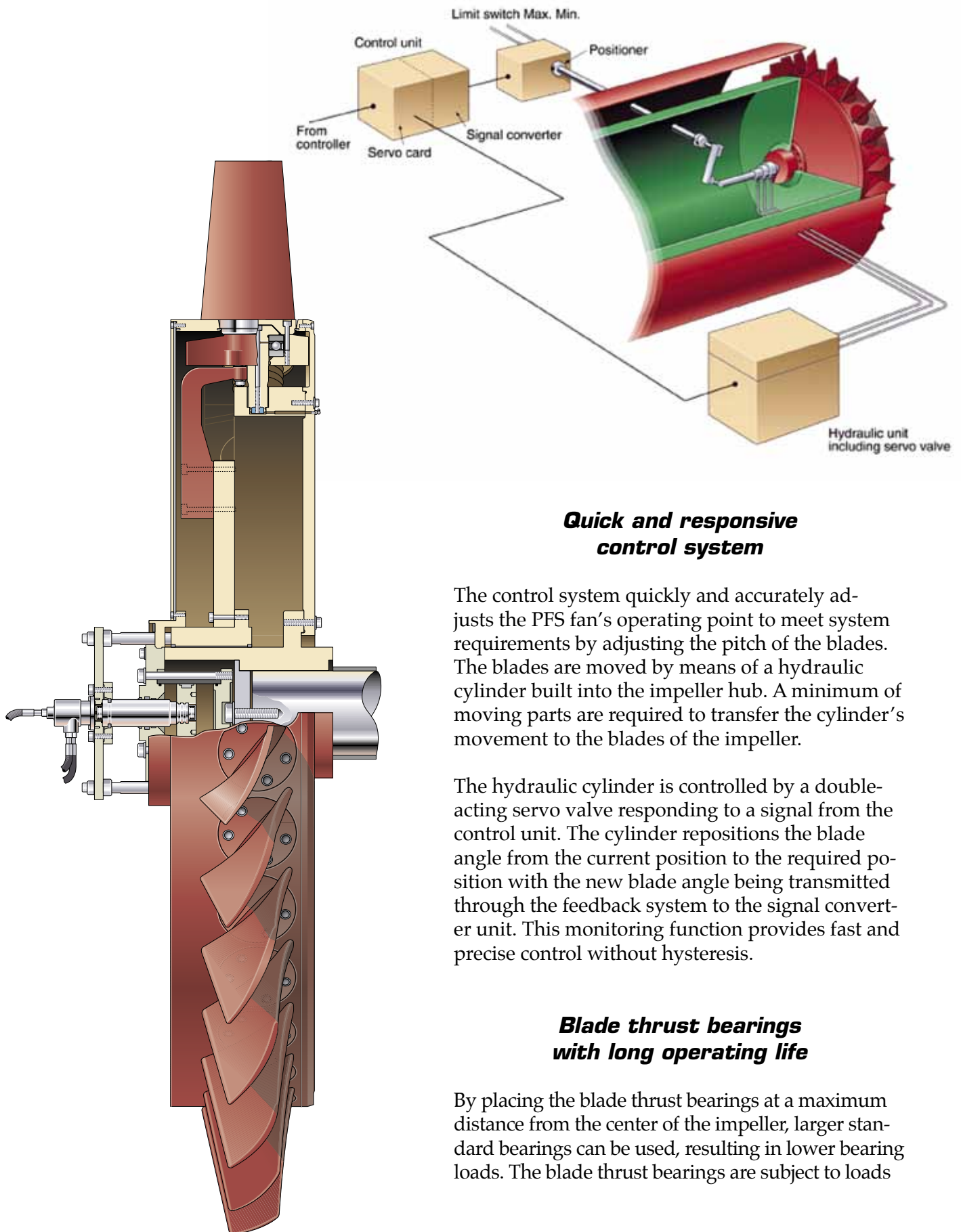


unique features

- Due to its compact dimensions, the shaft and bearing assembly also have the pronounced rigidity required to avoid vibration and resonance problems.
- No external actuator is needed for the PFS since the control mechanism, including its hydraulic cylinder, is integrated into the fan hub. With this design, control forces are not transmitted externally.
- The fan blades are controlled by a minimum number of moving parts, giving high reliability, low friction and a long operating life.
- The servo system controlling fan blade position eliminates potential hysteresis problems.
- The unique blade thrust bearing arrangement gives a low bearing load together with guaranteed continuous pressure lubrication of the bearings - the basic requirements for low control forces and long bearing life.



Details that make PFS axials t



Quick and responsive control system

The control system quickly and accurately adjusts the PFS fan's operating point to meet system requirements by adjusting the pitch of the blades. The blades are moved by means of a hydraulic cylinder built into the impeller hub. A minimum of moving parts are required to transfer the cylinder's movement to the blades of the impeller.

The hydraulic cylinder is controlled by a double-acting servo valve responding to a signal from the control unit. The cylinder repositions the blade angle from the current position to the required position with the new blade angle being transmitted through the feedback system to the signal converter unit. This monitoring function provides fast and precise control without hysteresis.

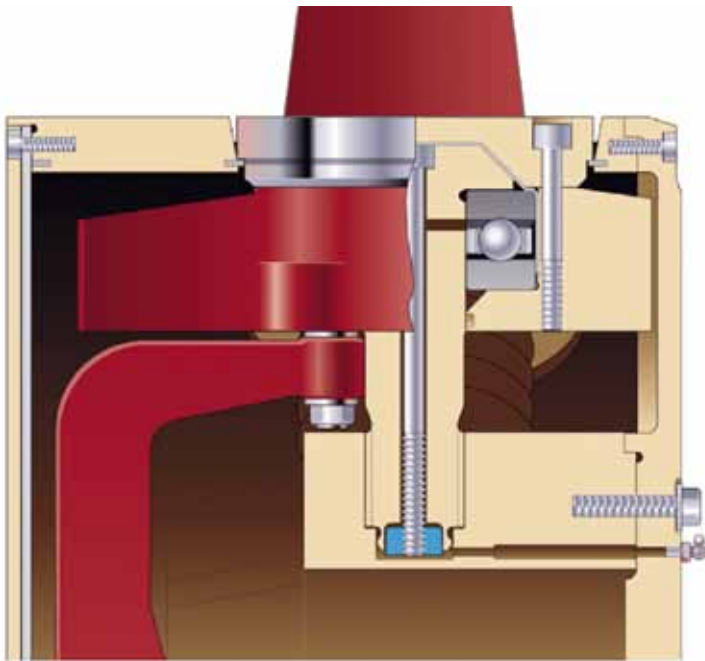
Blade thrust bearings with long operating life

By placing the blade thrust bearings at a maximum distance from the center of the impeller, larger standard bearings can be used, resulting in lower bearing loads. The blade thrust bearings are subject to loads

the most economical alternative

from the blade and the bearing mounting only, and not from a heavy blade shaft, thereby reducing bearing wear and increasing bearing life.

Fläkt Woods unique lubricating system lubricates the blade thrust bearings. With the bearing housing tightly enclosed under a plate cover, all lubrication remains in the bearing assembly and the lubrication system is not affected by any shaft sealing arrangement. This design prevents ingress of foreign matter, such as gas or particles, which can adversely affect bearing function and life.



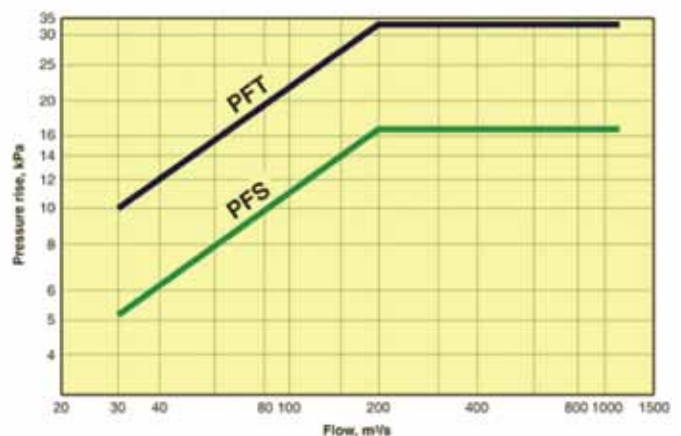
The PFS design principle gives a fan of the longest possible operating life due to:

- a low load on bearings
- guaranteed continuous lubrication of blade thrust bearings under pressure
- no risk for contamination of the lubricant
- no corrosion risk

The fan that's simple to service

Fläkt Woods PFS fan is recognized for its high availability. To keep service requirements to a minimum, we design the axial fans to operate over long periods without the need for maintenance. Inspection doors are strategically located on the fan for quick and easy maintenance and service.

Fan capacity range



We Bring Air to Life

Fläkt Woods is a global leader in air management. We specialise in the design and manufacture of a wide range of air climate and air movement solutions. And our collective experience is unrivalled.

Our constant aim is to provide systems that precisely deliver required function and performance, as well as maximise energy efficiency.

Solutions for all your air climate and air movement needs

Fläkt Woods is providing solutions for ventilation and air climate for buildings as well as fan solutions for Industry and Infrastructure.

● Air Handling Units (AHUs)

Modular, compact and small AHU units. Designed to ensure optimisation of indoor air quality, operational performance and service life.

● Air Terminal Devices and Ducts

Supply and exhaust diffusers and valves for installation on walls, ceiling or floor are all included in our large range and fit all types of applications.

● Chilled Beams

Active induction beams for ventilation, cooling and heating, and passive convection beams for cooling. For suspended or flush-mounted ceiling installation – and multi-service configuration. With unique Comfort Control and Flow Pattern Control features.

● Residential ventilation

A complete range of products for residential ventilation. Consists of ventilation units, exhaust air fans and cooker hoods designed to optimise indoor comfort and save energy.

● Energy recovery

Dessicant-based product and systems that recover energy, increase ventilation and control humidity.

● Fans

Advanced axial, centrifugal and boxed fans for general and specialist applications. Comprehensive range including high temperature and ATEX compliant options. Engineered for energy efficiency and minimised life cycle cost.

● Chillers

Air-cooled and water-cooled chillers with cooling capacity up to 1800kW. Designed to minimise annual energy consumption in all types of buildings.

● Controls and drives

Variable speed drives and control systems, all tested to ensure total compatibility with our products. Specialist team can advise on energy saving and overall system integration.

● Acoustical Products

A complete line of sound attenuating products, including rectangular and round silencers, Media Free silencers, custom silencers and acoustic enclosure panels

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