

# Replacement of existing blades



**For further information on axial fan retrofit solutions please contact:**

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**During 2008, the 2 x 600MW Wangqu Thermal Power Station in China, operated by Shanxi Lujin Electric Power, upgraded the existing installed VARIAX® ID fans with new super high pressure blades to meet the need for increased pressure.**

## The challenge

In 2005, the existing 4 ID ANN-3200/1600B – 990 rpm fans were installed with standard volume blade profiles. At the time of installation this solution was suitable for the purpose. However, a requirement to install antipollution equipment by means of a Selective Catalytic Reduction (SCR) plant changed the fan performance requirements. A considerable higher pressure was required to accommodate for the internal pressure loss of adding SCR.

As the existing volume blade profiles could no longer meet the required pressure, the customer contacted Howden for a solution.

## The solution

The existing VARIAX® fans used the latest technology from Howden comprising fabricated steel hubs, which are extremely versatile and strong by design.

A decisive factor in selecting the appropriate blade profile was of course the need for increased pressure and the optimum choice was Howden's recently developed super high pressure blade profile.

Compared to existing volume profiles this new type of blade profile is capable of delivering up to 30% more pressure.

The rise in pressure causes an increase in axial forces. Since the installed fabricated steel hubs were strong enough to carry this, only minor modifications to the hubs were necessary before new blades could be mounted.

At the same time the blade material was changed from cast steel to a more economical material of nodular cast iron. To optimise capacity and efficiency new guide vanes were installed in the inlet box and the diffuser.

The above changes were made possible without changing the existing motor capacity of 3100 kW.

## Benefits

Substantial changes to fan performance requirements were solved without considerable changes to existing fan installations.

By installing new types of blade profiles a pressure increase of 1000 Pa was delivered; more than sufficient to meet new requirements. The customer avoided costly down-time and investment in major changes to already installed fans.



New super high pressure blade profiles and guide vanes

