



Further information:

## High Efficiency High Pressure turbines

### Purpose

Ratcliffe Power Station uses High Efficiency High Pressure (HE-HP) turbines to achieve higher levels of efficiency (93%). The increased efficiency means that less steam will be required to produce the same amount of electricity. The pump will not need to send as much water into the boiler so less coal will be needed to heat it. This leads to a reduction in the amount of ash and emissions produced.

### How does it work?

The increased efficiency is achieved through a new blade and seal design called 3D blading. This consists of two rows of blades with seals attached - the inner blades are fixed, whilst the outer blades rotate. The seals force the steam through the blades preventing any from escaping

In traditional High Pressure turbines the inlet (or first stage) consists of one impulse stage and thirteen reaction stages. The HE-HP turbine on the other hand only has reaction stages, half of the pressure drops over the fixed blades and the remaining pressure drops over the moving blades. This means that the force on the rotor is a combination of changing direction of steam flow and changing velocity of steam.

