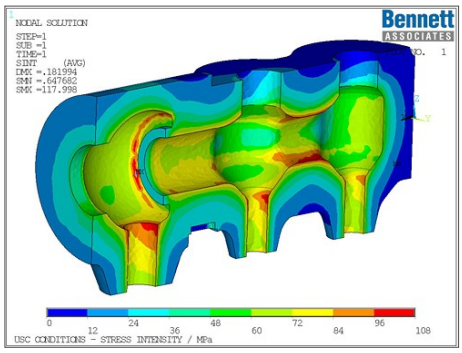
Ultra Super Critical Main Steam Valve Design

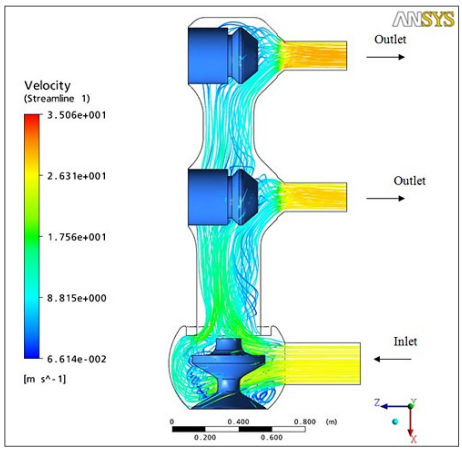
Location:	Stoke-on-Trent / China
Client:	Goodwin Steel Castings Ltd Harbin Turbine Company (HTC)
Value:	£14,500

The drive to increase the efficiency of new power stations means that ever higher steam pressures and temperatures are required. Working with Goodwins, Bennett Associates have developed several large main steam valves for a client in China.

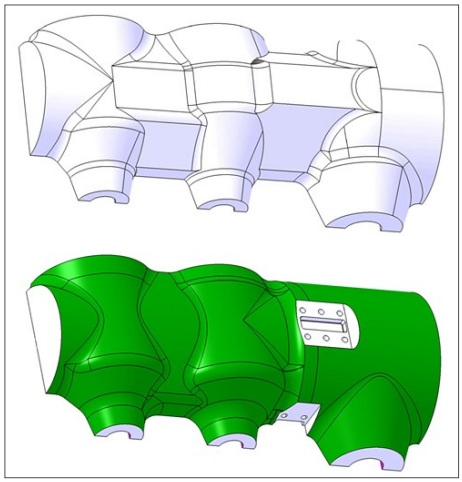
- Assessed the preliminary valve design from HTC and then improved the design to meet the required creep life of the component.
- Modelled the flow through the valve to determine heat transfer coefficients on the inner surfaces to allow us to assess how the whole body heated up during start up cycles.
- Worked with Goodwins to assess their high temperature casting steel to produce acceptable design criteria.



Stress plot for Ultra Super Critical main steam valve



Flow through the main steam valve



Valve Models
As Drawn (Top), Optimised (Bottom)

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