



Bespoke Heat Exchanger Design, Manufacture and Test

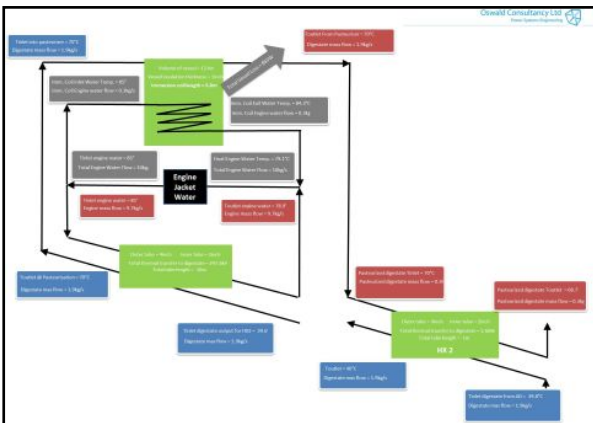
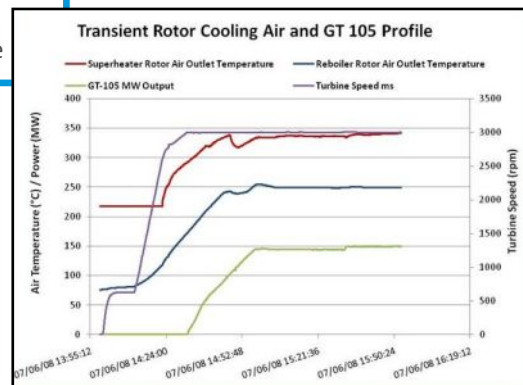
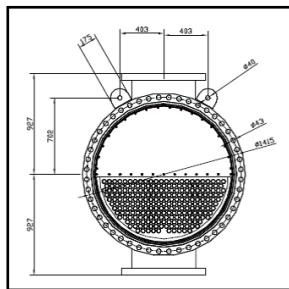
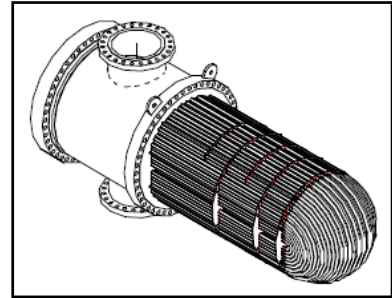
We specialise in the design, manufacture and testing of specialist heat exchanger systems. This means we integrate the heat exchanger within the overall fluid flow system: fluid flow, response and control.

Heat Exchanger Design:

Transient thermal response model of superheater

Application: Shell in tube heat exchangers for waste heat recovery in CCGT to raise thermal performance

- Concept phase study
- Assessed thermal parameters and best use of waste heat
- Advised client on system effects and cost/benefit
- Detail design phase: Produced detail model of response



Heat exchanger sizing design tool

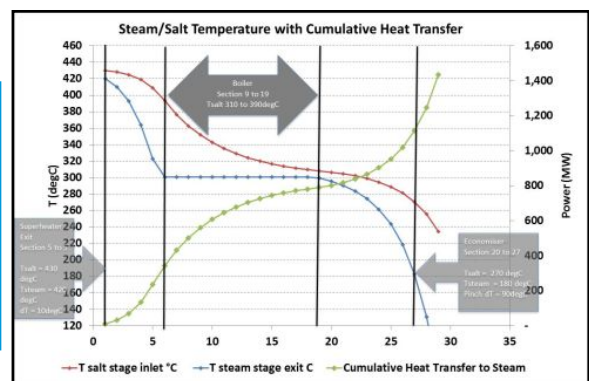
Application: Double pipe heat exchanger - Bioenergy

- Adopted first principle approach for the heat transfer models
- Provided Excel heat exchanger design tool for continuous and batch operational duties
- Held tutorial session with client to educate them in heat transfer principles and the use of our supplied design tool

Reversible heat exchanger design

Application: Molten salt, steam, nuclear reactor

- Assessed parameters and constraints for charging and discharging salt system to water/steam
- Modelled heat exchanger from first principles



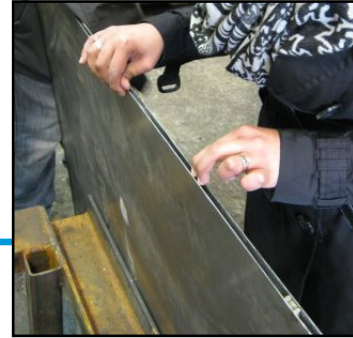
Manufacture:



Manufacturing development of unique, bespoke plate heat exchanger

Application: New heat exchanger for contaminated, particle laden process flow

- Worked closely with client to understand process requirements
- Design focused on maintaining critical flow velocity to avoid fouling
- Manufacturing samples and development arranged with local suppliers
- Unit delivered Dec 2013



Geometry inspection of plate-fin pair

Prototype inspection of bespoke manufactured heat exchanger fin



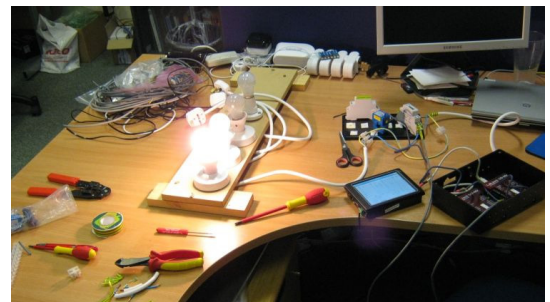
Design and manufacturing development of gas turbine recuperator



Control of heat transport systems

- Deployment of advanced control systems for specialised heat transport systems
- Rapid development of PLC systems for bespoke applications
- Embedded hardware & software design and development
- Specifying controls for all applications

Instrumentation manufacture for unique thermal test environments



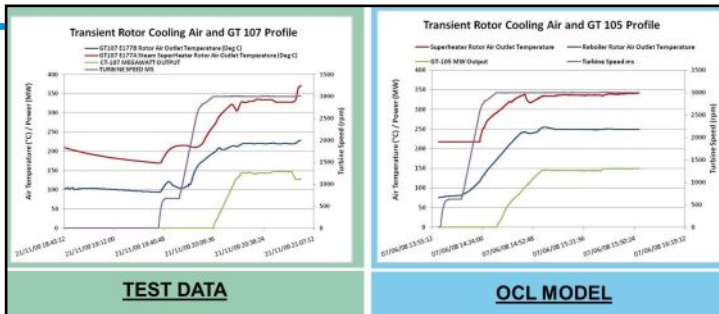
Testing and Validation of Heat Exchangers:



Validation of Heat Exchanger Transient Response

Application: Gas Turbine shell-in-tube heat exchanger

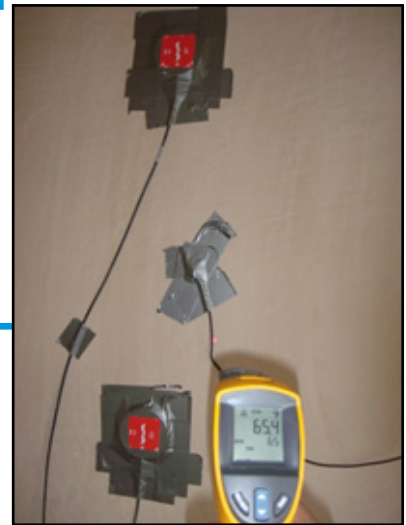
- Managed the design validation
- Test validation methods
- Carried out post-testing analysis and justification of performance benefits
- Defined instrumentation of combustion equipment



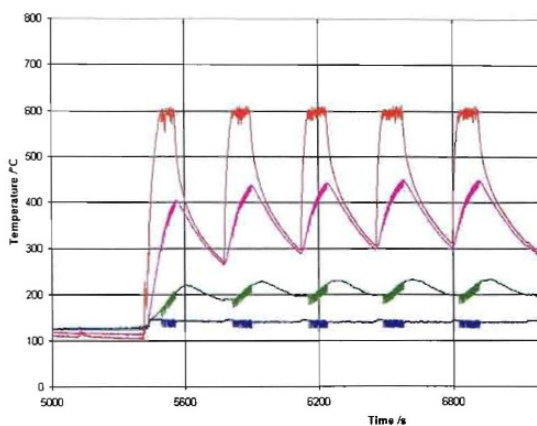
Transient radiation modelling & testing

Application: Biomass district heating system

- We developed a high resolution transient model of a radiation system
- We optimised the client's thermal control system



High temperature testing of compact heat exchangers



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Please contact us if you would like help with the design, development and testing of your heat exchanger application and system: info@oswald.co.uk, telephone +44 2476 256070

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