

Papper Mill Tube Bundle

Case Study

TO UNDERSTAND

- Turnbull & Scott were approached by a major **paper manufacturer** in Scotland to provide a one-off replacement **brass finned tube heat exchanger bundle**. The unit in question was critical for cooling oil in the production process, with the operating temperature ranging between **40–60°C**.
- The system utilised water as the tube-side medium, running at a pressure of around **6 bar**. The original bundle had been manufactured in brass, though the exact grade was not known. Turnbull & Scott engineers attended site to measure the existing unit, providing the foundation for a tailored design solution.

TO SOLVE

- Sourcing brass finned tube proved challenging, as it was no longer available in the required specification. Instead, **copper finned tube** was proposed due to its superior thermal conductivity. Compatibility between copper and the process oil was verified by the client, enabling the project to proceed with confidence.
- The solution incorporated copper finned tubes, with the **tube sheet, baffles, and tie rods retained in brass**. The tube sheet was designed, profiled, and machined in-house, while the full tube bundle was assembled and fabricated at Turnbull & Scott's facility. Rigorous NDT testing and hydrotesting ensured compliance with safety and performance standards.
- To optimise cost-effectiveness, it was agreed that the **existing bonnet connections would be borrowed for hydrotesting**, removing the need to manufacture additional test components while maintaining quality assurance.

TO DELIVER

- Turnbull & Scott successfully delivered a fully bespoke heat exchanger bundle replacement, engineered to match the paper mill's process requirements while introducing **material improvements** in thermal efficiency through copper finned tube construction.
- By combining on-site precision measurement with in-house manufacturing expertise, the project was completed in a **cost-efficient** manner without compromising on performance or reliability.
- This case highlights Turnbull & Scott's ability to adapt to modern material availability challenges while maintaining rigorous testing and quality standards.

