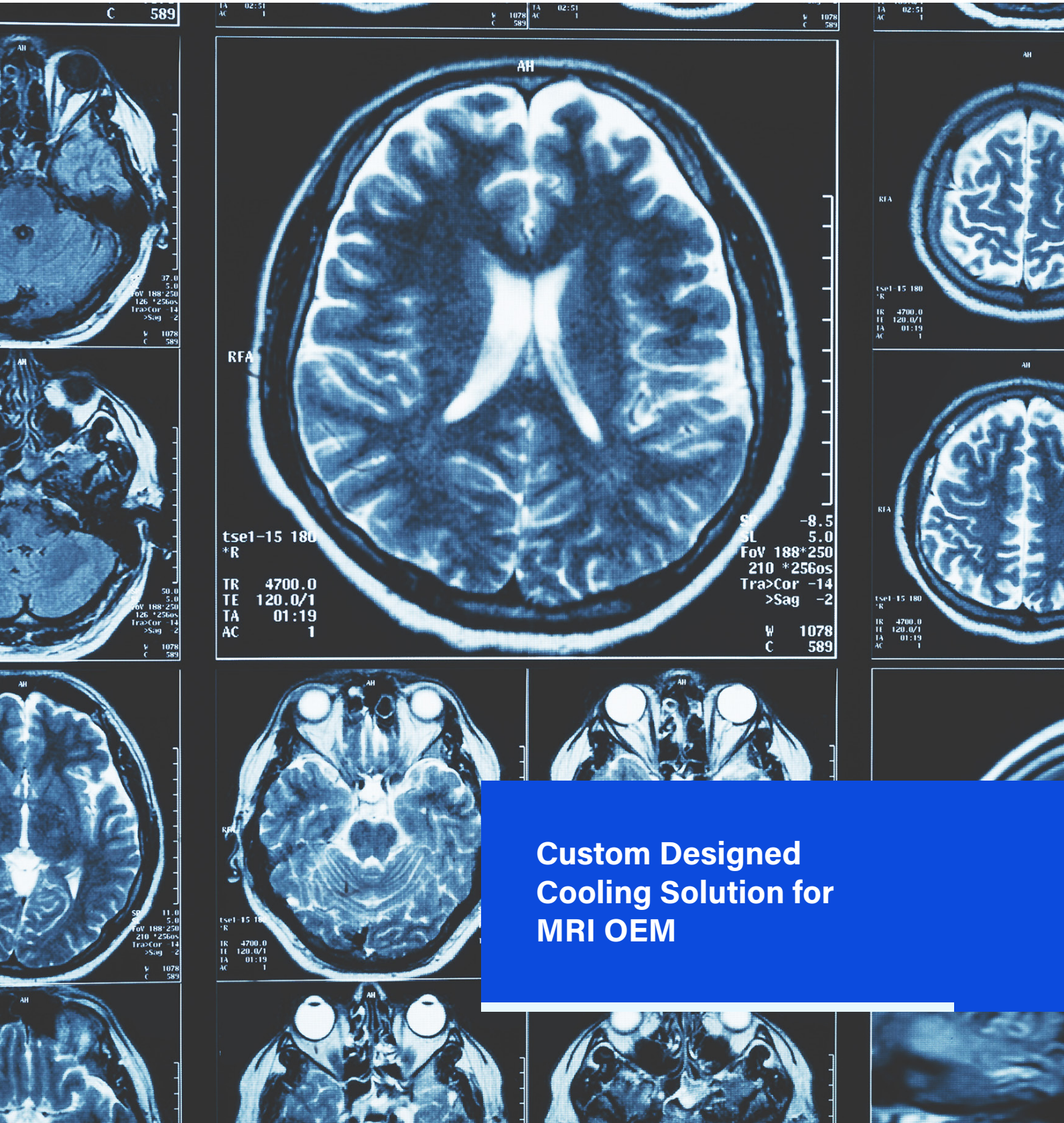
Aqua

The Temperature Control People.

Case Study | **OEM**



Custom Designed Cooling Solution for MRI OEM

Client

Mobile MRI Scanner OEM

Challenge

Concerns over reliability & performance of legacy system and a lack of contingency provision

Solution

Custom designed, modular cooling system

Mobile scanning trailers are used across the UK to bring essential scanning to patients that don't have access to static facilities. Aqua were approached by an original equipment manufacturer, specialising in bespoke mobile spaces.

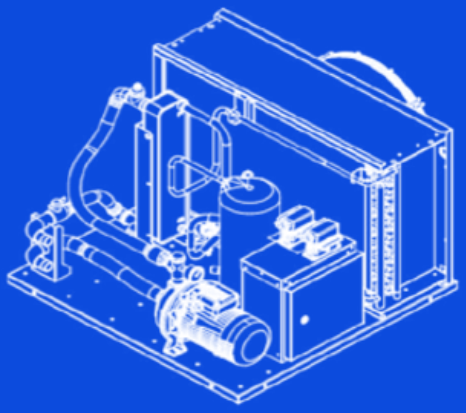
They were keen to review the cooling used on their MRI lorry trailers. OEM Account Manager, Ben Newman, explains how Aqua designed and supplied a new, custom designed system with a host of benefits, including built-in redundancy

Situation

The customer had concerns that their existing system was outdated, as well as taking up considerable space within the trailer framework. They also had no contingency provision, should anything ever go wrong. Ideally, they were looking for an updated, more progressive design, with enhanced reliability and improved performance.

Reliability and redundancy are vital for any MRI cooling application, not only to ensure patient scanning appointments aren't compromised, but also because cooling is critical to the way an MRI scanner operates.

Each scanner contains liquid helium, which cools down the MRI's superconducting magnets to a temperature of below -269°C. These magnets generate the MRI images. If the scanner loses cooling, there is only a limited time before the liquid helium must be discharged. Liquid helium is the only non-renewable element and a finite resource. It can cost over £1,000/10kg, so any issues can have a heavy financial impact.



Solution

Aqua's design team produced a completely bespoke, modular cooling system arrangement to provide chilled fluid at the optimum temperature to keep the MRI scanner cool.

Each module consists of a condenser, fan, evaporator, compressor, and process fluid pump. Three modules are fitted on each trailer, in a 2 run, 1 standby configuration, along with an internally mounted control panel. They're mounted on a slider mechanism for easy access and fit on each side at the rear of the trailer, freeing up valuable space.

The 2 run, 1 standby configuration gives built in redundancy. If a module should fail for any reason, the system – and scanning – continues uninterrupted and the liquid helium is protected. In addition, each system is connected to the process via flexible hosing with quick release connections, meaning it can be inter-changed with a temporary hire solution if any repair work is ever required.

The system operates on R32 refrigerant which has a low Global Warming Potential (GWP). The legacy system had long lengths of pipework, filled with a high GWP refrigeration, meaning its green credentials were very low.

Results

With the new modular system already deployed in several of their trailers, our client is already planning to roll it out across their fleet.

"One of the things I believe we do really well here at Aqua is challenging the norm and believing that there's often a better way of doing things"

explains OEM Account Manager, Ben. "We are fortunate in having a fantastic in-house Design & Installation team and they really shone on this project. Our client has a system they can depend on, safeguarding their patients – and business – for now and the long term."

For support with your next process cooling requirement talk to the team – **0333 004 4433.**