



## REAL TIME DATA ACQUISITION SYSTEM

A leading scientific research organisation required a high speed real time data acquisition system. The organisation is best known for having the largest neutron source in the world – created using a high speed proton accelerator. In order to generate the high magnetic fields required to accelerate the protons to the required speeds they use specialised power supplies. The acquisition system was needed to monitor the signals inside the power supplies.

The neutrons generated inside the accelerator can be fired into solid objects such as turbine blades and welds to give a microscopic view of the stresses operating on these critical engineering components. This enables gas turbines as used on jumbo jet aeroplanes to be built to a very high quality. It also enables failure rates to be accurately predicted allowing maintenance schedules to be optimised.

## SYSTEM REQUIREMENTS

The customer required a high channel count data acquisition system to log data to disc. The system was required to accept inputs from 4–20 mA process transmitters, 0–50 volt inputs, and PT100 RTDs. A total of 16 channels were allocated to the 4–20 mA inputs, all sampling at 500 KS/s into BNC terminations. A further 16 channels were allocated for 0 – 50V inputs also sampling at 500 KS/s. An additional four channels were required to sample 0 – 50 V inputs at 2MS/s which also terminated into BNC connections. Finally 32 RTD inputs were provided which allowed temperature logging at 25KS/s. The system was required to log data to disc for a maximum of thirty minutes at the rated speeds.



## SOLUTION

Amplicon supplied a complete multi – tasking embedded data acquisition system with on board DSP processing which enabled the host CPUs to perform other critical applications. A dedicated 19" rackmount enclosure was provided which incorporated the BNC terminations for connecting the signal cables to the system.

High voltage requirements on some of the channels meant that some specialist signal conditioning was also required; this was housed in the same enclosure as the termination connections. The system was designed to give maximum flexibility if changes were needed in the future.

The system solution supplied by Amplicon included 4 bespoke industrial PCs to handle the high data throughput from the cards. High capacity hard drives were specified to allow data to be logged to the disc at high speed.

On-site warranty was supplied as standard with the 19" rackmount pcs which gave the customer complete 24/7 support. Additionally the option was made available for a gold 4 hour response service if the application migrated to a mission critical system.

The complete real time DSP based datalogger system was delivered ahead of schedule and on budget, supplied in a 19" rack mount cabinet. This cabinet housed the industrial PCs, real time data acquisition hardware, pull out display and signal termination

Airlines and their passengers around the world expect 100% reliability from their aeroplanes – without technology such as that provided by Amplicon it would not be possible to provide this reassurance.

## WHY AMPLICON 🏆

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Amplicon was the supplier of choice as we were able to offer 30 years experience with industrial electronic systems encompassing data acquisition, industrial networking and computing solutions. By talking to one of our applications engineers, the right equipment was selected on time and within budget.