



Case Details

To verify the mathematical modelling of a new train, the client (a train manufacturer) engaged a firm of independent consulting engineers to verify the design and proof load the structure to ensure the design criteria had been met. The client intended to view the data in real-time in addition to post processing.

Key Requirements

High Speed logging
TCP/IP Networkability
Compatibility with strain gauges

dataTaker Data Logging Products

- 1 Cost effective data logging solutions
- 2 Capable of measuring and logging DC voltage, current and resistance sources in addition to digital signals
- 3 Suitable for small to large scale applications
- 4 Rugged design and construction provides reliable operation under extreme conditions
- 5 Designed and manufactured in Australia to the highest quality standards



All (sensors) Aboard!
The train was loaded with *dataTaker* data loggers and large number of strain gauges to record and verify design engineers' mathematical modelling.

dataTaker Solution

Equipment

dataTaker DT800 data logger x7
Network switch
Strain gauge bridge completion units x14
PC with *dataTaker* Software

Sensors

210 Strain Gauges
5 Resistance displacement transducers
1 Load cell

Implementation Notes

After reviewing the Finite Element Analysis model the consulting engineers selected the optimum locations for and applied 210 strain gauges and 5 resistance displacement transducers and a load cell.

We provided contract programming and commissioning of the DT800s and *dataTaker* software and on-site training for the consulting engineers. The seven *dataTaker* DT800s were configured for TCP/IP connections and attached to a local area network to which the PC was also connected. Using TCP/IP to communicate with the loggers allows for the automatic error correction ensuring data integrity and also enables the user to scale up the number of *dataTaker* DT800s if more channels are required.

The structure was dead weight loaded to pre-determined load levels and the strain gauge responses recorded. During tests the data was viewed in real-time and the *dataTaker* software was used to store the data in a database. Microsoft Excel was then used to recover the data from the database for analysis. This greatly simplifies the data collection, manipulation and analysis providing the necessary information to verify design and proof load the structure ensuring the design criteria had been met.