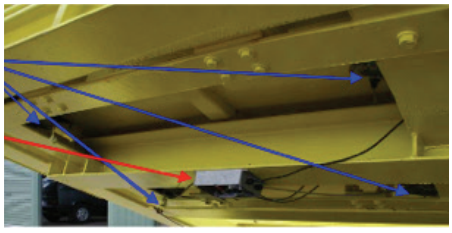
CASE STUDY
MANTRACOURT GIVES AUSTRALIAN ENGINEERS A LIFT

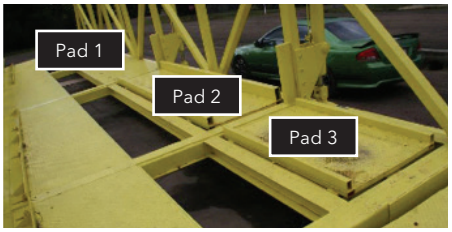
THE APPLICATION

This application demonstrates how the T24 wireless telemetry sensor system was used in conjunction with Mantracourt's Australian Business Partner to help the Australian Automotive Research Centre (AARC) renovate and update a Tilt Table. This is designed to test vehicle stability and/or load restraint mechanism by tilting to an angle of 45°.

KEY BENEFITS

- T24 wireless telemetry was ideal for this environment and avoided unnecessary cables which reduced installation costs.
- Intuitive logging software allows on screen viewing and logging during testing.
- The system provides high accuracy, low noise measurement for analysis.





mantracout.com
Mantracourt Electronics Ltd, The Drive,
Farringdon, Exeter, Devon, EX5 2JB, UK

CONTACT OUR TECHNICAL SALES TEAM
+44 (0)1395 232020
sales@mantracourt.com

THE PROJECT:
WIRELESS TELEMETRY ENABLES VEHICLE TESTING

THE APPLICATION

Applied Measurement Australia was approached by a vehicle-testing organisation the Australian Automotive Research Centre (AARC) to help renovate and update a Tilt Table that was used to test vehicle stability by tilting to an angle of 45°.

The test involves driving a vehicle on to the platform positioning the wheels on weigh pads. As the table is tilted using four hydraulic jacks and the load on the weigh pads is monitored until it approaches zero. This means the vehicle is near its tipping point and the platform angle is recorded.

Each weigh pad has 4 load cells, one in each corner, that are connected to a single summing box that accepts inputs from multiple load cells and combines their outputs into one output.

THE CHALLENGE

The existing table was mechanically functional, but the measurement system was out-dated and the load cells needed replacing and recalibrating.

Applied Measurements Australia serviced and replaced the load cells, as necessary.

They then looked at ways of updating the measurement system and approached Mantracourt whose T24 wireless telemetry system was ideal for the application. Initially it was the ease of set up and operation that attracted Applied Measurement to the T24 but also a wireless system was more suitable for the application environment, bearing in mind that the operators have to perform tests in all weather conditions.

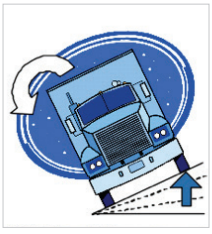
THE SOLUTION

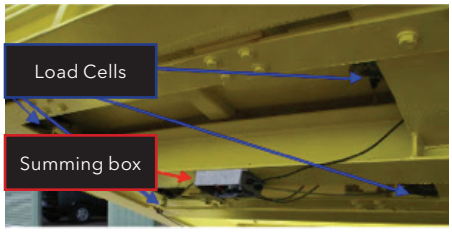
T24 is a wireless telemetry system for multiple data acquisition in real time. The range comprises a versatile set of products, based around proprietary acquisition devices that can be mixed and matched to provide high quality remote readings for critical applications. The low power, battery equipped, radio units allow data collection over many years without externally supplied power and so are considerably more cost-effective than hardwired systems.

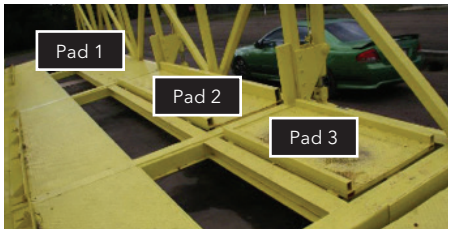
The solution was to connect each weigh pad summing box to a T24-ACMi-VA voltage acquisition module. These were then mounted to the side of the tilt table. The weigh pads were then loaded with known weights and the T24-ACMi-VA's calibrated to give an output in kg.

In addition to the wireless load measurements system, Applied Measurement also integrated 6 Accustar inclinometers onto 6 aluminium bars with magnetic feet. Each inclinometer was integrated with a T24-ACMi-VA which measures the returned voltage which is proportional to the angle of the beam. Each beam was calibrated using a laboratory tilt table to + 45 degrees.

A laptop computer was then equipped with a T24-BSue (USB receiver base station) and Mantracourt's logging and mapping software (T24LOG100). The inputs from the weigh pads and 6 inclinometers were configured into an on-screen representation so that they could be viewed and logged during testing.







THE RESULTS:
WIRELESS TELEMETRY ENABLES VEHICLE TESTING

THE RESULTS

During testing the inclinometers were mounted not only on the tilt bridge but also on the vehicle under test so that the angular difference between the tilt table and the vehicle could also be measured. This allows the user to see the effect of the suspension on different parts of the vehicle.

All data from the test was logged every second during testing to allow for analysis and compilation of a report to be given to the end customer.

EXAMPLE OF TEST DATA

Throughout the project technical support was available from Applied Measurement Australia and from the UK based Mantracourt office. In addition a Mantracourt engineer was also available onsite to assist with initial setup and calibration.

Mantracourt's T24 wireless telemetry system is a versatile system for a wide range of applications, including those in harsh and rugged conditions. With engineering expertise and back-up from Mantracourt, wherever in the world the application is being set-up, wireless systems are easy to set up and are now becoming a viable alternative to hard wired systems.

Since this application was completed, Mantracourt has launched a new, upgraded version of T24. The new T24 improvements include a 4x increase in transmission range, improved security features and smarter diagnostics. The complete system comprises a range of transmitters, interfaces, displays and output modules that can be simply and easily configured to suit individual applications. The transmitter modules have been designed to collect data from a wide range of industrial sensors not just load but also pressure, torque, strain, temperature, pulse, potentiometer and 4-20 mA/0-10 V conditioned sensors.

PRODUCTS USED

T24-B SUE

Extended range wireless radio telemetry USB base station

T24-ACMI

Mini sensor enclosure

T24-VA

Voltage to wireless telemetry converter

TIME	ELAPSED MS	TILT 1	TILT 2	TILT 3	TILT 4	TILT 5	TILT 6	PAD 1	PAD 2	PAD 3
13:18:17	500	19.4	20	19.4	19.8	19.9	19.2	0.01	-0.01	-0.01
13:18:18	1004	19.5	20	19.5	19.5	19.9	19.3	0.01	-0.01	-0.01
13:18:18	1578	19.5	20	19.4	19.7	19.9	19.4	0.01	-0.01	-0.01