

# CASE STUDY

## MEASURING THE OUTPUT POWER OF A MOTOR

### THE APPLICATION

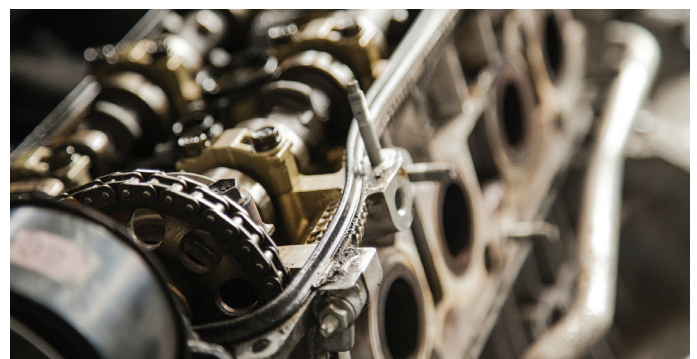
A generator company were looking at a number of motors to potentially incorporate into their generator design. Each motor had rated power outputs but the company wanted to independently measure the power output of the various motors whilst in the generator housing, drawing various loads from the electrical supply.

Mantracourt's T24 range enabled the company to measure the torque on the shaft between the motor and generator windings and then multiply this by the RPM of the shaft.

In order to capture the torque, the shaft was fitted with an inline torque transducer; a T24-ACMI-SA strain acquisition module was calibrated to output the torque in Nm. The RPM of the shaft was captured using an optic sensor which created a pulse every time a white dot on the shaft passed the sensor; this sensor was coupled to a T24-ACMI-PA pulse acquisition module which calculated the RPM of the shaft. Rotation and temperature data were also captured.

### KEY BENEFITS

- ▶ A Single Computer with a T24-BSu USB base station was used to collect the data from all of the units, meaning that synchronised data from the pulse and strain acquisition units could be logged back to a single CSV file, so output power can be calculated easily by multiplying the two values.
- ▶ Free T24LOG100 software provided engineers with a range of logging options to facilitate analysis.
- ▶ Maximum transmission rate of 200sps enabled the project team to ensure that at least 100 readings will be received by the base station regardless of possible radio collisions.

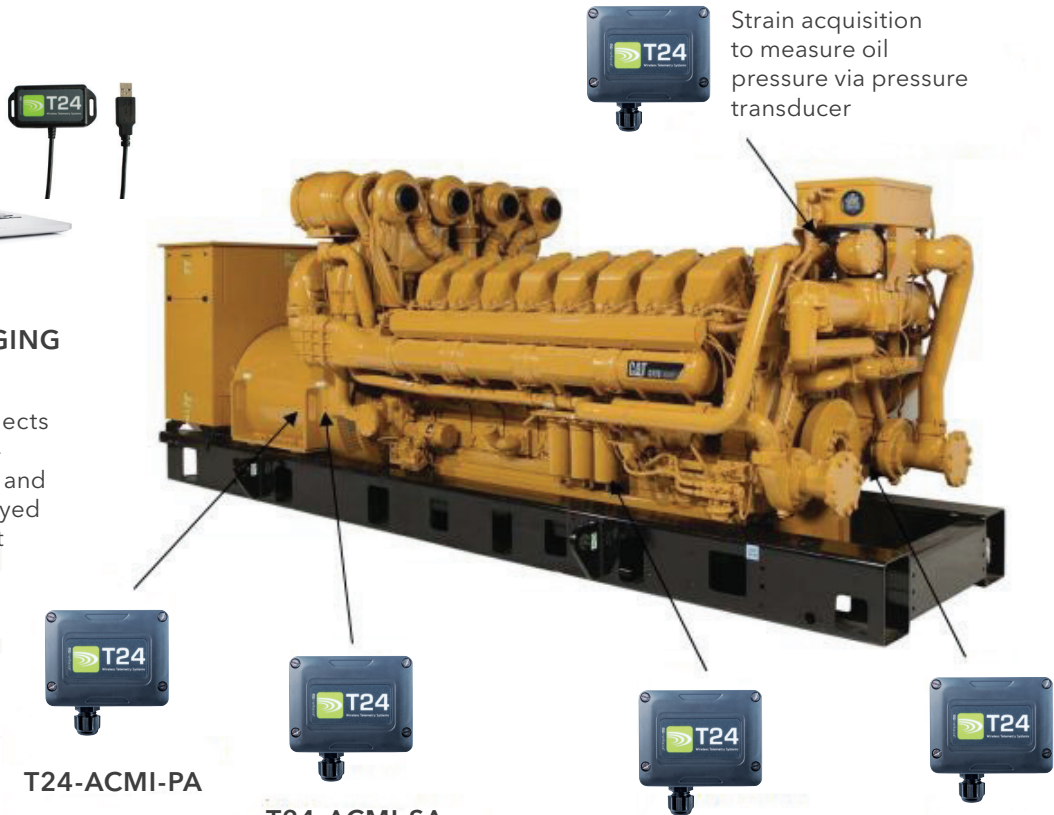


**SYSTEM OVERVIEW**



**T24-BSI & T24  
TOOLKIT & LOGGING  
SOFTWARE**

The base station collects data from all the T24 acquisition modules and is logged and displayed using the T24 Toolkit



**T24-ACMI-SA**

Strain acquisition to measure oil pressure via pressure transducer



**T24-ACMI-PA**

Pulse acquisition to measure RPM of motor



**T24-ACMI-SA**

Strain acquisition to measure torque via torque transducer



**T24-ACMI-TA**

Temperature acquisition of oil temperature



**T24-ACMI-RA**

Potentiometer acquisition connected to endless potentiometer to measure position of shaft

**PRODUCTS USED**



**T24-BSI**

Wireless radio telemetry USB base station



**T24-TK**

Free Toolkit software allows configuration, calibration and testing of the T24 range.



**T24-ACMI-VA, T24-ACMI-PA  
T24-ACMI-SA, T24-ACMI-RA**

Mini sensor enclosure with Voltage, Pulse, Strain and Potentiometer options of wireless telemetry converters



**T24LOG100**

Free T24 logging software allows viewing and logging of up to 100 channels of data from the T24 sensor transmitters