

## Telemetry in the tightest of spaces

Single-channel flex telemetry is one of the most important achievements in measurement technology.

It allows the measurement of torque, force, temperature etc in very compact installation conditions. The rotor antenna, sensor, sensor signal amplifier and casing can be accommodated within a height of just 4 mm. This avoids any annoying or complicated modifications to allow the measuring technology to be housed. Since the weight of the telemetry is small, the system is not influenced by its own behavior and the problem of balancing is eliminated. Flex telemetry is highly robust and is suitable for use in very tough environments.

After great success with single-channel flex telemetry, MANNER has now developed a flex telemetry solution for multi-channel applications. This permits even complex multichannel measurement tasks to be performed in very confined spaces. Existing singlechannel flex telemetry has also been extended by the addition of cascading applications for any number of channels.

The integrated measuring amplifier allows strain gauges or thermocouples to be directly connected. The new multi-channel sensor signal amplifier system can literally be wrapped around the shaft. Due to the new formable design, completely new tasks can be carried out especially in very tight installation conditions. Typical uses include engine transmissions, temperature measurements on clutches, strain measurements with miniature gears and turbocharger applications. The new multi-channel sensor-signal amplifier is of proven 16bit digital technology construction is very accurate and is suitable for temperatures ranging from -50 to 160°C.



# Telemetric Torsion Measuring System for Detecting the Torque on the Shaft Body with Contactless Signal Transmission

Nowadays, telemetry systems with near-field transmission are often used to measure the torques of rotating shafts. Torque is generally sensed using strain gauges. These have been providing excellent results for many decades due to their precision and flexibility.

Unfortunately, the installation and the connection of strain gauges is very time-consuming and thus expensive. Other procedures such as magneto-resistive or inductive methods, angle difference measurement and so on, while less expensive to manufacture, are more susceptible to interference and low precision. The telemetric torsion measuring technology outlined here combines the proven features of strain gauge techniques with an extremely low-cost application technology. The telemetric torsion sensor already has a torque sensing feature which can be very easily affixed, just like a postage stamp. This is achieved using a common carrier for the torsion sensor on a strain gauge basis, as well a signal detection unit with an integrated telemetry interface.

The system operates very advantageously and without any contact. No soldering iron is needed to install it. As the structure can be affixed anywhere on the body of the shaft the main area of application is in the cost-effective manufacture of torque sensors for series applications.

