



GS4R

ON BOARD MULTIPURPOSE
MONITORING UNIT FOR
RACING APPLICATIONS

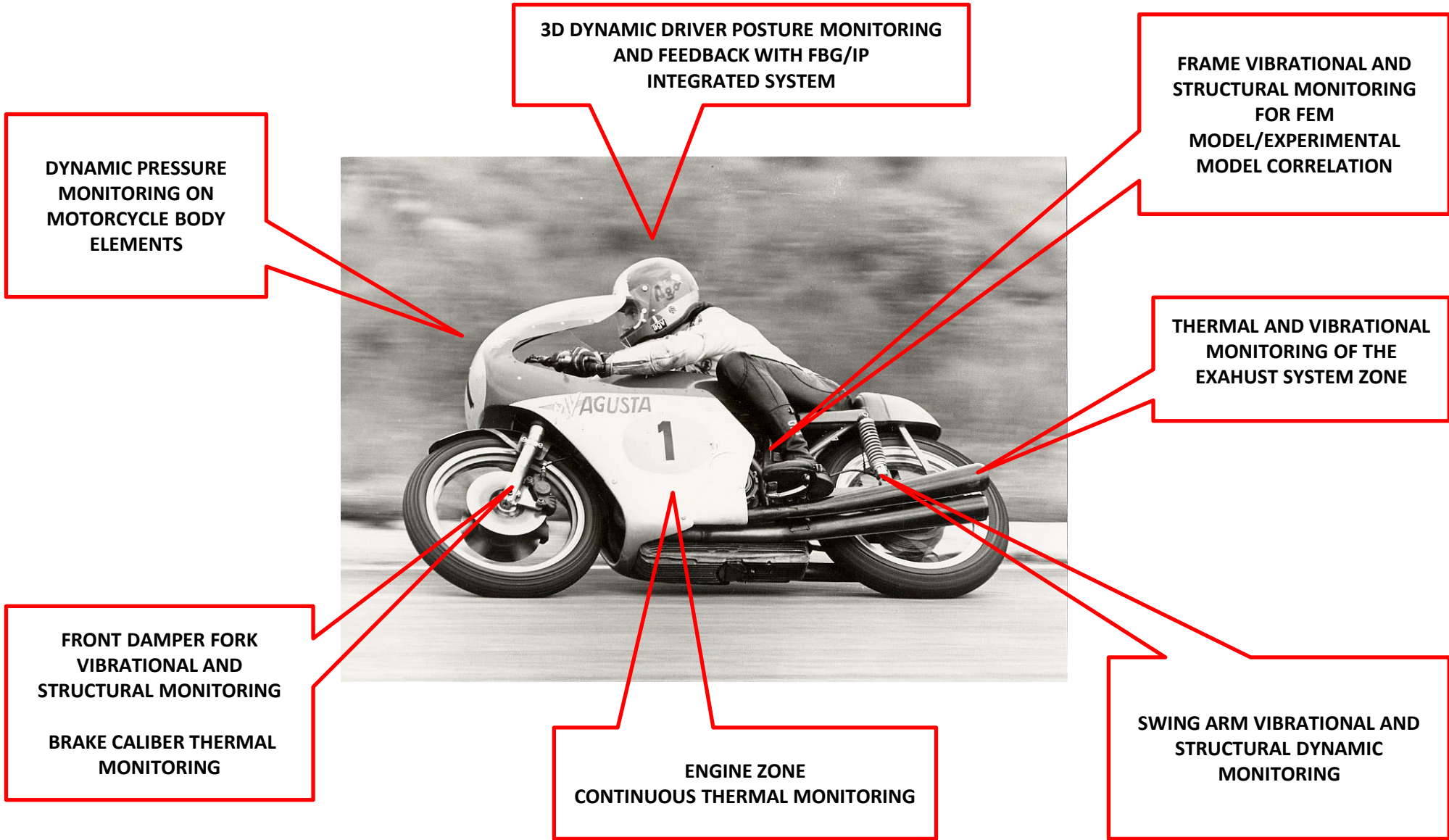
GS4R is an integrated multipurpose unit for thermal, strain and vibrational real time dynamic monitoring of racing motorcycles components, during in-door and out-door circuit tests, based on FBG fiber optic sensors

GS4R system setup

1. ON-BOARD UNIT - FBG High Speed interrogator/datalogger unit, linked to four FBG sensors spliceless arrays, able to sample in real time, at high frequency, temperatures, vibrations, strains, deformations and aerodynamic pressures of a racing motorcycle components during in-door and circuit tests, with a special trigger function linked to the finish line, in order to obtain multiple lap-referenced monitoring sessions.

2. OUTBOARD UNIT - Rugged tablet PC linked via ethernet cable to the ON-BOARD UNIT, supplied with GS4R|S software for output data management.





GS4R and FBG sensors technical features

- ▶ **FBG sensors thermal range from -180°C to 200°C**
- ▶ **Strain sensitivity: +/- 1 $\mu\epsilon$**
- ▶ **Thermal sensitivity: +/- 0,5 °C**
- ▶ **FBG sensors with NO insertion error [125 μm external diameter]**
- ▶ **Total EMI immunity. FBG sensors are chemically inert, insensitive to oxidation and erosion**
- ▶ **Stable embedded FBG sensors installation inside carbon fiber components**

- ▶ **Compact and lightweight GS4R interrogator/data logging unit**
- ▶ **Up to 2.5 kHz sampling rate for each installed FBG sensor**
- ▶ **No periodic calibration needed**

- ▶ **Competitive solution in terms of installation and usability of the data with respect to measurement systems based on resistance strain gauges and thermocouples**
- ▶ **Finish-line-triggering capabilities**

- ▶ **Depending on the available space, the GS4R housing is designed and produced by using 3D Optical Scanning and Rapid Prototyping techniques**
- ▶ **GS4R on-board unit with IP67 protection grade.**

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