

# **Low-cost lightweight strain measurement system for bicycle application**

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## **Abstract-**

**In the following work, we present the design of a measurement system to be applied to a race-class bicycle, utilized to obtain an exact image of stress distribution along its frame, in order to optimize tube design. Due to the very low weight of the structure under test, the instrumentation set needs to be designed so that its weight does not perturb too much the mass distribution on the frame. Selection of utilized sensors and electronic interface design is discussed, and several examples of measured data are showed.**

**Index Terms-** Strain measurement, Bicycles, Stress measurement, Design optimization, Telecommunications, Testing, Instruments, Composite materials, Construction industry, Production

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