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STRUCTURAL HEALTH MONITORING OF HIGH SPEED RAILWAY VIADUCT

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ABSTRACT: Nowadays, high-speed railway is one of the main icons for development and modern standards in the countries that choose to install this comfortable and safe transport, which is also an alternative to aviation transport. Consequently, in the last few years an extraordinary evolution has taken place with regard to the construction techniques of bridges, viaducts, rolling stock and civil works in general. Even national and international standards have experienced fundamental changes, mainly since the incorporation of Spain to the European Community, where interoperability is an essential requirement.

Within this innovative and rushing process, "Structural Health Monitoring in Viaducts of high-speed railway" is not only a fundamental need but also a symbol of progress. Singular structures are not only created but also studied in depth (static or dynamic control, signal processing and analysis, etc.) during the construction phase as well as in its subsequent commissioning. This means that we keep track and monitor them. This will be explained later on using as an example two extremely unique viaducts in the Spanish high-speed network.

Key Words: Structural Health Monitoring, Dynamic control, Digital Signal Processing and Analysis, Interoperability.

Figure 1. Photograph of the Viaducto Arroyo del Valle (LAV Madrid-Valladolid)

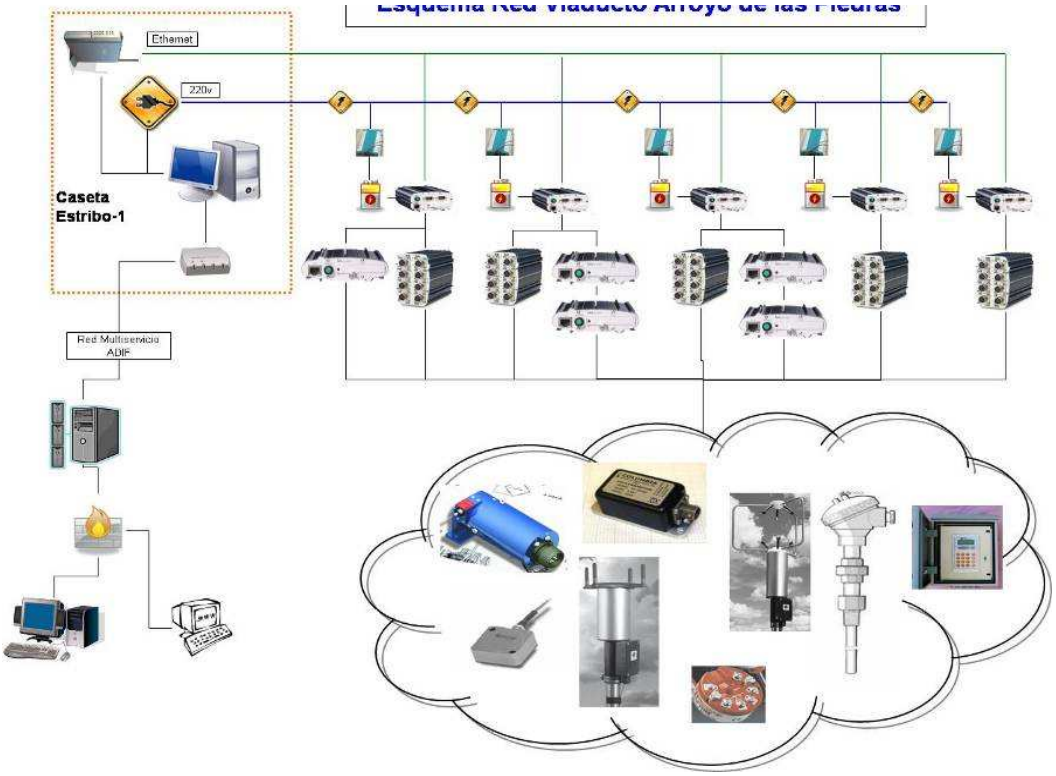

Figure 2.- Monitoring system schematic.