

Innovative System Platforms for Ultrasonic Inspections

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Ultrasonic instrumentations need to support a wide range of applications, from manual on-site inspection with a portable device to semi-automatic and fully automated inspection. As the requirements for these areas are varying, different instrument platforms are needed to provide optimum performance for the particular use case. One platform concept for manual and one platform for automated testing will be introduced. Manual inspection requires light weight, robust and ergonomic systems. In daily operation the bulky cable between instrument and phased array probe is ergonomically a hindrance for the user. The integration of the ultrasonic phased array electronics into the ultrasonic probe, which will connect via a USB connection to a tablet, is a major step to simplify the use of the test equipment for the operator. This highly integrated and innovative approach resulting in a USB connected phased array probe will be demonstrated with its practical application. For different applications in the field of semi- and full-automated ultrasonic inspections the scalability of the test system is key to react flexibly and quickly to the changing market requirements. Such a system platform must support different test configurations with conventional and phased array technology having very high channel counts. An instrument platform which fulfils these requirements will be introduced. The ultrasonic signals are digitized with an amplitude resolution of 24 bit and the internal data communication of 5Gb/s will allow real time data processing of the ultrasonic signals. The automated monitoring of the system parameters will ensure to avoid unexpected down times. As an application the fully automated steel bar inspection system will illustrate the flexible and versatile use of the system which is designed to support the full portfolio for semi- and full automated inspection systems in all segments.