emlix
embedded linux systems

Defectoscop MC 2.834 Linux-Platform for Instrument Familiy

The Magnetische Prüfanlagen GmbH (MP) has just introduced a new portable eddy current testing device, the Defectoscop MC 2.834. It is the first of a whole family of new instruments.

Eddy current testing instruments can detect failures on the surface or within the structure of conducting materials without touching them. They are used, for example, to detect problems and cracks in aircraft components that undergo a lot of stress.

A Debian-based embedded Linux operating system was used during the development of the prototype. MP had already made several modifications to this distribution.

After successfully completing the prototype phase, MP wanted these changes to be ported onto an embedded Linux system that was efficient to maintain, could be developed further and was designed specifically for the requirements of this family of products.

Significantly shortened boot time

MP also wished to further optimize the characteristics of the operating system. A particular challenge was to reduce the boot time from over a minute to under 15 seconds. This would be impossible, or at least very difficult to achieve, in Debian-based Linux. Remote update capability and support for non-Latin characters were also required.

During porting, only the essential packages and libraries were compiled and added to a U-boot boot loader and a native kernel. The optimizations already achieved were also adopted. The result was a slimmer operating system, a so-called board support package (BSP).

To ensure reproducibility and an efficient maintenance and development process, all the components of the BSP were checked into a source code management system (Git) and built using the open source software management and build system e2 factory, developed by emlix.
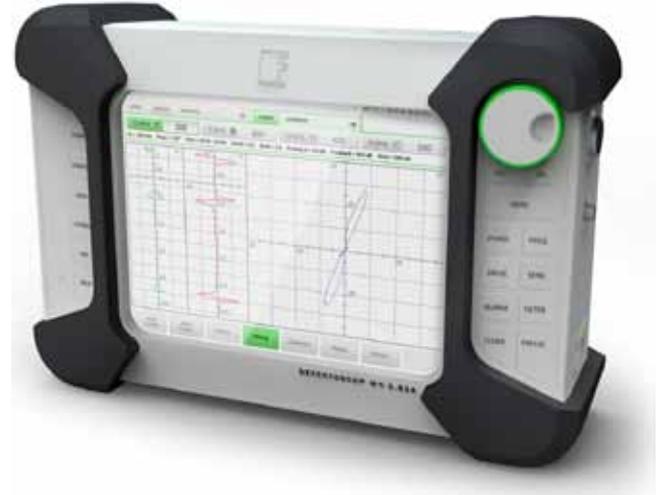
The Defectoscop MC 2.834 is the first model from a family of portable eddy current testing instruments.

In this way, all the software versions can be binary-identically reproduced and further developed, even years later, independently of the computers they were originally developed on.

Efficient development

The BSP has been in use for over a year now – initially in field tests with selected customers and now with the market introduction. Should changes be necessary or new features are to be introduced, these can be added with little effort.

Other „family members" will follow the market introduction of the Defectoscop MC 2.834. All necessary adaptations and customer-specific variants at the level of the operating system will be easy to implement.

DEFECTOSCOP MC 2.834

Technical Specifications:

- Test frequency: 5 Hz to 10 MHz
- Modular options: 3 modules with 2 independent channels including multiplexing (up to 96 sensors)
- Clearance compensation: possible for each individual sensor (up to 48 sensors)
- Simultaneous operation: 3 modules with 4 independent frequencies each

- Sensors: Single sensor/Arrays with up to 32 sensors in multiplexing mode and all coil configurations

- Position encoder:
  one or two axis synchronization

- Preamplifier: -24 to +36 dB in 0.5 dB steps adjustable for each module, input range ±15 V to ±15 mV

- Driver output: ±16 V ; 10 mA to 1 A with adjustable current

- Sensitivity (digital scaling): ±90 dB independently adjustable per sensor in 0.5 dB steps

- Display: TFT Touch Display with LED Backlight, 800 x 600 pixel, 26.4 cm (10.4") diagonal

- Screen views: x/y, x/t, y/t, C-Scan (with unlimited user defined views)

- Outputs: 3x USB 1.0, 1x RS232, 1x Ethernet 100 MBit/s, VGA, Audio In/Out, GPIO, 2x Analog

- Power supply: up to 2 lithium ion rechargeable batteries (typ. operating time: 6-14h), mains (115/230V)

- Weight: 5.9 kg (with 1 module and 1 accumulator)

emlix GmbH

solutions @ emlix.com
http://www.emlix.com

Phone   +49 (0) 551 / 30664-0
Fax   +49 (0) 551 / 30664-11

Defectoscop MC 2.834

The DEFECTOSCOP Eddy Current test unit is known for its user friendly operation and its unique ability to connect Eddy Current Arrays (ECA) with up to 32 sensors to each of its 3 input modules.

This permits up to a total of 96 sensors. Each module can operate up to 4 separate frequencies, either simultaneously or sequentially, driven by two independent channels.

Further Information:

Magnetische Prüfanlagen GmbH
In Laisen 65, D-72766 Reutlingen
info@mp-ndt.de