MULTI-CHANNEL EDDY CURRENT FLAW DETECTOR EDDYCON D

ULTRACON SERVICE®

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PURPOSE

The EDDYCON D universal eddy current flaw detector is designed to solve a wide range of tasks of eddy current flaw detection in such industries as:

- **AIRCRAFT** - testing of aeronautical engineering parts (wheel disks, covering, turbine blades, multilayered constructions, holes of various kinds etc.);
- **OIL-AND-GAS** - testing of pipelines, turbine blades of gas-distributing station (GDS), pressure vessels, etc.;
- **CHEMICAL** - testing of pipelines, industrial tanks etc.;
- **POWER** - testing of steam generator pipes by bobbin eddy current probes, collectors etc.;
- **MACHINE BUILDING** - testing of rods, wire, metalwares, forming rolls, sheet metals etc.;
- **RAIL TRANSPORT** - testing of rail components and car units (parts of wheel pair and axlebox unit, load trolley, refrigerated carriages and coaches, automatic coupler etc.).

The flaw detector is an eddy current high-performance channel that is connected to stationary PCs, portable laptops or tablets and using specially configured software or OEM applications creates high-performance systems for non-destructive testing.

THE FLAW DETECTOR ADVANTAGES AND DISTINCTIVE FEATURES

- High performance due to the flaw detector multi-channeling;
- Capability to combine several EC channels when creating the automated testing systems;
- High frequency measurement;
- Ethernet port for two-way communication with PC;
- Data transmission via Wi-Fi channel;
- Rotary scanners connection;
- Up to 2 encoders connection;
- Availability of multi-functional software for flaw detection of various test objects (testing the pipe body, rolled products, wheelsets, rails, bars, wires, etc).

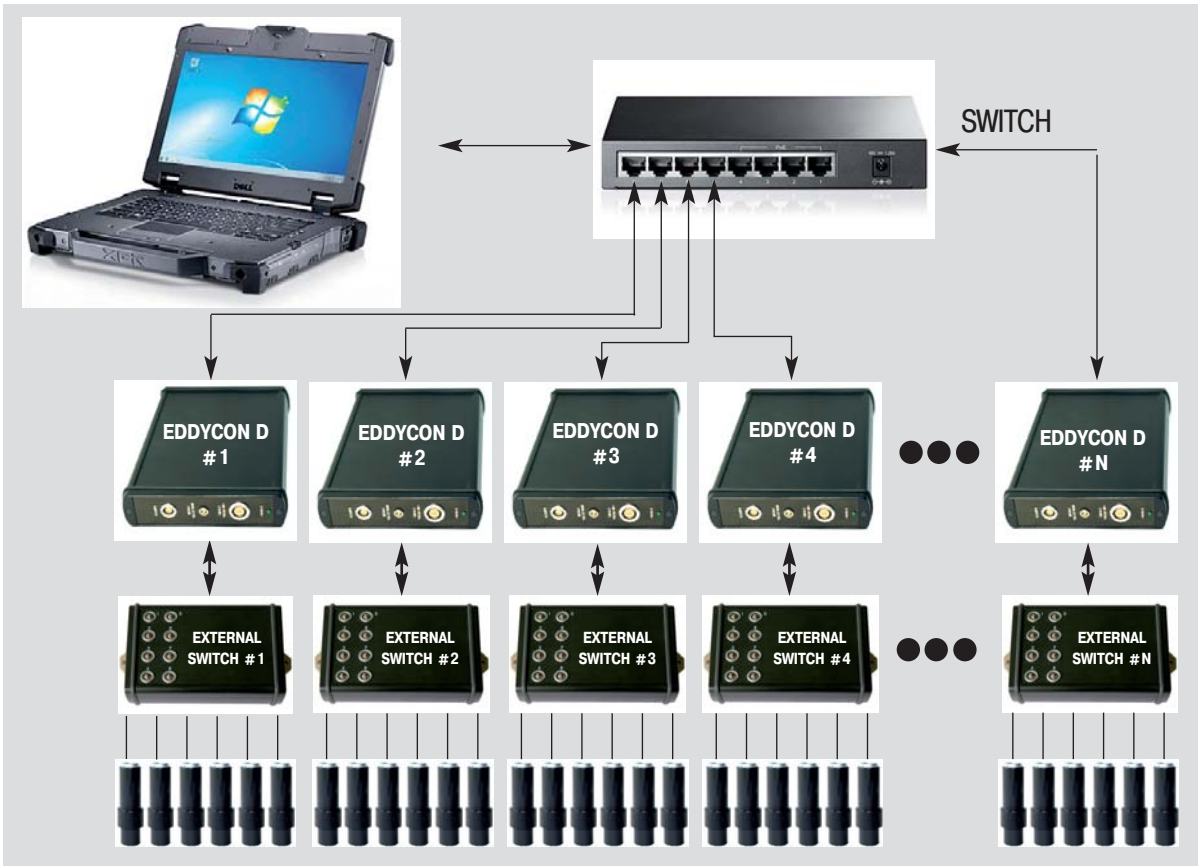


Figure 1.
Scheme for constructing the multi-channel system

THE FLAW DETECTOR ADVANTAGES AND DISTINCTIVE FEATURES

- Operating frequency setup range _ _ _ _ _from 10 Hz to 16 MHz;
- Generator output voltage (double amplitude) _ _ _ _ _from 0.5 V to 20 V;
- Adjusted gain range _ _ _ _ _ _ _70 dB;
- "Added gain" function _ _ _ _ _30 dB;
- Max sample freguency _ _ _ _ _ _32 kHz
- Digital filtering, 3 filter types: Low-pass, High-pass, Bandpass;
- Availability to connect a large number of ECPs when using external switches on 8, 16 or 32 channels due to the multiplexing of a first physical channel;
- Connection of up to 32 ECPs to one eddy current channel;
- External synchronization;
- Capability to connect and operate with the following ECPs:.
  – differential ECP;
  – differential ECP connected according to the bridge scheme;
  – differential ECP of transformer type with grounded centerpoint;
  – differential ECP of transformer type;
  – single coil ECP;
  – absolute ECP of transformer type;
- Setting up time for the flaw detector operation _ _not more than 1 minute;

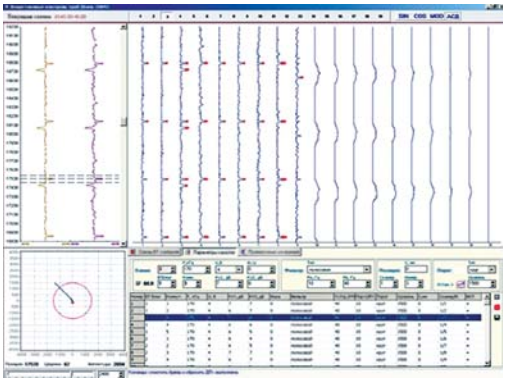
SPECIALLY CONFIGURED SOFTWARE

Specially configured software for ope-ration with the EDDYCON D eddy current channel includes:

- Program for setting up the EC channel;
- Program of testing;
- Program for reviewing the testing results.

Program for setting up the EC channel

Interface example of a program for setting-up the EC channel

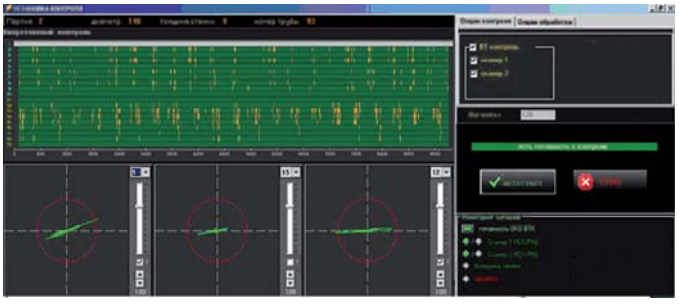


This software ensures the following:

- Rapid set up of all EC channel parameters:
  – EC probe frequency, generator output voltage, gain, filters, threshold level type, encoder, etc.
- Estimating the defect depth and length;
- Four independent threshold levels for automated defect triggering (ALARM) for each displayed area;
- Saving the testing setups into the PC or tablet`s memory;
- Channels mix.

Program of testing

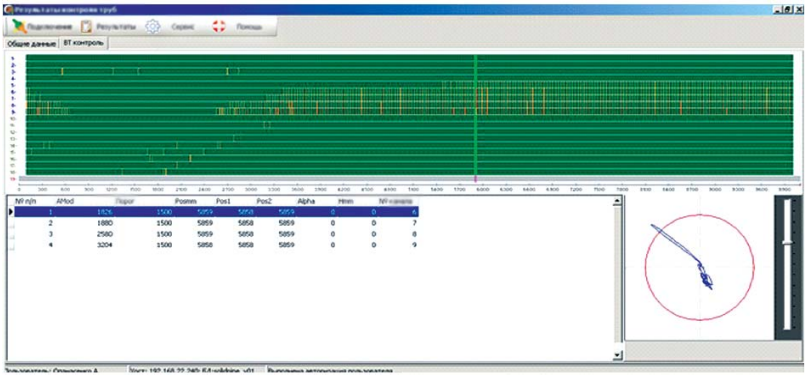
Interface example of a program of testing



This software ensures the following:

- EC probes per channel display;
- Real-time display of EC probe information (time charts, complex plane, two-dimensional display);
- Recording the testing results into the PC or tablet memory;
- Displaying the status of mechanisms and units on the mnemonic scheme;
- Testing process control, shop mechanization (when designing automated NDT systems).

Program for reviewing the testing results



Interface example of a program for reviewing the testing results

This software ensures the following:

- Reviewing the testing results from the database, sorting and retrieval by various characteristics;
- Generating the testing protocols;
- Archiving the testing results;
- Reviewing the testing results from the remote PC, etc.

THE EDDYCON D MAIN SPECIFICATIONS

Parameter	Value
Overall dimensions	not more than 293 x 37 x 141 mm;
Weight	not more than 1 kg;
Number of EC probes connected to one EC channel	up to 32;
ECP connectors	Lemo 12, Lemo00;
Power	12 V DC power;
Time for operating mode setup	up to 1 min;
Warranty	1 year.
MAIN METROLOGICAL SPECIFICATIONS	
Protection level	IP 64;
Enviroment humidity	from - 10^0 to +45 ^{0}C;
Atmospheric pressure	from 84 to 106,7 kPa;
Atmospheric pressure	(93 ± 3) % at 25 ^{0}C;
Full average life of the flaw detector	not less than 10 years;

Parameter	Value
INPUTS/OUTPUTS	
Ethernet	available;
Synchronous input	available;
Encoder output	1- axis Encoder line;
GENERATOR	
Output voltage (double amplitude)	0,5; 1; 2; 4; 6; 20 V, Peak-Peak;
Frequency range	from 10 Hz to 16 MHz;
Synchronization type	internal, from encoder, from rotary ECP
RECEIVER	
Gain	from 0 to 70 dB with a step 1, 10 dB
Added gain	from 0 to 30 dB
Input signal	not more than 0.5 V from Peak to Peak
Digital filters	High-frequency, Low-frequency, Bandpass

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