

ISO 20890-1:2020 (E)

Guidelines for in-service inspections for primary coolant circuit components of light water reactors — Part 1: Mechanized ultrasonic testing

Contents

| | |
|-----------|--|
| | Foreword |
| 1 | Scope |
| 2 | Normative references |
| 3 | Terms and definitions |
| 4 | Test systems |
| 4.1 | Preliminary remark |
| 4.2 | General |
| 4.3 | Validation and localisation of reflectors |
| 4.3.1 | Pulse-echo technique (PE technique) |
| 4.3.2 | Transmitter-Receiver technique (TR-technique) |
| 4.3.3 | Tandem technique |
| 4.3.4 | Inspection technique with mode conversion |
| 4.3.5 | V-transmission technique |
| 4.3.6 | Phased-Array technique (PA) |
| 4.3.7 | Preferred angles of incidence and wave modes for search techniques |
| 5 | Requirements |
| 5.1 | Test personnel |
| 5.1.1 | Task of NDT personnel |
| 5.1.2 | Personnel requirements |
| 5.2 | Test object |
| 5.3 | Ultrasonic test equipment |
| 5.3.1 | Preliminary remark |
| 5.3.2 | Test robot |
| 5.3.3 | Ultrasonic test device |
| 5.3.4 | Data acquisition and analysis |
| 5.3.5 | UT probe |
| 5.3.5.1 | General |
| 5.3.5.2 | UT probe data sheets |
| 5.3.5.2.1 | General information |
| 5.3.5.2.2 | Conventional transceiver probes |
| 5.3.5.2.3 | Phased-array probes |
| 5.3.6 | UT probe holders |
| 5.3.7 | UT probe cable (ultrasonic cable) |
| 5.4 | Couplant |
| 5.5 | Reference reflectors |
| 5.6 | Calibration block and reference or test block |
| 5.7 | Data storage medium |
| 6 | Testing |
| 6.1 | Preparation |
| 6.1.1 | General |
| 6.1.2 | Probe data sheets |
| 6.1.3 | Probe system |
| 6.1.4 | Test robot |
| 6.1.5 | Ultrasonic test device |
| 6.1.6 | Setting the test level |
| 6.1.6.1 | General |
| 6.1.6.2 | Sound path |

- 6.1.6.3 Testing level and recording level
- 6.1.6.4 Recording the calibration
- 6.1.7 Data acquisition system (DAS)
- 6.1.8 Ultrasonic test equipment
- 6.2 Implementation
- 6.3 Visualisation of the digitized and saved measuring data
- 6.4 Analysis of indications
- 6.5 Final measures
- 7 Recording
 - 7.1 Recording the setup for the ultrasonic test equipment
 - 7.2 Test record and test report
 - 7.3 Indication list
 - 7.4 Findings record
- Annex A (informative) Examples of test systems and transceiver probe arrangements
- Annex B (informative) Forms
- Annex C (informative) Findings record
- Annex D (informative) Amplification compensation
- Annex E (informative) Standard test procedures and test specifications

Page count: 33