Hellenic Accreditation System

Annex F1A/25 to the Certificate No. **159**-7

SCOPE of ACCREDITATION

of the

Laboratory for Non Destructive and Mechanical Tests

of the

"T.C.L. Co. – Test & Control Laboratories"
AVRAMIDIS ELEFTHERIOS – DIPSAKIS ANTONIOS Co.
(Athens Laboratory)

Materials / Products to be tested	Types of test / Properties to be measured	Applied Methods / Techniques to be used
A' Non destructive tests		
Metallic materials, products and fabrications, including weldings Penetration thickness: (1 – 100) mm	A1. Radiographic inspection using X and Gamma-rays (IR 192 & SE 75)	EN ISO 5579: 2013 Non-destructive testing - Radiographic testing of metallic materials using film and X or gamma-rays – Basic rules
		EN ISO 17636-1: 2022 Non-destructive testing of welds - Radiographic testing – Part 1: X- and gamma-ray techniques with films
		EN ISO 10893-6: 2019 Non destructive testing of steel tubes. Radiographic testing of the weld seam of welded steel tubes for the detection of imperfections.
		ASTM E94/E94M-22 Standard Guide for Radiographic examination.
		ASME Boiler and pressure vessel code Section V: 2023 Non Destructive Examination Article 2: Radiographic Examination.
		API 1104 22nd Edition Welding of pipelines and related facilities Paragraph 9.3 Radiographic testing

Materials / Products to be tested	Types of test / Properties to be measured	Applied Methods / Techniques to be used
Weldments of metallic materials Base metal ≥ 8 mm	A2. Ultrasonic testing	EN ISO 16810: 2024 Non destructive testing. Ultrasonic examination. General principles
		BS EN ISO 11666: 2018 Non destructive testing of welds-Ultrasonic testing-Acceptance levels.
		ELOT EN ISO 23279 E2: 2017 Non destructive testing of welds-Ultrasonic testing-Characterization of indications in welds.
		BS EN ISO 17640: 2018 Non destructive testing of welds-Ultrasonic testing – Techniques, testing levels and assessment.
		EN ISO 16827: 2014 Non destructive testing. Ultrasonic examination. Characterization and sizing of discontinuities.
		EN ISO 10893-8: 2011+A1:2020 Non destructive testing of steel tubes. Automated ultrasonic testing of seamless and welded steel tubes for the detection of laminar imperfections.
		API 1104 22nd Edition Welding of pipelines and related facilities. Paragraph 9.6 Ultrasonic testing
		ASME Boiler and pressure vessel code Section V: 2023 Non Destructive Examination Article 4: Ultrasonic examination methods for in-service inspection. Article 5: Ultrasonic examination methods for Materials and fabrication.
Metallic plates	A3. Ultrasonic testing of plates	ELOT EN 10160: 1999 Ultrasonic testing of steel flat product of thickness equal or greater than 6mm (reflection method). Thickness ≥ 6 mm
		ASTM E 797/E797M-21 Standard practice for measuring thickness by manual ultrasonic pulse-echo contact method

Materials / Products to be tested	Types of test / Properties to be measured	Applied Methods / Techniques to be used
Ferromagnetic materials, products and fabrications, including weldments, castings and steel forgings	A4. Magnetic particle testing by the use of portable electromagnetic yoke Investigation for surface discontinuities	ELOT EN ISO 17638 E2: 2016 Non destructive examination of welds-Magnetic particle testing of welds
		EN ISO 10893-5: 2011 Non destructive testing of steel tubes. Magnetic particle inspection of tube ends of seamless and welded ferromagnetic steel tubes for the detection of surface imperfections.
		API 1104 22nd Edition Welding of pipelines and related facilities. Paragraph 9.4 magnetic particle testing
		ASME Boiler and pressure vessel code Section V: 2023 Non Destructive Examination Article 7: Magnetic particle examination
		EN 1369: 2012 Founding- Magnetic Particle Inspection
		ELOT EN ISO 9934-1 E3: 2017 Non destructive testing-Magnetic Particle testing-Part 1: General Principles
		ELOT EN 10228-1 E2: 2016 Non destructive testing of steel forgings-Part 1: Magnetic particle inspection
		ASTM E709-21 Standard method for magnetic particle examination
Non porous materials, products and fabrications, including weldments, castings and steel forgings	A5. On site liquid penetrant testing Investigation for surface discontinuities	EN ISO 3452-1: 2021 Non destructive testing-Penetrant testing-Part 1: General principles
		ELOT EN ISO 23277 E2: 2015 Non destructive testing of welds – Penetrant testing of welds – Acceptance levels.
		EN ISO 10893-4: 2011 Non destructive testing of steel tubes. Liquid penetrant inspection of seamless and welded steel tubes for the detection of surface imperfections
		API 1104 22nd Edition Welding of pipelines and related facilities Paragraph 9.5: Liquid penetrant testing
		ASME Boiler and pressure vessel code Section V: 2023 Non Destructive Examination Article 6: Liquid penetrant examination.

Materials / Products to be tested	Types of test / Properties to be measured	Applied Methods / Techniques to be used
Non porous materials, products and fabrications, including weldments, castings and steel forgings (cont.)	A5. On site liquid penetrant testing Investigation for surface discontinuities (cont.)	ELOT EN 10228-2 E2: 2016 Non destructive testing of steel forgings-Part 2: Penetrant testing
		ELOT EN 1371-1 E2: 2012 Founding – Liquid penetrant inspection- Part 1 Sand, gravity die and low pressure die castings.
		ASTM E165 / E165M-23 Standard Practice for Liquid Penetrant Examination of General Industry
Weldings of metal structures	A6. Visual testing (direct method only)	BS EN ISO 17637: 2016 Non-destructive testing of welds - Visual testing of fusion-welded joints. EN ISO 5817: 2023 Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding excluded) - Quality levels for imperfections. ASME V art 9: 2023 ASME IX QW194: 2023 API 1104 22nd Edition § 6.4, 9.7
	B' Mechanical tests	
Metallic materials and products, including weldings	B1. Tensile testing (120-180) kN (Only elongation after fracture and tensile strength)	EN ISO 4136: 2022 Destructive tests on welds in metallic materials – Transverse Tensile Test
		ELOT EN ISO 6892-1 E3: 2020 Metallic materials – Tensile testing – Part 1- Method of test at ambient temperature.
		API 1104 22nd Edition Welding of pipelines and related facilities Paragraphs 5.6.2: Tensile strength test, 5.6.3: Nick break test.
		ASME Boiler and pressure vessel code Section IX: 2023 QW 150 Tension tests
	B2. Bend testing (0-200) kN	EN ISO 5173: 2023 Destructive tests on welds in metallic materials – Bend tests
		API 1104 22nd Edition Welding of pipelines and related facilities. Paragraphs 5.6.4: Root & Face bend test, 5.6.5: Side – bend test
		ASME Boiler and pressure vessel code Section IX: 2023 QW 160 Guided bend tests

Site of assessment: **Laboratory Permanent premises: Position Patima Rathiri, GR-19300 Aspropyrgos, Attiki, Greece.**

Approved signatories: **A. Dipsakis.**

This Scope of Accreditation replaces the previous one dated November 20th, 2024.
The Accreditation Certificate No. **159**-8, to ELOT EN ISO/IEC 17025: **2017**, is valid until December 6th, 2029.

Athens, March 21st, 2025

Konstantinou Evangelos Apostolos
CEO of ESYD

Hellenic Accreditation System

Annex F1B/23 to the Certificate No. **159**-8

SCOPE of ACCREDITATION

of the

Laboratory for Non Destructive and Mechanical Tests

of the

"T.C.L. Co. – Test & Control Laboratories"
AVRAMIDIS ELEFTHERIOS – DIPSAKIS ANTONIOS Co.
(Laboratory in Thessaloniki)

Materials / Products to be tested	**Types of test / Properties to be measured**	**Applied Methods / Techniques to be used**
A' Non destructive tests		
Metallic materials, products and fabrications, including weldings Penetration thickness: (1 – 100) mm	A1. Radiographic inspection using X and Gamma-rays (IR 192 & SE 75)	EN ISO 5579: 2013 Non-destructive testing - Radiographic testing of metallic materials using film and X or gamma-rays – Basic rules
		EN ISO 17636-1: 2022 Non-destructive testing of welds - Radiographic testing – Part 1: X- and gamma-ray techniques with films
		EN ISO 10893-6: 2019 Non destructive testing of steel tubes. Radiographic testing of the weld seam of welded steel tubes for the detection of imperfections.

Materials / Products to be tested	Types of test / Properties to be measured	Applied Methods / Techniques to be used
Metallic materials, products and fabrications, including weldings Penetration thickness: (1 –100) mm (cont.)	A1. Radiographic inspection using X and Gamma-rays (IR 192 & SE 75) (cont.)	ASTM E94/E94M-22 Standard Guide for Radiographic examination.
		ASME Boiler and pressure vessel code Section V: 2023 Non Destructive Examination Article 2: Radiographic Examination.
		API 1104 22nd Edition Welding of pipelines and related facilities Paragraph 9.3 Radiographic testing
Weldments of metallic materials Base metal ≥ 8 mm	A2. Ultrasonic testing	EN ISO 16810: 2024 Non destructive testing. Ultrasonic examination. General principles
		BS EN ISO 11666: 2018 Non destructive testing of welds-Ultrasonic testing-Acceptance levels.
		ELOT EN ISO 23279 E2: 2017 Non destructive testing of welds-Ultrasonic testing-Characterization of indications in welds.
		BS EN ISO 17640: 2018 Non destructive testing of welds-Ultrasonic testing – Techniques, testing levels and assessment.
		EN ISO 16827: 2014 Non destructive testing. Ultrasonic examination. Characterization and sizing of discontinuities.
		EN ISO 10893-8: 2011+A1:2020 Non destructive testing of steel tubes. Automated ultrasonic testing of seamless and welded steel tubes for the detection of laminar imperfections.
		API 1104 22nd Edition Welding of pipelines and related facilities. Paragraph 9.6 Ultrasonic testing

Materials / Products to be tested	Types of test / Properties to be measured	Applied Methods / Techniques to be used
		ASME Boiler and pressure vessel code Section V: 2023 Non Destructive Examination Article 4: Ultrasonic examination methods for in-service inspection. Article 5: Ultrasonic examination methods for Materials and fabrication.
Metallic plates	A3. Ultrasonic testing of plates	ELOT EN 10160: 1999 Ultrasonic testing of steel flat product of thickness equal or greater than 6mm (reflection method). Thickness $\geq$ 6 mm
		ASTM E 797/E797M-21 Standard practice for measuring thickness by manual ultrasonic pulse-echo contact method.
Ferromagnetic materials, products and fabrications, including weldments, castings and steel forgings	A4. Magnetic particle testing by the use of portable electromagnetic yoke Investigation for surface discontinuities	ELOT EN ISO 17638 E2: 2016 Non destructive examination of welds-Magnetic particle testing of welds
		EN ISO 10893-5: 2011 Non destructive testing of steel tubes. Magnetic particle inspection of tube ends of seamless and welded ferromagnetic steel tubes for the detection of surface imperfections.
		API 1104 22nd Edition Welding of pipelines and related facilities. Paragraph 9.4 magnetic particle testing
		ASME Boiler and pressure vessel code Section V: 2023 Non Destructive Examination Article 7: Magnetic particle examination
		EN 1369: 2012 Founding- Magnetic Particle Inspection
		ELOT EN ISO 9934-1 E3: 2017 Non destructive testing-Magnetic Particle testing-Part 1: General Principles
		ELOT EN 10228-1 E2: 2016 Non destructive testing of steel forgings-Part 1: Magnetic particle inspection
		ASTM E709-21 Standard method for magnetic particle examination
Non porous materials, products and fabrications, including	A5. On site liquid penetrant testing	EN ISO 3452-1: 2021 Non destructive testing-Penetrant testing-Part 1: General principles

Materials / Products to be tested	Types of test / Properties to be measured	Applied Methods / Techniques to be used
weldments, castings and steel forgings	Investigation for surface discontinuities	ELOT EN ISO 23277 E2: 2015 Non destructive testing of welds – Penetrant testing of welds – Acceptance levels.
		EN ISO 10893-4: 2011 Non destructive testing of steel tubes. Liquid penetrant inspection of seamless and welded steel tubes for the detection of surface imperfections
Non porous materials, products and fabrications, including weldments, castings and steel forgings (cont.)	A5. On site liquid penetrant testing Investigation for surface discontinuities(cont.)	API 1104 22nd Edition Welding of pipelines and related facilities Paragraph 9.5: Liquid penetrant testing
		ASME Boiler and pressure vessel code Section V: 2023 Non Destructive Examination Article 6: Liquid penetrant examination.
		ELOT EN 10228-2 E2: 2016 Non destructive testing of steel forgings-Part 2: Penetrant testing
		ELOT EN 1371-1 E2: 2012 Founding – Liquid penetrant inspection- Part 1 Sand, gravity die and low pressure die castings.
		ASTM E165 / E165M-23 Standard Practice for Liquid Penetrant Examination of General Industry
Weldings of metal structures	A6. Visual testing (direct method only)	BS EN ISO 17637: 2016 Non-destructive testing of welds - Visual testing of fusion-welded joints. EN ISO 5817: 2023 Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding excluded) - Quality levels for imperfections. ASME V art 9: 2023 ASME IX QW194: 2023 API 1104 22nd Edition § 6.4, 9.7
B' Mechanical tests		
Metallic materials and products, including weldings	B1. Tensile testing (0-400) kN (Only elongation after fracture and tensile strength).	EN ISO 4136: 2022 Destructive tests on welds in metallic materials – Transverse Tensile Test
		ELOT EN ISO 6892-1 E3: 2020 Metallic materials – Tensile testing – Part 1- Method of test at ambient temperature.

Materials / Products to be tested	Types of test / Properties to be measured	Applied Methods / Techniques to be used
Metallic materials and products, including weldings(cont.)		API 1104 22nd Edition Welding of pipelines and related facilities Paragraphs 5.6.2: Tensile strength test, 5.6.3: Nick break test.
		ASME Boiler and pressure vessel code Section IX: 2023 QW 150 Tension tests
	B2. Bend testing (0-400) kN	EN ISO 5173: 2023 Destructive tests on welds in metallic materials – Bend tests
		API 1104 22nd Edition Welding of pipelines and related facilities. Paragraphs 5.6.4: Root & Face bend test, 5.6.5: Side – bend test
		ASME Boiler and pressure vessel code Section IX: 2023 QW 160 Guided bend tests

Site of assessment: **Laboratory Permanent premises: Agrotemachio 579, Municipality of Echedoros, Thessaloniki, Greece.**
Approved signatories: **El. Avramidis.**

This Scope of Accreditation replaces the previous one dated November 20th, 2024.
The Accreditation Certificate No. **159**-8, to ELOT EN ISO/IEC 17025: **2017**, is valid until December 6th, 2029.

Athens, March 21st, 2025

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