

# Eddy Current Testing

## Course Information

Eddy Current Testing (ECT) is a highly effective electromagnetic testing method that leverages electromagnetic induction to detect and assess discontinuities in materials. A fundamental prerequisite for eddy current testing is that the material being examined, or in the case of paint thickness measurement, the substrate, must be electrically conductive.

ECT serves as a versatile testing method, offering both surface and subsurface inspection capabilities. The depth to which inspections can be carried out effectively hinges on several factors, including the frequency of the excitation current, the electrical conductivity, and the magnetic properties of the material under scrutiny. While this may seem complex, it all boils down to principles you may recall from your high school lessons on electrical transformers.

If the world of electromagnetic induction intrigues you, dust off your high school knowledge and embark on an ECT course. It's a journey that promises to deepen your understanding and expertise in this captivating field.

Eddy current testing techniques are adaptable, depending on the nature of the sample being tested, be it a flat surface, tube, bar, or more intricate shapes. The choice of probe is influenced by this, and it plays a pivotal role in the testing process. Additionally, the utilisation of multiple frequencies and inspection modes, such as absolute or differential, determines the specific multi-frequency and/or mode techniques used.

The presence of factors like magnetic saturation, weak magnetic alloys, shielding, or the focusing nature of the probe, as well as the capabilities of the display system, contribute to the comprehensive description of eddy current testing techniques. By delving into ECT, you're not only exploring the intriguing world of electromagnetic induction but also contributing to the safety and quality assurance of materials in various industries.

[www.saiw.co.za](http://www.saiw.co.za)

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# Eddy Current Testing

**If this sounds like a mouthful, then we invite you to dust off your high school knowledge regarding electrical transformers and attend an ECT course.**

The techniques utilised in eddy current testing depends on the sample being tested, i.e. whether it is a surface, tube, bar or other more complex shapes since it dictates the type of probe to be used. Furthermore, the number of frequencies and the inspection mode(s), such as

absolute or differential, determines the multi- frequency and / or mode technique description. The presence of magnetic saturation, weak magnetic alloys, shielding or focussing nature of the probe as well as the display capabilities extends the technique description.

**The training course is based on general theory as well as sector specific applications relating, but not limited to, the following standards and specifications:**

- ASME Boiler & Pressure Vessel Code - Section V - Subsection A - Article 1 & 8
- ASME Boiler & Pressure Vessel Code - Section V - Subsection B - Article 26
- ISO 15549 ECT – General principles
- ISO 15548 Part 1 ECT – Instrument Characteristics and verification
- ISO 15548 Part 2 ECT – Probe Characteristics and verification
- ISO 15548 Part 3 ECT – System Characteristics and verification
- ISO 17643 ECT – Welds
- ISO 2360 ECT - Non-Conductive coatings – Amplitude sensitive equipment
- ISO 21968 ECT - Non-Conductive coatings – Phase sensitive equipment
- ISO 12718 ECT - Vocabulary

EDDY CURRENT TESTING – SAIW Certification ndt scheme (iso 9712) non-destructive testing – surface method									
NDT Method and Level	Industrial Sector	Product Sector / Category	Duration 1 day = 8 hours	Prices (Inclusive of VAT)			Course & Initial Exam Dates		
				Training & Initial Examination Non-Corporate Members	Training & Initial Examination Corporate Members	Initial Certification			
Eddy Current Testing Level 1	Pre- and in-service	ECT 1.1: Surface (s)	Training 4 days	ECT 1.1 R 16,100	ECT 1.1 R 15,000	ECT 1.1 R 2,500	<b>Course Code</b>	<b>ECT 1.1 JHB 01</b>	<b>ECT 1.2 JHB 01</b>
		ECT 1.2: Tubes (t)	Exam 1 day	ECT 1.2 R 16,100	ECT 1.2 R 15,000	ECT 1.1 R 2,500	Training	02 - 05 Jun	30 Jun - 03 Jul
							Exam	06 Jun	04 Jul
Eddy Current Testing Level 2	Pre- and in-service	ECT 2.1: Surface (s)	Training 4 days	ECT 2.1 R 16,100	ECT 2.1 R 15,000	ECT 2.1 R 2,500	<b>Course Code</b>	<b>ECT 2.1 JHB 01</b>	<b>ECT 2.2 JHB 01</b>
		ECT 2.2: Tubes (t)	Exam 1 day	ECT 122 R 16,100	ECT 2.2 R 15,000	ECT 2.1 R 2,500	Training	07 - 10 Apr	11 - 14 Aug
							Exam	11 Apr	15 Aug