ANODIC FLAW DETECTION
EN4179 LEVEL 2 SYLLABUS

DOCUMENT APPROVAL			
Function	**Name**	**Signature**	**Date**
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General Theory

Instruction shall be given in the principles, limitations and theoretical aspects of the following:

- Introduction – Brief history of the development of anodic flaw detection, philosophy of NDT and anodic flaw detection testing capabilities in relation to other methods. Basic aerospace product technology.

- Principles of Anodic flaw detection – Types of conversion coatings, atomic structures, unit cells, atomic bonds, melting points, cooling curves, solidification of metals, Thermal expansion, Electrical conductivity, electrolysis, electrode chemistry, oxidation of metals, oxidation of aluminium, Nature of oxide layers, Capillary action.

- Methods of Anodising – Examples of the anodising process, processing operations, sealing test, dual inspection mode.

- Inspection and detection of indications – General inspection requirements, Lighting conditions, cracks, folds, corrosion, overheating, smearing, incipient melting at the grain boundaries, material segregation, repair and renovation of surfaces.

- Equipment – General equipment used.

Specific Theory

Instruction shall be given in the following:

- Preparation for anodic flaw detection – Surface preparation, cleaning methods, effects of surface finish and contaminants.

- Safety precautions – Fire hazards, electrical safety, ventilation, toxic materials.

- Processing of parts – Component handling, component jigging, immersion of parts. Rinsing methods, drying methods, processing times. (These are for an overview NOT to train inspectors to carry out the Anodising)

- Detectability of defects – General advantages and limitations of the test method with regards to defect detection; Characteristics of indications; Factors affecting indications: Surface preparation, detecting medium and application.

- Interpretation and reporting – Types of discontinuity and their identification; Relevant, non-relevant and false indications and their causes.

- Post test procedures – Handling of components.

Reference material

- ASNT – Study guide
- Metals Handbook Volume 17 Non-destructive evaluation of quality control
- The Canning handbook – Surface Finishing Technologies
- Inspection of metals: Visual Examination. - R Anderson
- Basic Metallurgy for NDT - JL Taylor