ADDITIVE MANUFACTURING TESTING CENTER

TEC·Eurolab
we make you feel sure

ADDITIVE MANUFACTURING TESTING CENTER

YOUR CHALLENGE

Additive technologies are acquiring an increasing importance in the industrial production and in different fields of application.

This is possible thanks to the numerous potentials they offer in terms of design freedom, speed, absence of molds. However, to have quality products, their use as a manufacturing system requires the development of all the numerous aspects that contribute to the result:

✔ material used
✔ validity check of the printing parameters
✔ piece arrangement in the work chamber

ACCREDITATIONS

NON DESTRUCTIVE TESTINGS

- RT FILM method certified by NADCAP

QUALIFICATIONS

- **BOEING e LEONARDO (both HELICOPTERS and AIRCRAFTS divisions): chemical-physical-mechanical tests**
- **GE AVIATION: TOMOGRAPHIC tests - CT**
- **AVIO AERO method: non-destructive tests - RT FILM method**

PERSONNEL QUALIFICATIONS

- UT-Pulse Echo and UT-Phased Array checks performed by qualified personnel at the II and III level ISO 9712 (general industry)
- RT Film and RT Non Film (Computed Radiography / Computed Tomography) checks performed by qualified personnel at the II and III Level ISO 9712 (general industry) - NAS 410 / EN 4179 (aerospace)

OUR SOLUTION

In a sector not yet regulated or standardized such as the Additive Manufacturing, knowledge of the technology represents an important opportunity for companies that want to guarantee the quality of their 3D printing products and processes.

TEC Eurolab supports companies in the transition from traditional industrial processes to additive manufacturing, following them along the entire process of experimentation, industrialization and qualification.

For instance, TEC Eurolab can provide companies with valuable support both in the characterization of materials, through multiple static and dynamic tests, and in the analysis of the finished component. Thanks to the consolidated experience and the synergy with which the various departments operate and the provision of advanced instrumentation, the center provides specific information, performs tests that comply with standards, accompanies the customer in evaluating the results of the analysis and suggests possible improvements to be made to the project or additive manufacturing process settings. The support offered to companies begins already in the pre-analysis phase, when the project is started together with the customer, to continue in the test phases and, subsequently, with the analysis of the test results.

TEC EUROLAB IS A PARTNER OF

AITA
ASSOCIAZIONE ITALIANA TECNOLOGIE ADDITIVE

TEC·Eurolab

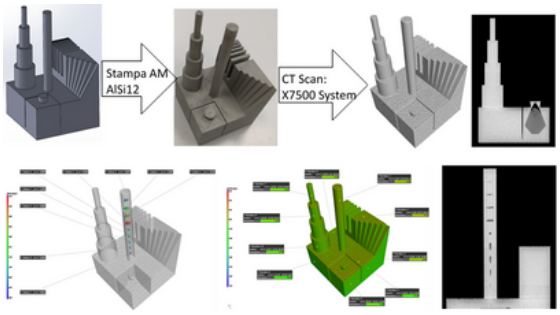
THE PROCESS OF THE CUSTOMER AND OUR SOLUTIONS

	R&D	TESTING	CERTIFICATION
CONCEPT	GUIDELINES SUPPORT TRAINING		
DESIGN	DESIGN FOR ADDITIVES FEA SIMULATION TOPOLOGICAL OPTIMIZATION DEFINITION OF THE CRITICAL DEFECT TECHNICAL SPECIFICATION SUPPORT FOR PLATING		
INDUSTRIALIZATION		MATERIAL TESTS NON DESTRUCTIVE TESTS DEFECT ANALYSIS LIFE EXPECTANCY IN SERVICE FUNCTIONAL TESTS	
PRODUCTION		DUST ANALYSIS PROCESS QUALITY MANAGEMENT PROCESS CERTIFICATION IDENTIFICATION OF REPAIR PROCEDURES SERVICES	

NON DESTRUCTIVE TESTING

INDUSTRIAL TOMOGRAPHY

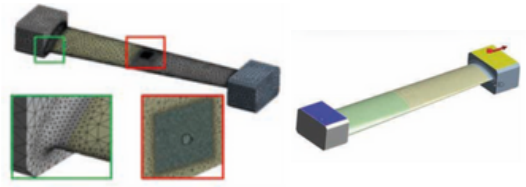
- 6 MeV tomography system (LINAC)
- 450KV tomography system (minifocus)
- 240KV tomography system (microfocus)
- Qualitative and quantitative defect analysis
- Dimensional analysis
- Wall thickness



RQI (Reference Quality Indicator) for analysis using industrial computed tomography

RADIOGRAPHIC INSPECTION

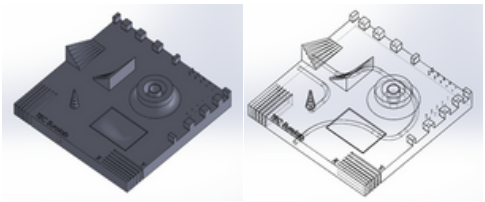
- 160KV and 320KV Radiographic inspection (RT, CR, DR)
- 2D X-ray NADCAP inspection system



Industrial computed tomography and FEM analysis of a jet turbine blade produced by additive manufacturing

METROLOGICAL AND DIMENSIONAL ANALYSIS

- Quality check
- Surface roughness analysis
- Dimensional surveys by CMM and Laser
- Controls according to ISO / ASTM 52902 (Geometric capability assessment of additive manufacturing systems)
- Reverse Engineering Gage R&R
- Statistical process control (SPC)



Tool for evaluating the dimensional performance of additive printing derived from ISO / ASTM 52902 with additional features for the analysis of freeforms and internal geometries

FEM ANALYSIS

- Static analysis
- Dynamic analysis

FUNCTIONAL TESTING

- Test Engineering (fluid dynamics, pneumatics, oleodynamics, thermal, dynamics) and customer technical support for defining test specifications.
- Environmental and functional tests
- Mechanical-dynamic Endurance tests on finished or developing components
- Endurance tests by pneumatic and hydraulic pressurization with leak check
- Deformation analysis by Strain Gauges on components
- Thermal shock

MATERIAL TESTING

CHEMICAL AND PHYSICAL ANALYSIS

- Specifical chemical analysis (ICP + Combustion + NOH + CS) X-Ray fluorescent (XRF)
- Granulometric distributions (laser + sieves) ASTM B822 Flow rate ASTM B213
- Tap density / Apparent density ASTM B212
- Humidity content determination
- Density according to ASTM B962

METALLOGRAPHIC TESTING

- Automatic Metallographic Polishing System
- Analysis with optical microscopy
- Metallography Inspection
- SEM metallography and comparative microanalysis Residual stress
- Evaluation of the HIP and HT effects
- Macro and micrographic examinations
- Brinell hardness test ASTM E10
- Rockwell hardness test ASTM E18
- Failure Analysis

MECHANICAL TESTING

- Resilience tests according to ISO 148-1, ASTM E23 and ASTM A370
- Static tensile tests @RT ASTM E8 / E8M, ISO 6892-1
- Tensile test from -40 ° to 1200 ° C ASTM E21, ISO 6892-2
- Fatigue test @RT a 1200°C ASTM E466, ASTM E 468, ASTM E606, ISO 1099, ISO 12106
- Bearing strenght test ASTM E238
- Shear strenght test ASTM B769
- Compression strenght test ASTM E9
- Fracture mechanics tests even at temperature according to ASTM E647, ASTM E1820 / E399, ISO 12737 and ISO 12108
- Rapture and creep stress tests up to 1200 ° C according to ISO 204, ASTM E139, ASTM E292
- Rotating bending @RT

MECHANICAL WORKINGS

- Preliminary cutting stations with automatic and semiautomatic equipment
- Automatic and semiautomatic lathes and milling machines
- CNC workstation
- EDM wire cutting
- Longitudinal polishing (custom machine)

TEC EUROLAB ACADEMY TRAINING OFFER

TEC Eurolab Academy supports freelancers, quality control technicians, designers and engineers, with scheduled and custom training courses, with the aim of providing vertical skills based on the different phases of the 3D printing process in which they are involved.
The training program is divided into theoretical thematic modules, starting with the principles of additive technology, combined with practical modules related to risks, equipment cleaning and maintenance, up to specific modules for destructive and non-destructive testing.

THE CERTIFICATION IN THE FIELD OF ADDITIVE MANUFACTURING

The certification of skills represents an important opportunity for all those who intend to enrich and add value to their curriculum. A sector such as that of Additive Manufacturing, in which strong growth and expansion has produced considerable theoretical and application knowledge, requires certified figures who can guarantee the possession of skills in the sector.

WHO IS THE CERTIFICATION FOR?

The certification is aimed at companies in the sector that want to guarantee the qualification and specialization of their staff, ensuring a higher quality of services and products offered to the market. The different certification profiles are therefore aimed at designers, operators, quality control technicians, but also freelance consultants in the sector who want to increase their knowledge and enrich their curriculum.

CERTIFICATIONS

After passing the certification exam, a performance and competences certificate with the respective license will be issued. A certificate of participation will also be issued at the end of the attendance of each thematic module of the training course.

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Viale Europa, 40 | Campogalliano (MO)| Italy
+39 059 527775 | www.tec-eurolab.com