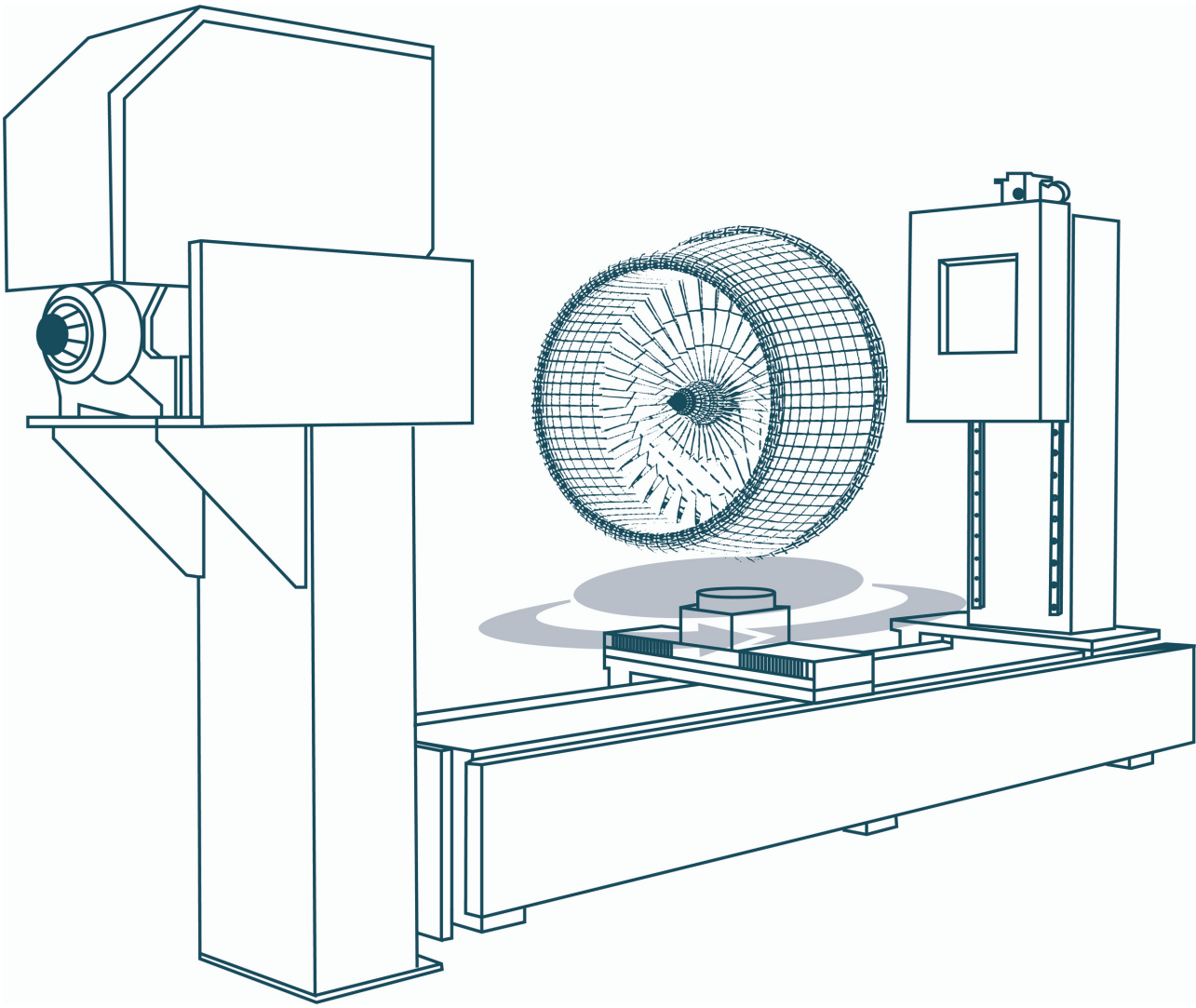
TEC·Eurolab

TOMOGRAPHIC INSPECTION BEYOND LIMITS

super accelerator for super alloys



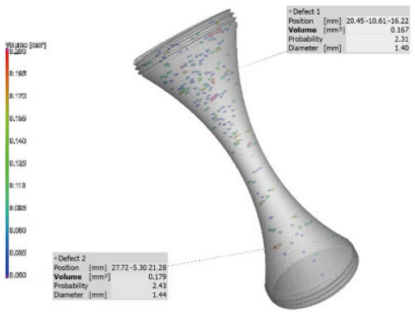
Industrial computed tomography is a widespread non-destructive analysis technique that allows to perform 3D scans very quickly, regardless of the production process and the material used.
Performing a tomographic analysis means combining dimensional inspection and a complete defect control in a single non-destructive analysis, allowing any critical problem to be detected in a timely manner, improve product engineering confidence, and drastically reduce time to market.

However, the tools currently available on the market have limitations.
Except for one.

TEC Eurolab's 6 MeV linear accelerator is a highly advanced instrument, with a size that can scan products with relevant weights, thickness and dimensions, above all with a power that allows to investigate components in super alloys, such as Inconel, Chrome-Cobalt-Molybdenum, copper and similar.

Let our technical and qualified staff support you.

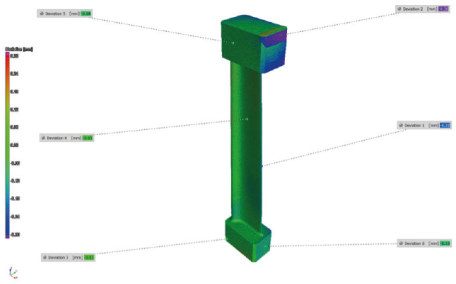
SERVICE



DEFECT ANALYSIS

Following the tomographic scan of a component and the reconstruction of the tomographic volume thus obtained, the defectological analysis allows to define the state of the component, without damaging it, in terms of:

- Assessment of internal discontinuities in accordance with acceptability specifications and issuance of Accept / Reject judgment
- Classification of discontinuities in terms of extension in the 3 dimensions, type and position with respect to the CAD of the component
- Definition of the total volume occupied by the discontinuities in relation to the total volume of the component with the application of specific calculation modules "Porosity".
- Import of the mathematical models of the component and verification of the removability of the discontinuities detected during the machining phase for In-Process and Cost Saving controls



DIMENSIONAL ANALYSIS

it is possible to evaluate and verify

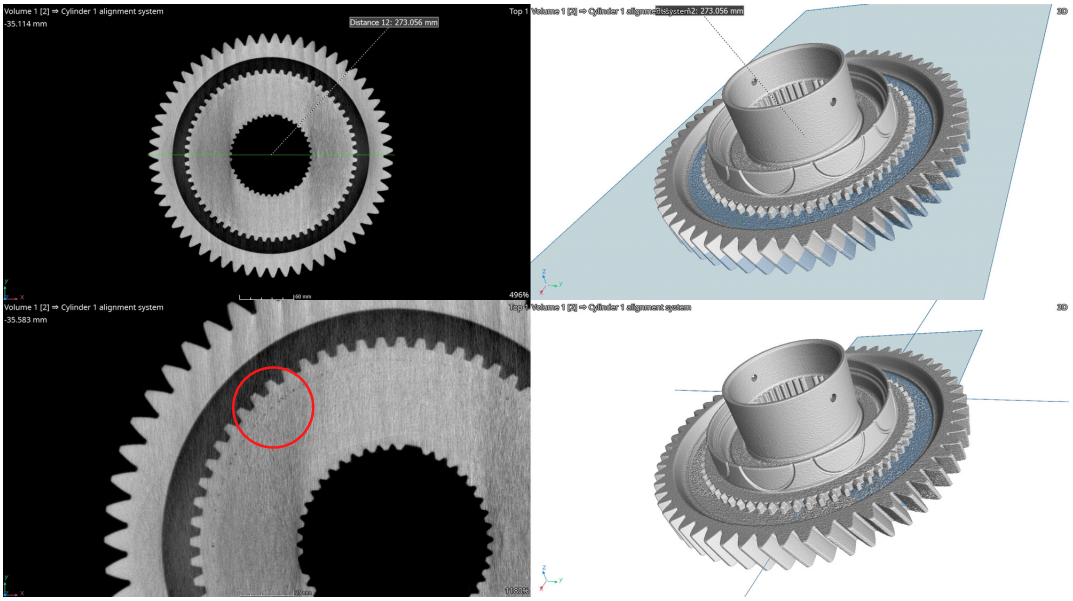
- Deviations from CAD, both of internal features (not accessible with traditional controls) and external features
- Wall thickness analysis for the detection of thicknesses, with easy identification of critical areas thanks to the application of chromatic scales
- Reverse Engeenering: in the dimensional field CT finds many applications in recreating CAD (through STL extraction) starting from the physical component when the drawing is no longer available.

This application is functional to all technologies, both classic, in the case of components whose drawings are only available in paper format, and innovative such as Additive Manufacturing, where there may be a need to manufacture a component produced with "standard" methodologies by means of 3D printing.

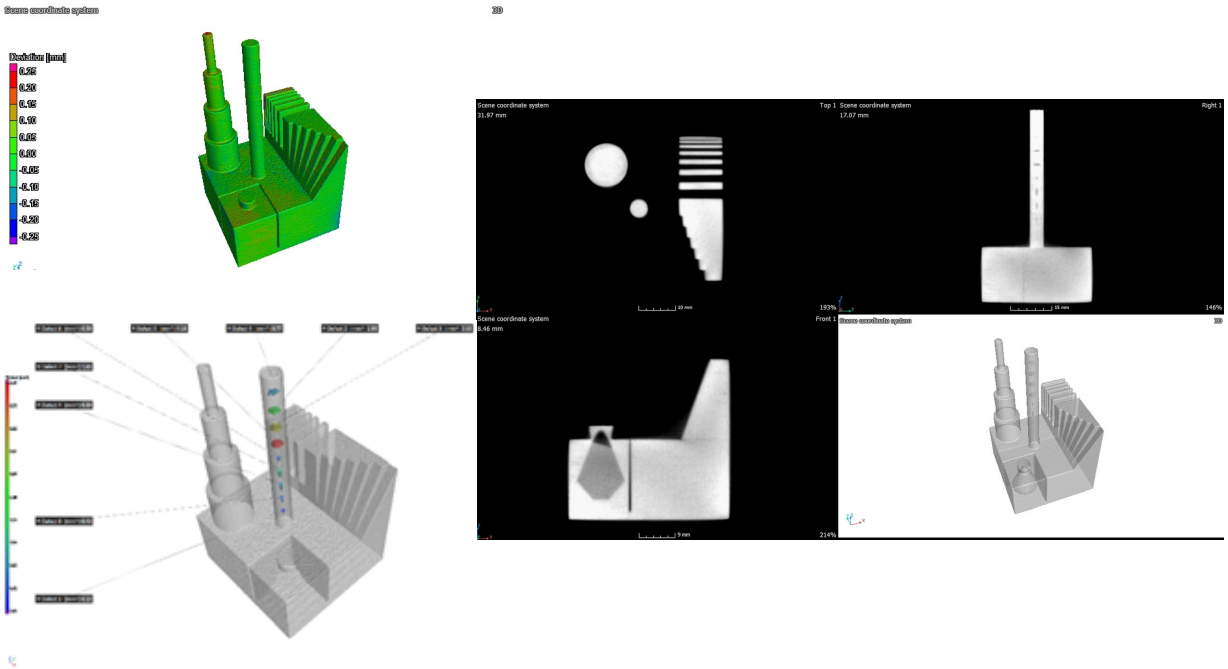
FIRST ARTICLE INSPECTION

The purpose of the first product validation is to give objective evidence that drawings, dimensions and all design specifications are verified and classified with the intent to bring out any non-conformities in order to avoid the presence of the same in the series production.
The tomographic control, thanks to both defectological and dimensional applications and to the possibility of detecting both internal characteristics (ducts, blind holes, internal circuits), allows a precise and reliable FAI characterization.

APPLICATION

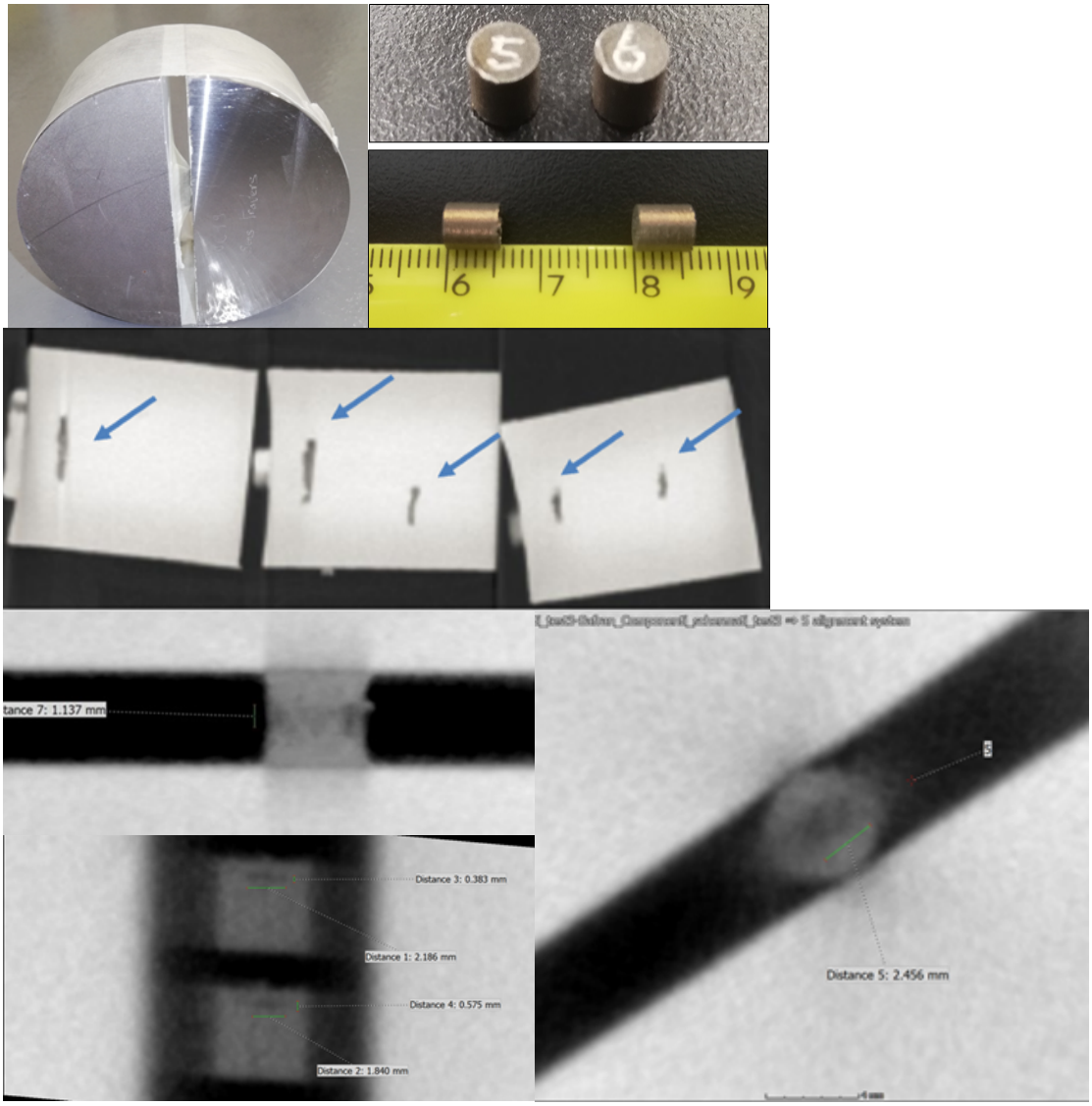


Steel gear wheel with analyzed thickness greater than 270mm, defect analysis.



Inconel reference quality indicator (RQI) with analyzed thickness greater than 55mm, CAD Comparison and porosity analysis.

REFERENCE



Since there are no international regulations or specific standards yet, which define how to monitor the quality of a tomographic image (as it happens for example for RT Film and RT CR / DR), it is essential for each customer to define its own way of monitoring the performance of a scan.

TEC Eurolab, in collaboration with the SAFRAN group, has investigated the possibility of detecting artificial discontinuities engineered through additive manufacturing.

The activity involved the scanning of N° 2 RQI (Representative Quality Indicator) containing known discontinuities, both without shielding and when a shielding equal to approximately 100 mm of Inconel was present.

Systems in the order of hundreds of KV fail to pass through similar thicknesses in high-density alloys, while instead, a LINAC system, such as the one present in TEC Eurolab, allows the crossing of the material and the detection of artificial discontinuities, placing itself as an ideal instrumentation in the inspection of high-density alloys for critical applications.

QUALIFIED PERSONNEL

TEC Eurolab has II° and III° personnel who comply with the requirements of the following standards:

- EN 4179 / NAS 410: RT Non Film Method (CT Technique)
- ISO 9712: RT method integrated with the basic principles of tomographic process

A qualified staff guarantees to the client that the evaluation of a tomographic volume is the most objective and adherent to the required normative protocols. The "quality" of the tomographic volume and the consequent evaluation process aimed at issuing an Accept / Reject judgment, is carried out by personnel who follow specific checklists, guaranteeing the reliability and repeatability of the result.

APPROVAL AND ACCREDITATION

TEC Eurolab material testing laboratories are Accredia accredited, according to UNI CEI EN ISO/IEC 17025:2018, ISO 9001:2018 and Nadcap National Aerospace and Defense Contractors Accreditation Program, according to SAE AS7003 for performing tests in the aerospace and defense sector, according to the standards proper to these sectors.

INTERNATIONAL PARTNERSHIP

DIONDO D7 6 MEV LINAC

Manipulator:	6-Axes granite-based
Variable FDD:	1500 - 4000 mm
Scanning envelope:	D = 1000 mm, H = 2000 mm
Max payload:	200 kg
Max dose rate:	2.5 Gy/min @ 3 MeV, 9.0 Gy/min @ 6 MeV
High resolution Line Detector Array:	length 600 mm, pixel pitch 200 µm
3K Flat Panel Detector 4343 HE:	active area 417 x 417 mm, pixel pitch 139 µm

Do you want to know the powers of our linear accelerator applied to your product?

CLICK HERE TO REQUEST YOUR DEMO

TEC·Eurolab

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