

## Innovative solutions for product quality control and process monitoring

Company Profile

Partner



**DES: ADVANCED TECHNOLOGY, EFFICIENCY, SKILLS AND COMPETENCE.**

DES is a Spin Off Company of **Politecnico di Bari**, specialized in Non Destructive Testing and Experimental Mechanics Systems development. **DES** develops **advanced diagnostic systems** that find application in standard tools and in customized systems for non destructive testing, in optimization and monitoring of process, in characterization of materials.

In particular, DES is leader for the application of thermal methods for which it is official partner of FLIR, worldwide leader in the production of infrared cameras.

*DES mission is the technology transfer of innovative solutions in structural diagnostics (NDT techniques) from Academic research straight to Industry.*

**THERMOGRAPHY: ENDLESS INNOVATIVE SOLUTIONS FOR DIAGNOSTIC.**

**INFRARED THERMOGRAPHY** is an innovative technique for **NDT DIAGNOSTIC**. From measurement of infrared emissions from a body the surface temperature can be determined. Through the use of “thermal cameras”, the temperature is shown as a false colour mapping. The surface temperature mapping, conveniently analyzed and treated, is essential to evaluate the materials integrity status. Anomalies about temperature distribution are warnings on the material’s structure, component or technological system. Almost any process in nature is associated with temperature changes.

Non stimulated thermography, typically used for inspection, maintenance and process monitoring give information about the component or the process during service condition, detecting anomalies in terms of expected thermal behaviour. Stimulated thermography forecast an “injection” of energy in the material/component in order to analyse the thermal transient. Anomalies in thermal behaviour is strictly related to presence of defects in the components. Data interpretation is not immediate and requires skilled and trained technicians.

*Thermography  
is a versatile technique,  
applicable in different  
technology fields;  
highly convenient in terms  
of costs and times;  
essential for maintenance  
and testing of very  
complex structures.*



Partner



## THE COMPANY'S STRENGTHS.

### Industry 4.0 solutions ready

Capability to validate **high value-added solutions** using cutting-edge procedures and instruments, functional to the technological and digital transformation of companies in **Industry 4.0** key.

### Professional team

DES is endowed of an **highly skilled team** of experts with 20 years experience in the field of stress analysis and NDT techniques, developed by the "Laboratorio di Diagnostica Strutturale" of the "Dipartimento di Meccanica, Matematica e Management" at Politecnico di Bari (Higher Technical University of Bari).

## DIAGNOSTIC SOLUTIONS

DES designs innovative structural diagnostic solutions for non-destructive testing, process optimization and monitoring, material characterization, stress and damage analysis.

DES offers standard products, customized solutions, highly specialized consultancy, service and training activities.

Some ready-to-use standard products recently made by DES:

- **MULTIDES SYSTEM laser-optical-flash:** modular and customizable thermal excitation system, designed to perform NDT (Non-Destructive Testing) on different materials, using the most appropriate excitation source (laser, halogen lamps, flash).
- **COMPOSITE DEFECT FINDER:** compact thermographic analysis system for the detection and characterization of defects on composite material components.
- **COATING ANALYZER:** thermographic control system developed to evaluate the coating quality and integrity.
- **IRTA - Infrared Testing and Analysis:** modular and

customizable software designed to analyze the thermographic data, recorded with thermal cameras, and to allow the definition of the optimal test.

- **IDR - Infrared Disk Reconstructor:** software that allows to reconstruct a brake disk, starting from a thermographic sequence recorded during braking.

DES also offers **customized solutions** which can perform, for example:

- Integrity check of composite materials in production line or in customized stations.
- Control and analysis of welded joints.
- Analysis of functional coatings and painted components, in production line or in customized stations.

The products supply provides a preventive support for the most appropriate solutions. The staff supports the customer's R & D department to design and develop systems that provide the most effective solution to the identified problem.

DES also carries out highly specialized **consultancy** in the diagnostic field:

- Analysis of damage of composite and metal materials.
- Mechanical and fatigue characterization of composite and metallic materials.
- Energy monitoring.
- Drafting test procedures by III<sup>o</sup> level UNI EN ISO 9712 certified engineers.

DES performs non-destructive tests in the industrial and aeronautical fields.

## Time and Costs Optimization

Our strength is the ability to develop **flexible projects and customized solutions**, in order to answer efficiently to customer's needs, through advanced high tech instruments and procedures.

## Versatility

Thanks to highly skilled competences on NDT techniques, DES develops multi-purpose and easy-fitting solutions, in compliance with customer's needs. The suggested systems are **customized and modular**, in order to be applied in many areas and industrial sectors.

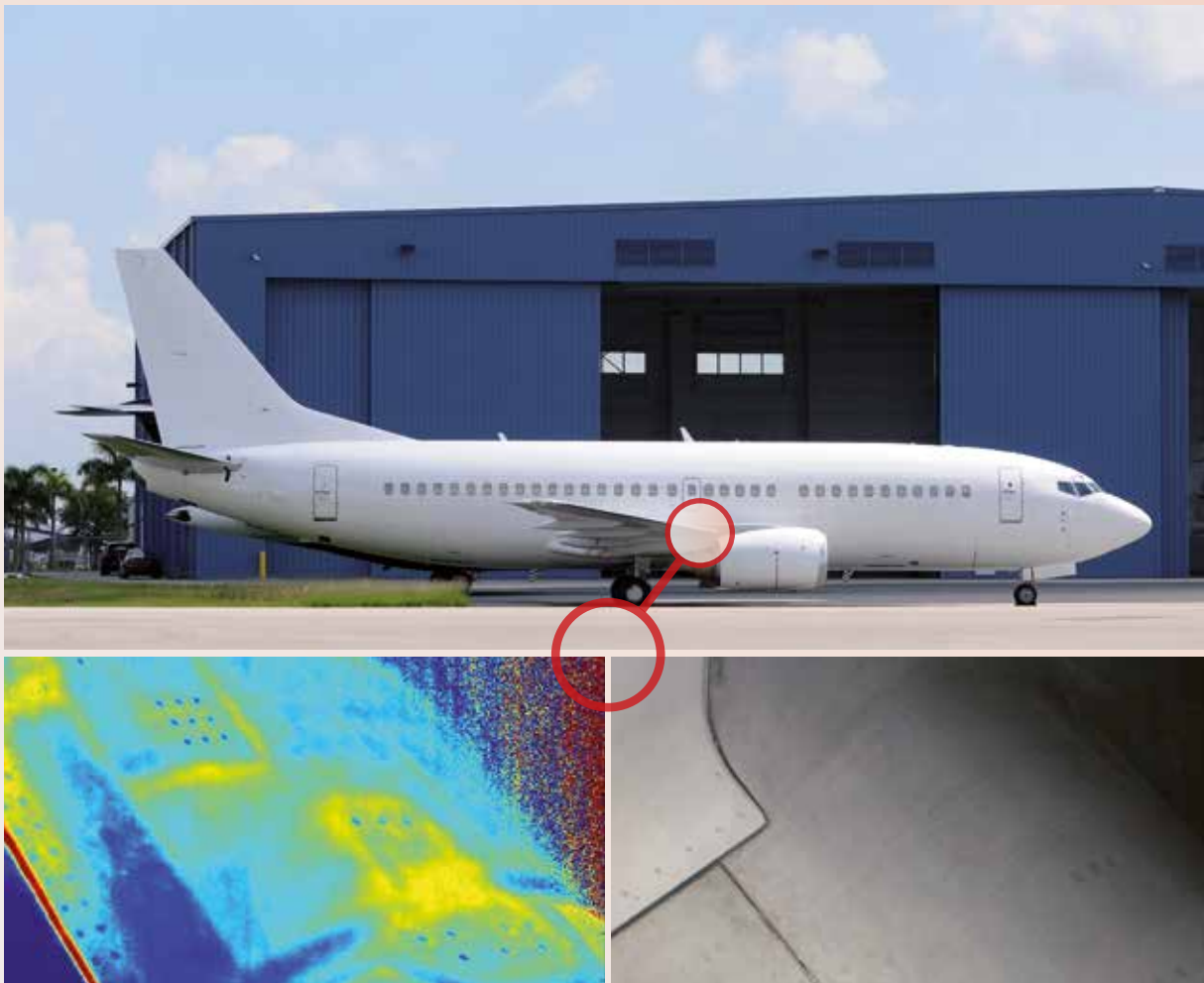
## Flexibility

It is the ability to integrate Infra Red Thermography with **other different techniques** such as, for example, ultrasounds and microwaves, developing dedicated software for that specific purpose. This allows a very little implementation time to respond to customer need with a fast data analysis.

The applied NDT methods are: Thermography, Visual Testing, Ultrasonics Testing, Magnetoscopic Testing, Penetrant Testing, Eddy Current, Extensometry.

**Service activities** can be carried out on field, at the customer's premises, or at DES laboratories on small components.

DES Academy provides **training** for operators in non-destructive tests. It is DEKRA Examination Center for the UNI EN ISO 9712 certification, I<sup>o</sup>, II<sup>o</sup> and III<sup>o</sup> level. It is possible to take the exams at DES premises.



## INTERVENTION FIELDS.

The DES market is very wide and involves several sectors: **automotive, aerospace, naval, transportation, mechanics, mechatronics, renewable energies, plastic materials.**

The applied technologies, in fact, can be used in many applications allowing the monitoring of the processes, in order to detect anomalies, defects, breakages, avoiding also production stops.

The main customer advantage results also in waste reduction and a more durable product with as longer life cycle.

In particular following advantages are observed:

- ***Time and Cost Optimization of the testing, also in wide inspection areas.***
- ***Components Analysis in every scale.***
- ***Release of Certifications for Reparation.***
- ***Remote Control, in order to facilitate and keep safe the operators.***
- ***Implementation of predictive maintenance or condition based.***

*DES provides advantages in terms of:*

- *Prevention of dramatic collapses, anomalies and malfunctioning.*
- *Reduction and Elimination of production stops.*
- *Costs Reduction about development, monitoring and maintenance.*

## REFERENCES

*DES is distinguished for complex works committed by multinational companies, establishing business relations with important partners.*

*DES is the winner of the 2014 Finmeccanica Innovation Award. Partners: FLIR Systems, CETMA, Microlaben, FBR Control.*

*DES is a founding member of Net4Industry, Business Network for Industry 4.0.*

[desinnovation.com](http://desinnovation.com)

**Prof. Umberto Galietti**, President and scientific coordinator of DES activities. Associated Professor of Mechanical Projecting and Machines Construction, Scientific Responsible of “Laboratorio di Diagnostica Strutturale e Metodi Termici per la Meccanica Sperimentale del DMMM” at Politecnico di Bari.

DES staff is certified at II° and III° level UNI EN ISO 9712, SNT-TC-1A, PED approval in MT, UT, PT, VT, ST, ET, RT and TT. It is also certified at II° level UNI EN 4179 in PT, MT, ET, UT and RT.



## Customer Service

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OUR PRODUCTS  
AND SERVICES

