



Infrared solutions for quality
assurance and process
control in industrial metal
processing applications

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New Infrared Technologies: A vertically integrated company supplying innovative mid-IR detectors, cameras and industrial solutions

New Infrared Technologies (NIT) is a company located in Madrid (Spain), which develops and commercializes industrial solutions for real-time process monitoring and smart control of industrial processes.

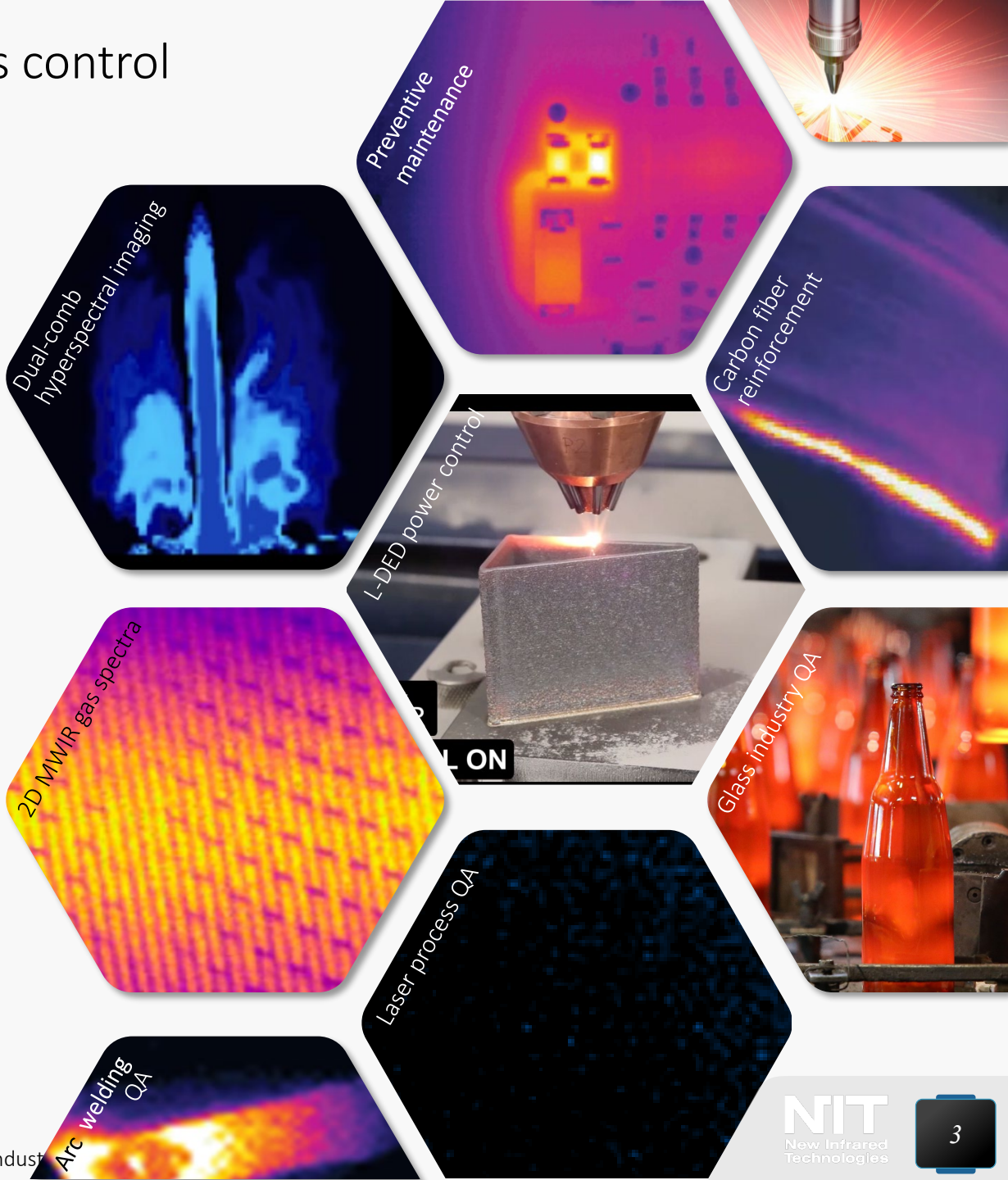
These solutions are based in self-produced infrared cameras manufactured with a unique proprietary technology (sensitive in the medium wavelength infrared - MWIR, 1 - 5 microns, high-speed capabilities and uncooled operation at room temperature), and thermal uncooled cameras sensitive in LWIR (8 – 14 microns).

Proud member of:



Infrared solutions for quality assurance and process control in industrial metal processing applications

- Many applications in multiple industries: automotive, aerospace, steel, among others
- Quality assurance of laser-based processes:
 - Laser DED 3D metal printing & laser cladding process monitoring and control
 - Laser welding with real-time Machine Learning processing
 - SLM processes (melt pool geometry, position and cooling rate monitoring)
 - Hardening & surface structuring process control
- Arc welding & WAAM process monitoring and control
- Strong collaboration with the industry through H2020 projects



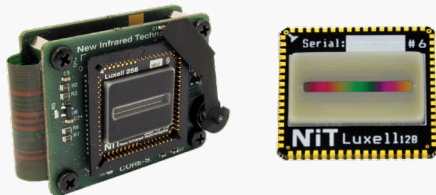
New Infrared Technologies: Product and Solutions portfolio targeted to Integrators, Solution Developers and End-users

Single pixel

Linear array (256 px)

OEM modules
(1x256, 32x32)

TACHYON 1024
microCAMERA



CLAMIR & I3MS
monitoring system

Quality assurance of
L-DED 3D metal printing

Closed-loop control of
laser power

Real time monitoring
of melt pool width

Direct integration in laser optics



Winner of the Innovation Radar Prize 2018, category 'Industrial & Enabling Tech', awarded by the European Commission

High-speed uncooled MWIR camera
TACHYON 16k CAMERA PLUS

128x128 px, pixel size: 50 um,
uncooled operation

Max. frame rate @128x128: 4,000 fps

Snapshot acquisition

GigE VISION & GenICam compliant

Power-over-Ethernet

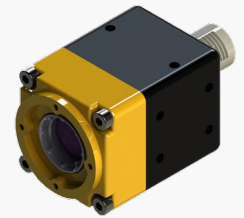


Thermal camera
LIR320

Thermal measurements

Compact design

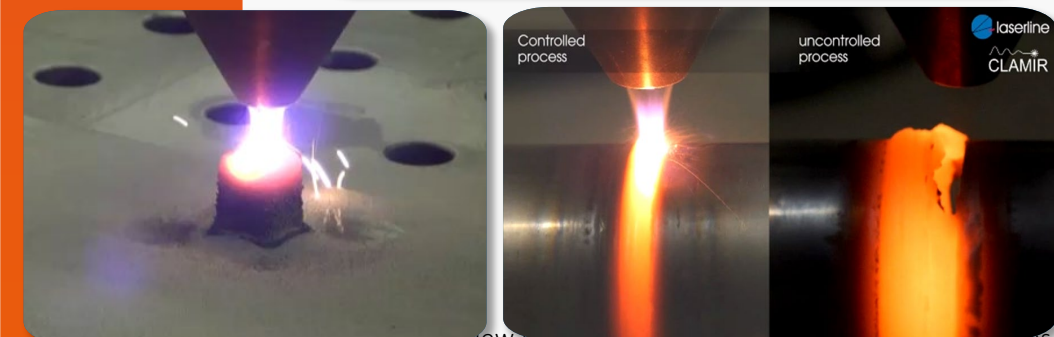
USB comm's and power





CLAMIR for L-DED LMD process control

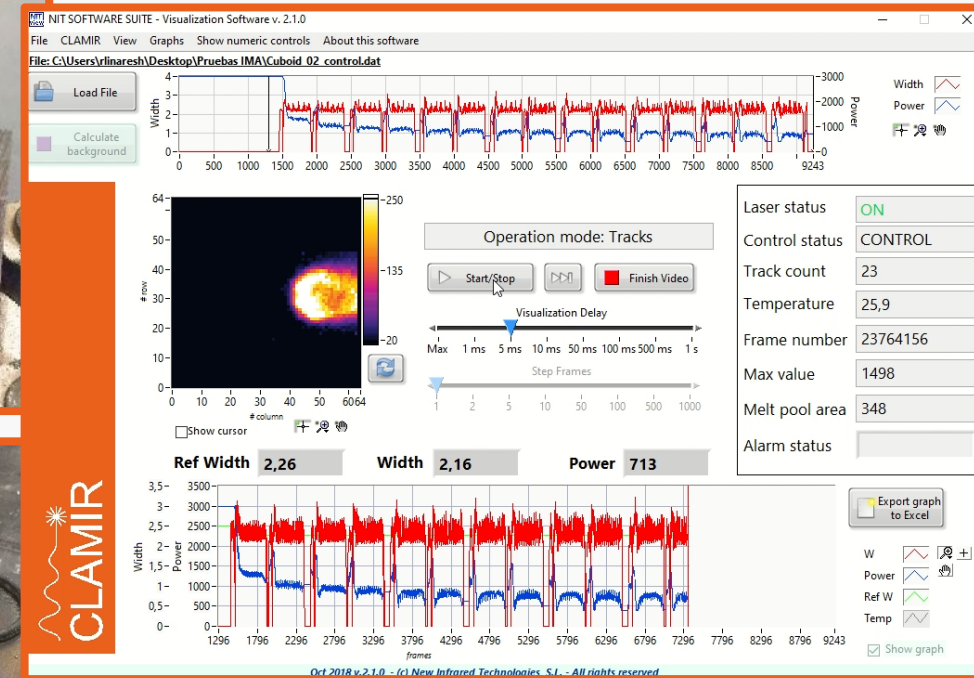
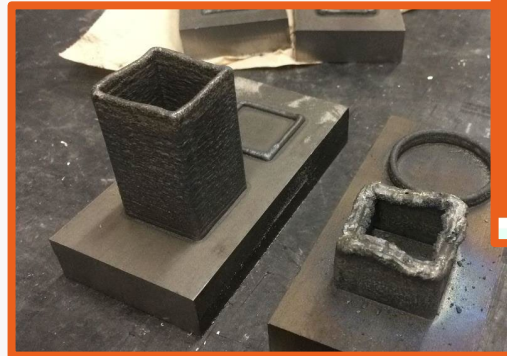
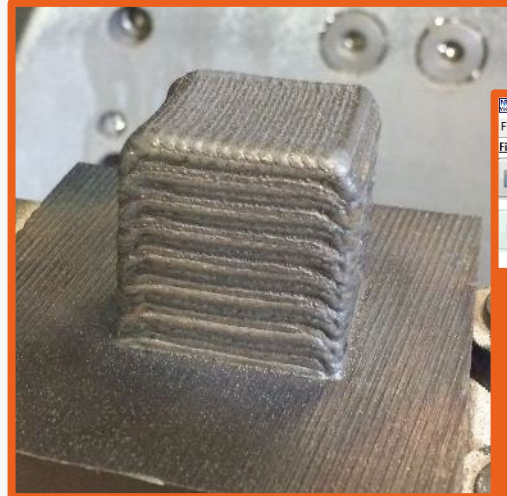
- Continuous monitoring and measurement of the melt pool geometry using a MWIR infrared camera (1.1 μm – 5.0 μm), coaxial installation
- Closed-loop control of the laser power during the complete process, ensuring quality and repeatability
- Compatible with most of laser optics and powders
- Easy mechanical integration and quick configuration, allows retrofit
- Consistent operation, no need of reconfiguration during the process
- Main applications: LMD and laser cladding, including EHLa
- More info: www.clamir.com



Winner of the Innovation Radar Prize 2018, category 'Industrial & Enabling Tech', awarded by the European Commission

CLAMIR for L-DED LMD process control

- Continuous control of the laser avoids overheating of the part under process and allows a continuous and high-quality manufacturing process
- Use of CLAMIR reduces rates of defective parts, material use and energy than uncontrolled processes. It can also help to optimize the process and improve the productivity.



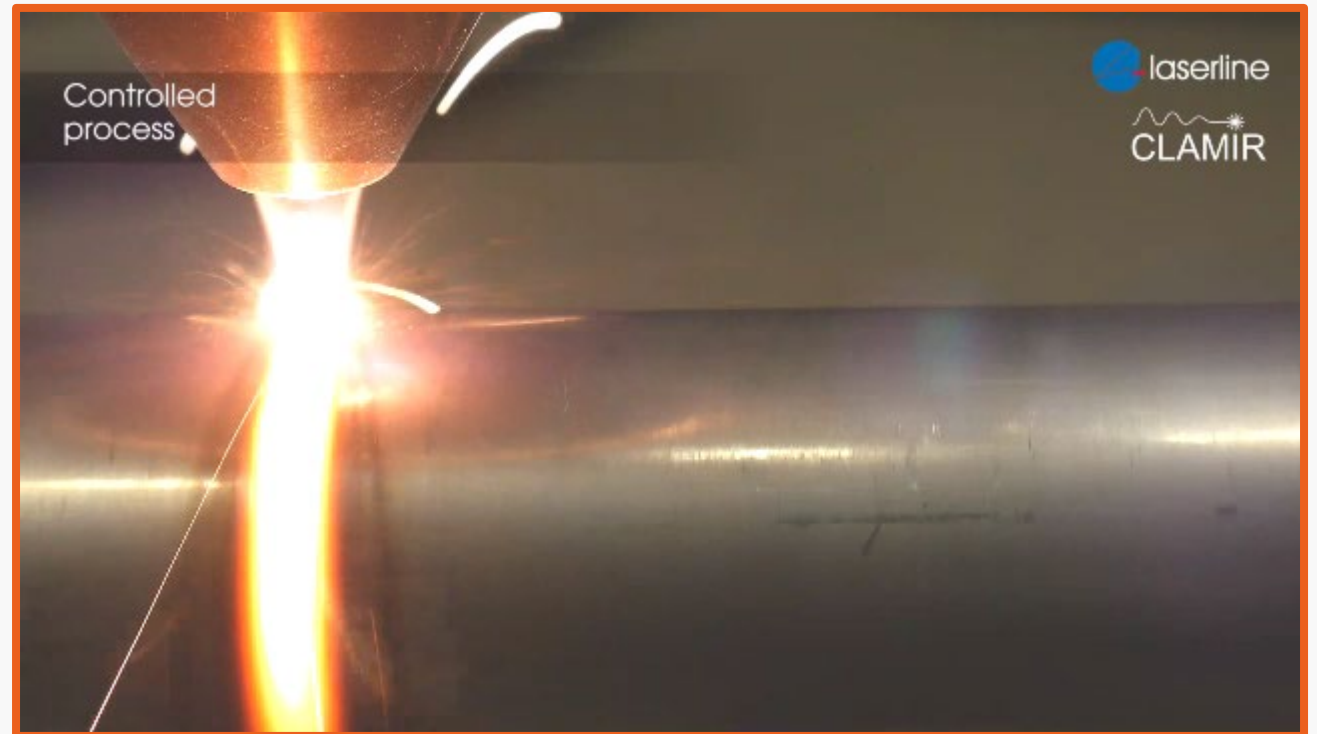
CLAMIR for L-DED LMD process control

- Example: manufacturing of triangular shape



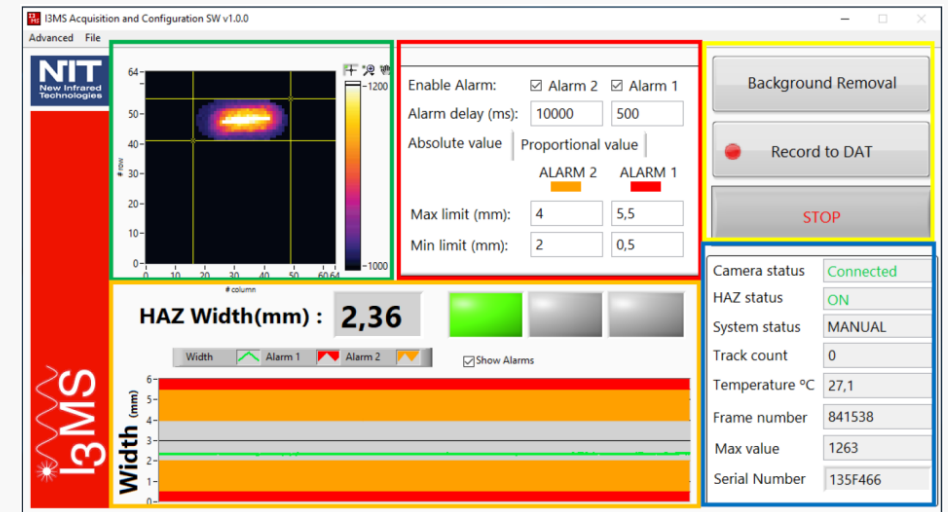
CLAMIR for Laser Cladding process control

- Continuous control of the laser power allows continuous processing of large areas / lengths
- Use of CLAMIR reduces dilution rate and damage to the base material due to excess of laser power
- Compatible with EHLA process



Process monitoring in metal 3D printing

- Inline Infrared Imaging Monitoring System for industrial process monitoring
- Continuous monitoring and measurement of the melt pool and HAZ geometry
- Ensures quality monitoring
- Allows coaxial integration and off-axis operation
- Standalone operation
- 2-alarm levels configuration, PC datalogging
- Main application in 3D printing processes: L-DED (powder & wire), WAAM
- More info: www.i3ms.eu



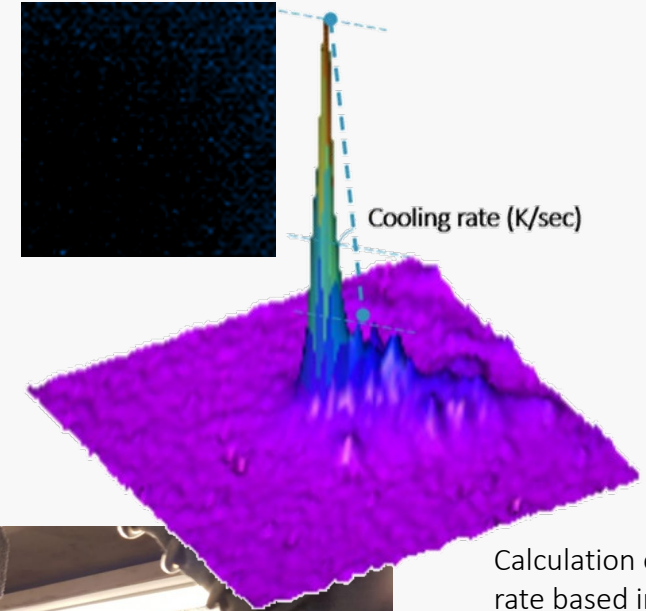
I3MS Acquisition and Configuration SW

High-speed Infrared camera for 3D printing process monitoring

- Camera resolution: 128x128 px, pixel size: 50 μ m, uncooled operation
- Band of detection: 1 – 5 μ m
- Max. frame rate: 4,000 fps @full frame
- Windowing mode that allows faster frame rates
- Snapshot acquisition
- GigE VISION & GenICam compliant, PoE



Video of a melt pool in a PBF process



Calculation of cooling rate based in the Infrared image





TACHYON 16k CAMERA PLUS coaxially integrated in a PBF machine

NIT

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