SPECIFICATION SHEET

Supply, installation and commissioning of a *Solder Reflow Station* for the ICFO, financed by FEDER Catalunya 2021-2027

FILE NUMBER: ICFO-2026-033

CLAUSE 1. Object of the contract

The purpose of this contract is the supply, installation and commissioning of a "**Solder Reflow Station**" for the ICFO, financed by FEDER Catalunya 2021-2027.

The types of items supplied are linked to the CPV (Common Public Procurement Vocabulary) **38000000-5** Laboratory, optical and precision equipment (except glasses).

CLAUSE 2. Needs to satisfy

PhotonChip is a platform project that will help bring photonic technologies, in particular integrated photonics and photonic chips, from scientific feasibility to prototype stage to be applied in, for instance, communications as 6G transceivers, sensors, quantum computing and technology platforms.

Once operational, PhotonChip will cover the whole photonic chip value chain (design, packaging, testing) and train new experts thanks to dedicated programs.

As part of the Institute of Photonic Sciences (ICFO), PhotonChip will use advanced technologies as quantum technologies for cybersecurity, virtual and augmented reality, artificial intelligence, and machine learning.

In the development of the project, ICFO needs to acquire the supply of a **Solder Reflow Station.**

This equipment constitutes an important process step in the integration and advanced packaging of Integrated Circuits. Its primary functions include reflow soldering, rapid thermal annealing, and brazing. It provides, among other capabilities:

- die soldering onto substrates or subassemblies inside a package
- reflow of solder balls for BGA-based technologies
- package sealing

All operations are performed under controlled-atmosphere conditions, preventing solder oxidation, improving wettability, and ensuring high-quality solder joints.

CLAUSE 3. Technical requirements

Technical proposal structure - minimum mandatory equipment characteristics

The station is a vacuum reflow oven allowing the processing of a wide variety of optoelectronic devices, including single substrates or subassemblies, wafers, various package types and batch configurations.

It shall provide the following minimum characteristics:

1. IR heating capable of achieving process temperatures of at least 450ºC.
2. Minimum heated surface of 300x300 mm.
3. Chamber cooling via water-cooling system.
    a. Chiller shall be included.
4. Minimum ramp up 3ºC/ sec.
5. Minimum cool down 2ºC/ sec.
6. High-clearance chamber.
7. Minimum vacuum level of 5x 10^{-2}mbar.

a. Vacuum pump shall be included.

8. Process gases: the system shall support operation with nitrogen (N2) and formic acid vapor (HCOOH) supplied via a bubbler system.
9. Multi-step process recipe programming and data logging, including measurement and control of heating temperature, vacuum and process gas.

Software requirements

10. The system must include the software required to manage all required functionalities described above and shall be supplied with a permanent (non-expiring) license (note item 9).
11. The software shall be installed on the system PC

Technical documentation or manuals to be delivered

A set of documentation shall be provided, covering the following topics:

- Comprehensive system user manual, including both hardware and software descriptions, routine servicing and troubleshooting.

CLAUSE 4. Power distributions and safety

The system shall include:

- Electrical Operation: 230V ±10%, 50 Hz (per UNE-EN 61010-1, Spanish adoption of IEC 61010-1)
- CE-certification
- Safety interlocks and emergency stop system.
- Auxiliary equipment: chiller and vacuum pump, as specified in technical requirements.

CLAUSE 5. System layout and services

The proposal shall include a set of “system layout and services documentation”, containing the following information:

- System layout, including overall footprint, weight, drawings and detailed description of the different system components.
- Installation and start-up requirements, including required utilities, service connections, and any applicable environmental specification.

CLAUSE 6. Transportation, installation, start-up.

- Contract includes the installation and start-up of the system, including system checking, functional tests and the supply of all those elements necessary for its correct operation

- The proposal will include transportation to ICFO’s facilities including insurance and all export/import and customs duties.

- Any other customs or miscellaneous expenses, unexpected and not covered in the tender, which may arise until the equipment arrives at ICFO, must initially be borne by the Supplier and will be reimbursed by ICFO upon submission of supporting documentation proving the actual incurrence of such expenses.

- The machine will be placed in the designated location by ICFO. The contractor shall cover all costs, organization, and coordination related to the placement, including the provision of any required specialized equipment or vehicles, as well as any necessary component disassembly and reassembly for unloading and transportation inside the building, strictly following the route specified by ICFO.

- The contractor will be responsible for the removal and proper disposal of the packaging when the machine is delivered and unpacked, or its storage during the warranty period in case the original packaging needs to be kept.

Process qualification

Site Acceptance Test (SAT) will be required as part of the delivery and acceptance process of the equipment.

It shall include, at minimum:

a) Machine parameters verification, such as vacuum level in chamber, max temperature reached, etc. demonstrating compliance with the specification.
b) Documentation. All test results, reports and data shall be included in the documentation delivered to ICFO.

CLAUSE 7. Warranty and Follow-on Support

- 1-year Full Warranty on all parts and components of the system irrespective of the manufacturer. The warranty will include the replacement of any faulty or damaged part(s) during normal use of the system, no matter the manufacturer of the component(s). It will cover any cost related with the disassembly, transportation, reparation and re-assembly of the damaged component(s), including all travelling and living costs of the required service engineer(s). An on-site repair, or a justified alternative to reduce the system down time to the minimum, will always be the first service option. A team of properly qualified and skilled service engineers will have to be available.

- System lifetime support.

- Spare parts will be available during, at least, 10 years after system supply.

CLAUSE 8. Training

- System training for ICFO personnel shall be included: the number of training days shall be specified in the proposal.

- The training shall ensure proper and safe operation of the system by designated equipment operators and engineers.

- The training program shall also provide an overview of basic maintenance procedures, covering routine preventive tasks and essential troubleshooting guidelines.

- Training will take place at the ICFO facilities, scheduled on a mutually agreed date.

CLAUSE 9. Delivery and Installation Time

The machine should be delivered within **2 months starting from the formalization of the contract.**

CLAUSE 10. Target price

- The target price for the system is **125.000€** (VAT excluded).
- Payment terms: Full payment will be made once the final receipt of supply, installation and commissioning is issued.

Castelldefels, on the date of its digital signature

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