




**TECHNICAL CLAUSES FOR THE ACQUISITION OF A VACUUM  
INDUCTION MELTING FURNACE FOR METALLIC MATERIALS  
DEVELOPMENT**

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	<p>Technical clauses for the acquisition of a vacuum induction melting furnace for metallic materials development</p>	<p>www.idonial.com  info@idonial.com  T +34 984 390 060  F +34 984 390 061</p>
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## TECHNICAL CLAUSES

Technical description of a high-vacuum multi-purpose laboratory scale system:

### Equipment specifications

The Department of Metallic Materials Development at Fundacion IDONIAL (hereafter known as IDONIAL) is currently seeking out the acquisition of a **laboratory scale (or pilot production) furnace for melting, alloying and casting of metals and alloys in a ceramic or graphite crucible under vacuum or protective gas partially pressurised**. The technical specifications described in this document cover the desired and essential equipment requirement. Idonial invites any interested organisations along with others to offer a tender for provision of the above, to the specification outlined in this document.

### Description of the equipment and functions:

The equipment shall be capable of operating under two different pressure conditions: (i) vacuum and (ii) controlled inert atmosphere. Both, ultimate vacuum and overpressure levels shall be included in the offer.

The minimum required vacuum pressure level ranges from  $10^{-2}$  to  $10^{-3}$  mbar. The time required to reach several vacuum levels shall be specified.


Inert atmosphere or vacuum shall be maintained whilst measuring bath temperature or adding material in to the crucible. The offer shall include any procedures for sampling, alloy additions and temperature control whilst keeping atmosphere protection.

The equipment shall be capable of processing iron-based alloys. The offer shall include details such as maximum melting temperature and induction characteristics (e.g. frequency, power, others).

The loading capacity shall be within the range of 2 and 10 kg of steel.

The coil shall be equipped with a tiltable system so that both melting and casting can be performed under a controlled atmosphere. The offer shall include the maximum size of the moulds to be used.

The melting and casting process shall be observed through an inspection device such as a sight-glass screen.

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The chamber shall include intakes (inlet and outlet) for further implementation of cooling and heating devices of the moulds. The number of intakes shall be specified. Note that the heater-cooling system of the mould is not under consideration in the requested offer.

The offer shall include the main dimension of the furnace and delimited working area.

The offer shall include specifications of the required cooling system capacity. Note chiller device not to be included in this offer.

Please feel free to highlight any additional features of your VIM furnace for us to take under consideration as a special added value (e.g. processability of reactive materials, the panel control, raw material charging procedure, automatic vacuum setup, melting and casting processes, optional devices and configurations, others).