INFORMATIVE

TECHNICAL SPECIFICATION

REF: EQ AIMEN/ 6-2015

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Background

I.- The *Asociación de Investigación Metalúrgica del Noroeste* (AIMEN) [Metallurgical Research Association of the North West] is a private non-profit entity incorporated in Vigo in 1967 and promoted by a group of Galician businessmen with the aim of boosting Research, Technological Development and Innovation in the Industry.

AIMEN is the Center of reference in the field of materials in the Autonomous Community of Galicia and it is recognized and registered as Center of Innovation and Technology under number 38 in the Registry of the Science and Technology Inter-Ministerial Commission (CICYT), dated on 21 May 1998. Currently, the body has more than one hundred companies associated and it serves more than seven hundred organizations devoted to industrial and commercial activities.

Given the transversal nature of the technologies and services developed by the Center, AIMEN renders its services to a wide range of sectors: motor, naval, aeronautic, mechanical metal, building, energy, among others. In addition, AIMEN plans to cover other sectors, like the textile and biotechnical industries, thus broadening its frame of action.

For more than forty years of activity, AIMEN's main objective has been contributing to the development and strengthening of the competitive capacity of companies in the fields of technology and innovation, providing companies with technological services, scientific-technical support and R&D activities in the following areas: metallurgy, forming processes, welding, laser technologies, industrial design and engineering, the environment, characterization of materials and failure analysis, non-destructive tests, calibration, industrial organization, quality management, environmental management, hazard prevention at work and technological training.

II.- AIMEN has built the new building for the Laser Processing Center on a plot covering 11,000 m^2, located in the future Business Park of Cataboy-Porriño SURPPI 2 (Sector 2) lot 3; all of this according to the Execution and Basic Projects of the Architect Mr. Santiago Ulloa Ayora in May 2010. For this purpose, a tender was called in the modality of open procedure.

III.- This document aims to establish the administrative basis of the tender which, under the modality of open procedure, will be carried out in order to choose the Awardee of the Supply Agreement of the goods described in the Schedule of Technical Specifications.

IV.- Calling Entity

The Asociación de Investigación Metalúrgica del Noroeste (AIMEN), which calls the tender, is located at:
Relva, 27A – Torneiros
36410 PORRIÑO (Pontevedra)
CIF (Tax Identification Code): G36606291
Phone: 00.34.986.344.000
www.aimen.es
E-mail (for issues related to the tender) : licitaciones@aimen.es
PROFILE OF THE CONTRACTING PARTY: It can be checked at: HYPERLINK "http://www.aimen.es/"www.aimen.es, where the general instructions for contracting approved within the Association can also be found.

V.- Financing:

A collaboration agreement has been signed between the Ministry of Economy and Competitiveness of the Government of Spain, the Regional Department of Economy and Industry of the Xunta de Galicia (Galician Regional Government) and AIMEN, so the **project is co-financed by the aforementioned Ministry, charged to the European Regional Development Fund (ERDF) 2007-2013 "A way of making Europe" and the Xunta de Galicia.**

VI.- Regulation:

Taking into account the origin of the funds, and in spite of the provisions of sections 9, 17, 190, 191 and 192, regarding 3.3 of TRLCSP (Leg. R. D. 3/2011) the contract would not be subject to the harmonized regulation of the TRLCSP. According to the provisions of Council Regulation (EC) 1083/2006, laying down general provisions on the European Regional Development Fund and the Cohesion Fund (which abolishes Regulation CE 1260/1999), and the Community regulations on contracting, this tender is inspired by and is adapted to the provisions of the revised text of the Law on Public Sector Contracts (TRLCSP) on anything related to the preparation process, publicity, tender stage, election, awarding and execution of the contract (and thus respecting the principles of publicity, concurrence, transparency, confidentiality, equality and non-discrimination included in the abovementioned TRLCSP and Community regulations).

To be more specific, and taking into account that the contract is not under the suppositions of art. 17 of the TRLCSP as harmonized regulations, the procedure is subject to the information principles and provisions included in arts. 157 and following and 191 and 192 of the TRLCSP.

Therefore, and according to the aforementioned terms, Leg. R.D. 3/2011, of 14 November, on Contracts of the Public Sector has been basically considered when writing this Schedule; as well as the General Law on Subsidies, the General Regulation on Contracts of Public Administrations and other applicable private Law regulations, when applicable.

In addition, the Contracting Internal Instructions approved by the Association will be applicable. They can be checked at the Association's website.

Definitions of the terms that will appear in the text of the administrative basis or technical specifications:

A. Contracting Body: AIMEN
B. Contracting Committee: The offers will be assessed by the Contracting Committee, which will be made up by the following members:

CHAIRMAN: Chairman of AIMEN, who will be in charge of leading the meetings and responsible for the functions of the maximum representative of the Committee.

MEMBER: Adviser and Deputy Chairman of AIMEN. In case of absence of the Chairman, he/she shall take on his/her functions, standing in for him/her as established in the General Instructions for Contracting of the Association.
MEMBER: Managing Director of AIMEN.
MEMBER: Adviser of the Board of Directors of AIMEN.
MEMBER: Member specially invited according to the provisions of the General Instructions for Contracting, head of the Directorate for Technology of AIMEN, whose participation is appropriate as a result of his/her profile and proven professional experience.

SECRETARY: Secretary of the Board of Directors and General Assembly of AIMEN, who shall not have the right to vote, limiting his/her action, when applicable, to the provision of advice to the Commission. He/she shall be in charge of writing the minutes of the meetings, recording as faithfully as possible the relevant agreements concerning the tender. The minutes will be written at the same act or, with authorization of the members meeting in the Contracting Committee, just the main and essential points of the meeting will be recorded, writing the definitive minutes as soon as possible and within the five working days following the meeting. The minutes shall be signed by the Secretary and the Chairman and then they will be transferred to the members of the Committee.

C. Minimum Quorum for the valid constitution of the Contracting Committee: The Contracting Committee shall be considered as validly constituted if at least 3/5 of its members are present.

D. Votes of the Contracting Committee: Agreements shall be taken by simple majority of the members who are present.

E. Committee of Experts: Made up by the people listed below, who are in charge of the execution of the tasks indicated in the administrative basis: 3 engineers (at least one of them must be a Superior Engineer) or, failing that, university graduates of other fields, appointed by AIMEN.

F. Contract Responsible: Legal Representative of AIMEN appointed in the contract to be signed with the awardee. Should there not be an expressed appointment, the Managing Director of

AIMEN would be.

G. Delegate of the Awardee: Representative appointed by the tenderer for the purposes of this schedule and the contract to be signed with the awardee.

H. Notifications: all and any notification made by AIMEN at the addresses or e-mail addresses provided by the tenderers will be valid.

I. Calendar days: every day of the year. **Working days:** every day but Sundays and public holidays (local holidays in Porriño and provincial, autonomic or state holidays). Unless otherwise stated, the reference to days in this schedule shall refer to calendar days.

J. Working hours: AIMEN's working hours for the receipt of documentation are from 9.00 to 13.30 from Monday to Friday. The Contracting Committee can authorize another timetable and days for the submission of the documentation, in case of need, for rectifications or similar cases. Should the documentation receipt service be authorized in the afternoon, documents can be submitted out of the abovementioned working hours (after confirming this possibility with the Calling Entity).

The times indicated refer to the local time in Porriño (province of Pontevedra, Spain).

K. Language: all and every communication made by the interested parties shall be in Spanish or Galician. The documents to be submitted in the tender offers can be in Spanish, Galician or English (if they are submitted in another language, a translation to any of those three languages shall be attached). The submission in another language shall not be a reason for exclusion, unless AIMEN does not have qualified personnel for the translation among its staff.

It has been included an English translation of these Specifications Sheets for information purposes only

BASIS

1. Object of the contract.

The object of the contract is the supply and installation of the goods indicated and detailed in the Schedule of Technical Specifications; including the delivery of the documentation required in the abovementioned schedules, the execution of the training actions and tasks and all the obligations for the awardee deriving from this document, the schedule of technical specifications and the contract undersigned (the awarding of which is object to this tender process).

Any additional improvement offered by the tenderer is included, unless AIMEN expressly rejects their addition or execution.

Therefore, the obligations of the awardee for the observance of the object of the contract concerning the supply and installation of the goods acquired include any packaging tasks or needs, transportation, storage at AIMEN's premises —including the necessary means, such as machinery, means of transport, elevators, etc.— until the definite and complete installation of the good for its operation with all the technical requirements demanded by this document and by the Schedule of Technical Basis of this procedure (including those necessary tests for this purpose, even rectifications or repairs that could be made within the guarantee period). The good object to this tender shall only be considered as duly delivered once these requirements and obligations have been met (especially concerning the maximum deadline period for each lot).

Por la individualidad de los bienes objeto de adquisición y sus sustantividad propia aun cuando para la incorporación a un solo Centro, es por lo que se ha decidido -a modo similar lo propuesto en el art. 86 de la LCSP- la confección de lotes en los términos que más adelante se señalaran aun cuando se admite la posibilidad de optar a varios lotes por los mismos licitadores si bien, insistiendo en la individualidad de los mismos y a fin de alcanzar la mayor eficacia y obtención de la propuesta económicamente más ventajosa, procediéndose a la admisión de ofertas individualizadas por cada uno de los referidos lotes.

2. Needs to be met through the contract.

The object of the execution of the contract and the supply and installation of the goods acquired is to provide the new building of AIMEN's Laser Processing Center with the goods needed for the development of its activity, as well as the optimization of the investment made. The goods object to this procedure, and according to their description in the Schedule of Technical Specifications, as a result of their characteristics, are essential for this purpose.

3. Object of this Specifications Sheet.

The purpose of this Technical Specifications Sheet is to define and clarify the minimum characteristics for the elements subject to acquisition which in turn constitute the object of the contracts to be awarded in the present proceeding.
In any case they are considered as essential minimum requirements to be met in order to consider the bid submitted as valid.
This Specifications Sheet is drafted without prejudice to the drafting of the Schedule of Administrative Clauses to be complied with by those interested in submitting their bids to this tender.

4. EXPRESS ACCEPTANCE OF THE OBSERVANCE OF ALL AND ANY REQUIREMENT AND TECHNICAL SPECIFICATION OF THE EQUIPMENT TO BE SUPPLIED, according to the Schedule of Technical Specifications of this procedure.

THE SUBMISSION OF A TENDER OFFER in this procedure ENTAILS THE EXPRESS AND COMPREHENSIVE ACCEPTANCE by the tenderer, WHO AGREES TO OBSERVE THE TECHNICAL SPECIFICATIONS INCLUDED IN THE SCHEDULE OF TECHNICAL SPECIFICATIONS of this procedure. IT ALSO ENTAILS THE EXPRESS KNOWLEDGE OF AL THE TENDER SCHEDULES OF CONDITIONS (both administrative and technical specifications).

It is expressly indicated that, in case the tender offer includes improvements with respect to the technical specifications included in the Schedules, the tenderer undertakes to meet them if he/she is the awardee —unless AIMEN expressly rejects their inclusion or execution— but the offer of these improvements will not be considered when giving the points that decide the awarding of the contract, except for the ones expressly established in these schedules or technical specifications.

Likewise, if the Committee of Experts, to be herein referred to later on, considers that the improvements or variations offered by the tenderer involve the inobservance of any of the inexcusable requirements demanded in the Schedules of Technical Specifications —because they improve any feature of the good, but they do not meet other requirements demanded— it will inform about the situation and will propose the exclusion of the tender offer.

Porriño, on 12 june 2015

TECHNICAL SPECIFICATION
LOT 1º
DIODE LASER OF 6kW

Main technical characteristics for the laser source include:

- Continuous wave, Fiber-coupled diode laser.
- Maximum output power: 6kW cw
- The laser source must combine different wavelengths in the range from 900nm to 1100nm.
- Beam quality of 44mm mrad or better.
- Suitable for optical fiber with minimum core diameter of 0,4mm or less.
- Several different modes of laser operation can be selected: continuous wave (cw), pulse mode, programmable powder mode or external remote operation.
- Beam switch for use with at least two optical fibers. The coupling must be simple.
- The laser head must provide a positive pressure inside to avoid dust contamination in a dusty environment and condensation due to high humidity.
- Profibus interface.
- Water/water heat exchanger for cooling of processing optics integrated into the laser enclosure.
- Control interface for cooling system.
- User-friendly panel interface for operation of the diode laser system by the operator.
- Possibility of at least one analog signal for power control.
- Dual channel safety circuit
- Integrated Ethernet teleservice module.
- Pilot laser in the visible range (600-700nm) to help with the programming of paths.

Additionally, to work with a high power laser for material processing, it is necessary the installation of other elements which will allow its use for the different applications in which the laser will be used.

Other necessary accessories are:

- A Cooling system (air/water), with enough capacity of cooling of the provided laser system. This cooling unit will be ready to work outside, under low temperature.
- Two optical fibers with core diameter of 0.4 mm and 20m of length.
- Two optical fibers with core diameter of 1.0 mm and 20m of length.
- A welding head able to work until 15kW. The welding head must incorporate a fiber-coupling, collimating lens, focusing lens, coupling cube and adaptor for IR pyrometer, coupling unit and adaptor, on-axis CCD camera with monitor, focusing lens, quick change cover slide and cross jet,

including mounting set. This welding head will allow working with minimum diameter at focus position of 0,7mm.

- A cladding head, able to work until 15kW which consisting of fiber-coupling unit, collimating lens, focusing lens, coupling cube and adaptor for IR pyrometer, cover slide in collimating optics, quick change cover slide and plate with distortion lock, additionally the cladding head will include a water cooled, coaxial cladding nozzle ups to 10kW output power. Working distance from nozzle to work piece will be around 19mm. The nozzle will work independent of direction of cladding. The nozzle will have four powder feeder connections. Minimum powder focus approx. 2mm for fine cladding. The nozzle will be able to work with a laser spot between 1mm to 8mm, with particles size between 20-150 µm and powder feed rate between 2 and 150g/min. The optics to be included with this head will allow working with a focusing laser of diameter between 1mm to 8mm, with an optical dimensions and configuration to be defined together with the selected provider.
- A heat treatment laser head ups to 10kW with monitorized axes which allow achieving rectangular homogenized spots with dimensions variable on both directions, for example with a zoom relation of 1 to 6 in axis X and 1 to 3 in axis Y.
- Two color pyrometer for temperature measurement in the range of 450ºC-1500ºC. The pyrometer includes a pilot laser for adjustment of measuring spot (x-y position). Control system will be integrated with the laser source. The pyrometer could be connected coaxially to the heat treatment head.
- A powder feeder unit compatible with the laser and cladding nozzle. The powder feeder must include a mass flow control unit for improved carrier gas control instead of volumetric measurement.
- A web cam to make easier the teleservice.
- Power meter that can measure from 1kW to 20kW laser power, in the range of 800-1100nm.

Other technical requirements for the warranty and training which must be included in the offer:

- Warranty period at least 24 months, excepting the laser source which will have a warranty of 4 years.
- Packaging for the shipment.
- Shipment to AIMEN facilities
- Unloading at AIMEN facilities
- Installation and commissioning at AIMEN facilities
- Basic training course of at least one day at AIMEN facilities. The training date will have to be agreed.
- Training course, at least 3 days at provider facilities. The training date will have to be agreed.
- Manual for installation, operation and maintenance in Spanish and/or English.
- Basic manual for operation in Spanish.
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The offered improvements.- P.B. A.. Base 17 b) B):

-Additional training in the facilities of the supplier: 1 point for every additional training day to a maximum of 4 points.

-Extension of any of the warranties: 2 points for every 6 additional months to a maximum of 8 points.

Once the points have been assigned, the result shall be multiplied by 0.30, thus obtaining the definitive number of points corresponding to the improvements

TECHNICAL SPECIFICATION
LOT 2º
MOBILE MANIPULATOR

MOBILE MANIPULATOR

Mobile manipulator composed of a mobile platform and a robotic arm. The robotic arm and the mobile platform have to be totally integrated (both electrical and mechanical integration). The mobile manipulator has to be controlled based on ROS (Robot Operating System) architecture.

The whole mobile manipulator must not exceed 135kg with a payload of at least 6kg.

Technical specifications of the platform

The mobile platform can work at a speed of 3m/s. The platform can carry up to 100kg of additional equipment. Moreover, the platform will have a configurable traction system: Tracks combined with wheels.

The platform will include batteries with a capacity of at least 15Ah.

Technical specifications of the robotic arm

Lightweight arm configured with a minimum of 6 degrees of freedom and a payload of at least 6kg. The reach of the robotic arm is at least 610mm and repeatability of 0.06 mm. The arm also integrates a servo-electric parallel gripper with at least 2-finger and a gripping force between 5-120N (min-max).

Other technical requirements and training included in the offer:

- 12 months warranty.
- Packaging of the equipment for its transport.
- Transport to AIMEN facilities.
- Unloading at AIMEN facilities.
- Operation and service manuals in Spanish and/or English.
- Basic manual for operation in Spanish.

The offered improvements.- P.B. A.. Base 17 b) B):

-Extension of any of the warranties: 1 points for every 6 additional months to a maximum of 4 points.

Once the points have been assigned, the result shall be multiplied by 0.30, thus obtaining the definitive number of points corresponding to the improvements

TECHNICAL SPECIFICATION

LOT 3º

HOT PRESS FOR COMPOSITES MANUFACTURING

The desired equipment is a hydraulic press with hot plates. The press must provide enough force and pressure to achieve the consolidation of thermoplastic matrix composites. In addition, It is imperative a precise measure and control systems of pressure and temperature. Additionally, a programmable system to control the process variables along the time process is also necessary
Technical specifications:

- Hydraulic press with a maximum press force of 1000 kN.
- Two antiadherent 600x600 mm hot plates electrically heated.
- At least 400 ºC of maximum operating temperature.
- Maximum measure and control temperature deviation of ±5 ºC.
- Maximum heating rate of 20 ºC/min.
- Minimum daylight 200 mm.
- Programmable control system.

Other technical requirements for the warranty and training which must be included in the offer:

- Warranty period, at least 12 months.
- Packaging for the shipment
- Shipment to AIMEN facilities
- Unloading at AIMEN facilities
- Installation and commissioning at AIMEN facilities
- Training course, minimum duration of 1 day, at AIMEN facilities
- Manual for installation, operation and maintenance in Spanish and/or English.
- Basic manual for operation in Spanish.
-

The offered improvements.- P.B. A.. Base 17 b) B):

-Additional training in the facilities of the supplier: 1 point for every additional training day to a maximum of 4 points.

-Extension of any of the warranties: 1 points for every 6 additional months to a maximum of 4 points.

Once the points have been assigned, the result shall be multiplied by 0.30, thus obtaining the definitive number of points corresponding to the improvements

TECHNICAL SPECIFICATION

LOT 4º

RTM INJECTION BICOMPONENT

The set must consist of two elements:

1. A polyvalent resin injection pump for bi-component resins with hardener dispenser and resin/hardener mixer and injection valve.
2. A flat RTM mould to obtain flat plates of composites.

The injection system is a pump system able to select the right amount of hardener for each type of thermosetting resin, in the case of bi-component resins. The equipment also mixes the resin with the hardener and inject it into the mould cavity at fixed pressure in a continuous form. This equipment requires a valve to be properly connected to the mould.

The mould must be orthoedric shaped with adjustable thickness to obtain flat plates of composite materials. Temperature must be adjustable and controlled. Reusability and durability are mandatory.

Technical requirements

RESIN INJECTION EQUIPMENT

- Polivalent bi-component resin injection machine for 2:1 epoxy resins and polyester resins. It must be able to be adaptable to 1:1 epoxy resins and phenolic resins.
- It must be able to be adaptable to supply high flows for big infusions.
- At least 2 l/m of resin flow over 3 bar of injection pressure using 1.5 Pa·s to 2.5 Pa·s resins.
- Adjustable injection pressure between -1 bar and 12 bars.
- Adjustable injection velocity.
- Stroke counter.
- Gel timer alarm.
- Low resin volume automatic head mixer.
- Not pressurized cleaning system and low volume of solvent.
- Quick connection to mould and fast and simple cleaning injection valve.
- Injection machine spares kit and valve joint system for metallic moulds.
- Heating mantle for resin drums.

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FLAT MOULD

- Heated aluminum or stainless steel mould for 500x500 mm specimens. Variable thickness between 1 and 6 mm. Machined vent and inject connections and ready to connect the injection valve, vacuum supply/resin exits…
- Automatic system of heating and temperature control by hot fluid. Maximum operating temperature 150 ºC.
- High strength glass countermould for flat shapes.
- Double seal system.

Other technical requirements for the warranty and training which must be included in the offer:

- Warranty period, at least 24 months.
- Packaging for the shipment
- Shipment to AIMEN facilities
- Unloading at AIMEN facilities
- Manual for installation, operation and maintenance in Spanish and/or English.
- Basic manual for operation in Spanish.

The offered improvements.- P.B. A.. Base 17 b) B):

-Extension of any of the warranties: 2 points for every 6 additional months to a maximum of 4 points.

Once the points have been assigned, the result shall be multiplied by 0.30, thus obtaining the definitive number of points corresponding to the improvements

TECHNICAL SPECIFICATION
LOT 5º
ROBOTIC MANIPULATOR SYSTEM

Compact industrial generic robot designed for handling of medium sized loads. The whole robotic system integrates 6 degrees of freedom robot and 2 degrees of freedom rotary positioner.

Technical specifications of the industrial robot:

- 6 degrees of freedom.
- Load capacity: At least 60 kg.
- Reach: approximately 2m ±5%
- Position repeatability: Al least 0.2mm
- Absolute accuracy
- Collision detection
- Interface with external control systems.
- Multitasking
- Master/Slave Profibus communication system for network connection of peripherals devices.
- Independent axis
- Integrated with functions to improve the path accuracy of geometries with small dimensions.
- Integrated with functions for the integration of external sensors for path correction.

Technical specifications of the rotary positioner:

- 2 degrees of freedom.
- Load capacity: At least 250 kg.
- Repetitive accuracy: At least +/- 0.05º
- Servocontrolled
- Totally integrated in the robot controlled. All axes can be fully coordinated with the robot.

Other technical requirements and training included in the offer:

- At least 12 months warranty.
- Packaging of the equipment for its transport.
- Transport to AIMEN facilities.
- Unloading at AIMEN facilities.
- Manual for installation, operation and maintenance in Spanish and/or English.
- Basic manual for operation in Spanish.

The offered improvements.- P.B. A.. Base 17 b) B):

-Extension of any of the warranties: 1 points for every 6 additional months to a maximum of 4 points.

Once the points have been assigned, the result shall be multiplied by 0.30, thus obtaining the definitive number of points corresponding to the improvements

TECHNICAL SPECIFICATION

LOT 6º

FE-CONTAMINATION FREE PROCESSING GRINDING UNIT

The grinding unit should be able to process alloys and composites Fe-contamination free. This grinding unit should be suitable for High Energy Milling, Reactive Milling and Mechanical Alloying. The grinding unit should be suitable to be installed in a milling ball ZOZ GmbH, model SIMOLOYER C01, currently installed in Aimen

The grinding unit is constituted by: a vessel (chamber+ bearing flange), a rotor and a top closure cover. Moreover, as the process must be Fe-free, 2 new drain-gratings and a side adapter (to connect the safety valve for overpressures) for this type of grinding unit are necessary. One of them is used to work in inert atmosphere and the other for vacuum processing. Finally, 6.5 Kg of balls, specific grinding media are required.

To work in Fe-contamination free processing, the grinding unit vessel must be fabricated with stainless steel (1.4301) with a WC-Co lining. The rotor must be made by WC-Co bulk blades. On the other hand, all pieces in contact with powder will wear out so they must be also plated with WC-Co. Finally, the grinding media must be WC-Co (Ø4mm), Co-rich.

Additional technical characteristics for the grinding unit are:

- Nominal volume of 1,6 litres,
- nominal power 1,35KW/l
- Maximum relative velocity 1000 rpm
- Cooling system (with water) for pre seal unit, flange and vessel,
- Entrance of gas to allow work with inert atmosphere or vacuum. Three airlock systems, two of them ports, main and auxiliary and the third one to avoid overpressures.
- Operation mode: batch (semi continuous)
- Operation pressure: 2 bar
- Operation temperature: ambient temperature-100ºC
- Operation loadings: ball weight from 2 to 4 kg and powder from 200 to 400 kg.

Other technical requirements included in the offer:

- 12 months warranty.
- Packaging of the equipment for its transport.
- Transport to AIMEN facilities.
- Unloading at AIMEN facilities.
- Operation and service manuals in English or Spanish.

The offered improvements.- P.B. A.. Base 17 b) B):

-Extension of any of the warranties: 1 points for every 6 additional months to a maximum of 4 points.

Once the points have been assigned, the result shall be multiplied by 0.30, thus obtaining the definitive number of points corresponding to the improvements

TECHNICAL SPECIFICATION

LOT 7º

SCANNING HEAD FOR CO2 LASER: integration kit of the scanner to the laser source ROFIN SCx30 CO_2

The scanning head with galvomirrors, is an optical system able to work with a CO2 laser, and to move the laser beam at highest speed, quality and precision. Thanks to the laser beam deflection at high speed, different processes of high precision can be performed, such as machining, marking, welding, drilling or trepanning of different kind of materials: metals, polymers, composites, glasses, leather, natural or synthetic textiles, wood, etc.

The main components that the scanning head must include are:

- Optomechanical elements for the beam shaping in the right way to integrate the laser beam from the laser output until the scanner entrance.
- Motorized galvomirrors
- Optical elements, including beam expander and flat-field focusing lenses, for the right focusing of the laser beam on the workpiece.
- Integrated control system connected to one control panel which must control the parameters required for the good performance of the scanning head.
- Software user-friendly, to design the different scanning geometries for different applications
- Cooling system if required.

Minimal technical specifications:

The system must be adequate to be operated with a specific CO2 laser source, the ROFIN SCx30 , with at least the following basic characteristics:

- Compatible with a CO2 laser source, with wavelength of 10.6µm, and repetition rate from single shot to 100kHz.
- Compatible at least with an average laser power of 310W.
- F-theta lens with a working field of 210x210mm approximately.
- Laser writing quality for laser processes of high precision.

The offer must include:

- Mechanical structure with the anchorage points to include the laser source (ROFIN SCx30), the external shutter, the beam expander, and the scanner itself.
- Scanning head to work with a SCx30 laser, with the power source, cables, control card, and software for controlling the scanning head.
- F-Theta lens of 300mm focal length and working field of about 210x210 mm
- Industrial PC with the software installed
- Box containing the external shutter, the shutter control and the beam expander to increase the laser beam from the laser output to the size of the scanner entrance.

Other technical requirements for the warranty and training which must be included in the offer:

- Warranty period at least 12 months.
- Packaging for the shipment
- Shipment to AIMEN facilities
- Unloading at AIMEN facilities
- Installation and commissioning at AIMEN facilities, after the required trials for the integration at the provider facilities.
- Training course, minimum duration of 1 day, at AIMEN facilities
- Manual for installation, operation and maintenance in Spanish and/or English.
- Basic manual for operation in Spanish.

The offered improvements.- P.B. A.. Base 17 b) B):

-Additional training in the facilities of the supplier: 1 point for every additional training day to a maximum of 2 points.
-Extension of any of the warranties: 1 points for every 6 additional months to a maximum of 2 points.

Once the points have been assigned, the result shall be multiplied by 0.30, thus obtaining the definitive number of points corresponding to the improvements