

## Annex 1 to the Tender Terms and Conditions

### Technical specification of a customized seamer for welding of cones

| No       | Parameter  | Value required             |
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| <b>1</b> | <b>General layout of the equipment.</b>  |                            |
| 1.1      | The seamer is intended mainly for welding of a closing seam of cones which are parts of stainless steel tanks. The seamer should be capable of welding of the two marginal types of cones- the Cone-15 and the Cone-55 - while being able to perform the designated task, it is believed, all other requested shapes of cones would fall into the range of weldable jobs. The drawings of the Cone-15 and Cone- 55 are presented in Annex 2 to the Tender Terms and Condition. | Yes                        |
| 1.2      | The Cone-15 shall be welded from outside and the Cone-55 shall be welded from inside.  | Yes                        |
| 1.3      | The seamer stands on one-level-flooring and has an elevation gear for purpose of keeping of the Cone-15 seam in the horizontal position during welding.  | Yes                        |
| 1.4      | The very end of the supporting framework of the seamer (the lower part- the mandrel, the upper parts- the tabletop and the boom with weld carriage slides) is customised for a weld reach of a closing seams of the cones. However, it is admitted that due to geometry constraints the very end section of the seam (it's length should be minimised) would remain inaccessible and should get finished manually after removal of the cones from the seamer.                  | Yes                        |
| 1.5      | The mandrel of the seamer has T-slots on both sides for mounting of support fixtures provided by Astra.  | Yes                        |
| 1.6      | The mandrel and the tabletop have two easily interchangeable latches- one is customised for the small diameter openings like in the Cone-15 and the more rigid another one is intended for openings without space constraint.  | Yes                        |
| 1.7      | The table-top has pneumatic clamps for sheet fixing in a desired position with force of at least 60 kg/cm.   | Yes                        |
| 1.8      | The seamer has a motorized manually jogged vertical elevation stroke $a$ equalling   | $1200 \leq a \leq 1500$ mm |
| 1.9      | The seamer has a motorized programmable horizontal weld gear stroke $x$ equalling  | $3200 \leq x \leq 3250$ mm |
| 1.10     | The seamer has a motorized manually jogged cross-seam adjustment slide.  | Yes                        |

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| 1.11     | The seamer is intended for welding of stainless steel AISI304, AISI316 sheets which thicknesses ranges from 2 to 10 mm (with an exception of rare cases when 12-15 mm thick sheets would be welded).  | Yes                     |
| 1.12     | The seamer has PAW & GTAW weld gear packages with separate welding power sources or one common source for both processes.   | Yes                     |
| 1.13     | The first torch situated next to the latching mechanism is retractable aside by means of some kind of a hinge so as to minimize unreachable to weld distance for the second torch in a row. As an alternative, allowed is design of such the weld carriage when changeover of torches into the same position is implemented. In the latter case, it is mandatory to implement the next design features: 1) easy, "tool-less" changing of torches between the idle-operation positions, 2) no position adjustment efforts of an operator are required when putting a torch into the operation position. Whether the hinge or the changeover design is implemented, disconnection of power supply cables or water hoses from torches is not allowed -there must be switching devices installed for that purposes. | Yes                     |
| 1.14     | The seamer has an operator's console which allows to view weld, to monitor weld parameters and to program the weld parameters from one location.  | Yes                     |
| 1.15     | Shield gas supply flow indicators are observable from the operator's console. Applicable to both PAW and GTAW processes.  | Yes                     |
| 1.16     | The seamer has a central electric cabinet which distributes power to absolutely all hardware on the seamer. All circuits must be fuse protected.  | Yes                     |
| <b>2</b> | <b>Key components/parameters supplied with the Plasma arc welding (PAW) process:</b>  |                         |
| 2.1      | Entire length of the Cone-55 closing seam is reachable to weld with the PAW process using small run-off tabs.   | Yes                     |
| 2.2      | Length b of the closing seam of the Cone-15 unreachable to weld with the PAW process with a magnetic oscillator probe mounted.  | $b \leq 125 \text{ mm}$ |
| 2.3      | Length c of the closing seam of the Cone-15 unreachable to weld with the PAW process with the magnetic oscillator probe dismounted.   | $c \leq 75 \text{ mm}$  |
| 2.4      | PAW process conducted either in keyhole plasma mode or with-wire mode.  | Yes                     |
| 2.5      | Programmable slide provided for vertical torch positioning and arc voltage control for the PAW process.   | Yes                     |

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| 2.6      | Wire feeder allowing the programming and control of feed rate, retract, delay, and pulsation (synchronized to current pulsation). Precise wire positioning device allowing operator to fine-tune the wire position in 2 axis directions in relation to weld torch and weld puddle, controlled from the operator's console is included. Wire feed rolls for 1.0, 1.2 mm wire are included. Wire straightening, rolling gear is included.                                      | Yes                     |
| 2.7      | Separate high resolution colour weld camera for the PAW torch with mounting brackets, a water-cooled or gas-cooled body is included. If the gas-cooled design of a camera body is chosen, then the distance between the camera and an arc must be at least 170 mm and still ensure clear imaging of a weld zone. Auxiliary lighting to aid in viewing the weld joint prior to welding is included.   | Yes                     |
| 2.8      | Magnetic oscillation module with a water-cooled probe are included. The module allows to program the next oscillation parameters: frequency, left and right deviation, oscillation centreline and an amplitude of the magnetic field not less than 9,5 mm. For purposes of the better weld reach, the probe must be disconnectable by unplugging its cable and water lines with fast connection joints or distractible without unplugging it's cable and water supply hoses. | Yes                     |
| 2.9      | Welding power source rated output at 38 VDC, 100% duty cycle   | $\geq 400 \text{ A}$    |
| 2.10     | Easily, without wrenches dismountable, water-cooled shield gas trailer with a separate gas supply nozzle intended for protection of a cooling weld beneath the torch.  | Yes                     |
| 2.11     | Water-cooled one-fits-all bed insert on the mandrel allowing to protect with shield gas seams of steel sheets of all thicknesses during the PAW root pass welding. 2 pcs of the inserts are included.  | Yes                     |
| <b>3</b> | <b>Key components/parameters supplied with the Gas tungsten arc welding (GTAW) process:</b>  |                         |
| 3.1      | Length d of the closing seam of the Cone-15 unreachable to weld with the GTAW process with the magnetic oscillator probe mounted.  | $d \leq 125 \text{ mm}$ |
| 3.2      | Length e of the closing seam of the Cone-15 unreachable to weld with the GTAW process with the magnetic oscillator probe dismounted.   | $e \leq 75 \text{ mm}$  |
| 3.3      | Length y of the unreachable to weld section of the seam near opening of the Cone-55 using GTAW process.  | $y \leq 100 \text{ mm}$ |
| 3.4      | Programmable slide provided for vertical torch positioning and arc voltage control for the GTAW process.   | Yes                     |

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| 3.5      | Wire feeder allowing the programming and control of feed rate, retract, delay, and pulsation (synchronized to current pulsation). Precise wire positioning device allowing operator to fine-tune the wire position in relation to weld torch and weld puddle, controlled from the operator's console is included. Wire feed rolls for 1.0, 1.2 mm wire are included. Wire straightening, rolling gear is included.   | Yes     |
| 3.6      | Separate high resolution colour weld camera for the GTAW torch with mounting brackets, a water-cooled or gas-cooled body is included. If the gas-cooled design of a camera body is chosen, then the distance between the camera and an arc must be at least 170 mm and still ensure clear imaging of a weld zone. Auxiliary lighting to aid in viewing the weld joint prior to welding is included.  | Yes     |
| 3.7      | Magnetic oscillation module with a water-cooled probe are included. The module allows to program the next oscillation parameters: frequency, left and right deviation, oscillation centreline and an amplitude of the magnetic field not less than 9,5 mm. For purposes of the better weld reach, the probe must be disconnectable by unplugging its cable and water lines with fast connection joints or distractible without unplugging it's cable and water supply hoses. | Yes     |
| 3.8      | High frequency arc starter for establishing GTAW arc at an outset.   | Yes     |
| 3.9      | Welding power source rated output at 38 VDC, 100% duty cycle.  | ≥ 400 A |
| 3.10     | Welding power source can operate in programmable pulse mode.   | Yes     |
| 3.11     | Easily, without wrenches dismountable, water-cooled shield gas trailer with a separate gas supply nozzle intended for protection of a cooling weld beneath the torch.  | Yes     |
| <b>4</b> | <b>Miscellaneous other requirements:</b>   |         |
| 4.1      | Price of the equipment includes crating, delivery to Ulonų g. 33, 62161 Alytus, Lithuania, assembly and comissioning. Unloading and storage of the equipment at the place of delivery are undertaken by Astra LT.  | Yes     |
| 4.2      | Price of the equipment includes site performance acceptance testing program which aim is to check if target weld process objectives set by the Buyer are achieved. The testing program layout is presented in the Annex 3 to the Tender terms and Conditions. The successful execution of the testing program triggers the last 10% payment foreseen in the supply contract.   | Yes     |
| 4.3      | Price of the equipment includes costs of at least 24 hours long training program for operators and technicians. Part of this   | Yes     |

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| 4.4 | CE declaration of conformity in English  | Yes         |
| 4.5 | Safety requirements of usage of the equipment in English and Lithuanian.                                     | Yes         |
| 4.6 | Operating manual in English both paper and electronic copy.  | Yes         |
| 4.7 | Service manual with electrical and mechanical drawings, spare parts lists both in paper and electronic copy. | Yes         |
| 4.8 | Warranty period.   | ≥ 24 months |
| 4.9 | The equipment must be new (unused) and manufactured no earlier than 3 years before the date of purchase.     | Yes         |











