**Annex no. 1 – Technical specification**

Public Contract Name:

**“High power ps fiber laser for material processing”**

Technical specification of galvanometric scanning system

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|  | **The subject of the procurement** | **High-power pulsed picosecond fiber laser for material processing** |
| Following tasks to be realized with galvanometric scanning system | * High-precision laser micromachining and material surface structuring.
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| * Ready for 24/7 operation
 |
| * Compatible with multi-beam and beamshaping technologies based on spatial light modulator
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| * Fundamental wavelength in 1 µm region
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| * Adjustable pulse repetition rate and pulse duration to optimize for different materials and processes.
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| * Compatible with Direct Machining Control system
 |
| * Integration with existing galvanometric scanning systems and RTC control boards.
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| **Technical features of galvanometric scanning system** |
| Optical Characteristics | *- Wavelength*: Must be between 1020 nm and 1070 nm.- *Pulse Repetition Rate*: Must be adjustable at least in the range of 100 kHz and 5000 kHz*- Pulse Duration*: Must be tunable within the range of at least 1 to 3 picoseconds.*- Output Power*: Maximum output power should be at least 90 W- *Beam Quality (M²)*: Must be lower than 1.3.- *Polarization*: Must be linear, with a polarization extinction ratio of at least 20 dB. |
| Performance and Stability | - *Pulse Energy*: Maximum pulse energy must be at least 100 µJ at lower repetition rates.- *Power Stability*: Output power stability should be within 1% over 8 hours of continuous operation.- *Pulse-to-Pulse Stability*: RMS < 2% at the nominal pulse repetition rate. |
| Control and Interfaces | - Must be compatible with both analog and TTL control signals, with support for RS-232 or Ethernet communication.- The system must include an integrated pulse picker for flexible pulse shaping.- Control software must be compatible with Windows 11 and support integration with existing systems (e.g., Scanlab’s laserDesk and RTC control, Direct Machining Control). |
| Dimensions and Weight | Control unit dimensions should not exceed 500 x 650 x 150 mm, with a weight limit of 40 kg. |
| Accessories | Delivery with all necessary cables, connectors, and manuals in English.Must come with power supply for 24/7 operation.Must come with dedicated control software for laser operation |