**ANNEX NO. 4 OF DOCUMENTATION OF THE TENDER PROCEDURE**

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**SPECIFICATION OF THE PUBLIC CONTRACT SUBJECT**

The subject of the public contract shall meet the following requirements for technical parameters and equipment:

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| **Technical specification – Flow visualization system** | | |
| **Designation of the delivery (min. brand and type)** | |  |
| **Individual technical parameters of the performance** | | **Data about the offered performance** |
| The system enables time resolved measurements on a plane using the Stereo PIV (Particle Image Velocimetry) technique, i.e. on the measurement plane all three components of the fluid velocity are resolved, and includes the following parts: | |  |
| 1. **A water tank, where a jet flow generator is placed firmly** | | |
| 1 | The water tank is at least 75 cm long | ***and will enter the actual value*** |
| 2 | The water tank is at least 30 cm wide | ***and will enter the actual value*** |
| 3 | The water tank is at least 30 cm high | ***and will enter the actual value*** |
| 4 | The water tank is placed on a robust (e.g. aluminium) frame, where supports for cameras and light sheet optics can also be placed |  |
| 5 | The flow generator is made of a pump and nozzle, with nozzle diameter at exit equal to at least 5 cm and jet nominal velocity equal to at least 3 cm/s (up to approximately 50 cm/s) | ***and will enter the actual value*** |
| 6 | Steady and unsteady (periodic) flows are generated by the pump and nozzle |  |
| 7 | The pump can be controlled remotely |  |
| 1. **Two digital (e.g. CMOS) cameras** | | |
| 8 | Two digital (e.g. CMOS) cameras, with at least 160 fps and 2.2 MP | ***and will enter the actual value*** |
| 9 | Suitable lenses to focus the cameras on a plane at least 2 (up to 20) cm wide and at least 2 (up to 20) cm high (e.g. with a 35 mm focal length and an f/2 to f/22 aperture range) | ***and will enter the actual value*** |
| 10 | Adequate Scheimpflug mounts for the cameras, to enable Stereo PIV measurements in the water tank |  |
| 11 | Suitable 2-level calibration target for the cameras |  |
| 12 | The cameras and Scheimpflug mounts are placed on an adequate rig linked firmly to the water tank frame |  |

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| 1. **LED illumination source** | | |
| 13 | LED illumination source with a power of at least 120 W, providing the intensity needed for the short exposure times required for PIV measurements | ***and will enter the actual value*** |
| 14 | Adequate optics, to enable Stereo PIV measurements in the water tank, resulting in a light sheet at least 2 (up to 20) cm wide, with a minimum thickness of at least 5 mm, (using e.g. a fibre-optic light guide and an adjustable focus rod lens) | ***and will enter the actual value*** |
| 15 | Sliding arm, linked firmly to the water tank frame, allowing to move together cameras and light sheet |  |
| 16 | The light source can be controlled remotely |  |
| 17 | Micron-sized particles required for PIV measurements in water (at least 200 g) | ***and will enter the actual value*** |
| 18 | Relevant accessories to enable Stereo PIV measurements in the water tank, e.g. cables to connect cameras and light source to a computer |  |
| 19 | Software allowing Stereo PIV measurements and subsequent image processing (perpetual use and at least 1 year update licence, in case of commercial software) | ***and will enter the actual value*** |