**TECHNICAL PROPOSAL**

**Designation and description of test method:**

ASTM D7872-25 Standard Test Method for Determining the Concentration of Pipeline Drag Reducer Additive in Aviation Turbine Fuels.

**In view of the qualification and technical requirements provided by the Buyer, the Supplier shall fill in the below tables:**

*Table 1*

**Qualification and technical requirements applicable to laboratory equipment**

| **Item No** | **Criterion** | **Requirement [specify]** | **Information provided by Supplier** |
| --- | --- | --- | --- |
| 1. | Qualification of Supplier’s employees | Provide documented information that the Supplier's employees or those of its subcontractors have been properly trained to commission the respective equipment. |  |
| 2. | Suitability of equipment for tests according to required test method: ASTM D7872-25. | Submit manufacturer's technical documentation or certificate proving that equipment is suitable for tests according to the said test method. |  |
| 3. | Deadline for commissioning | The term for commissioning the equipment is max 60 days. |  |
| 4. | Warranty terms and conditions | Not less than 12 months; provide the terms and conditions for after-sales service for warranty periods longer than 12 months. |  |
| 5. | Supplier's response time during the warranty period. | Response time (arrival at the Refinery if there is no other way of fixing faults) during the warranty period is max 72 hours. |  |
| 6. | Submit equipment safe operation manual (document) in the English/Lithuanian language (preferably in Lithuanian). | Undertake to present the safe operation manual (document) in the English/Lithuanian language (preferably in Lithuanian) together with the supplied equipment. |  |
| 7. | Pre-commissioning/commissioning and training to be provided after the delivery of the equipment. | Undertake to perform pre-commissioning/commissioning and training after the delivery of the equipment. |  |
| 8. | Transfer of information relating to maintenance and repair of equipment to the equipment maintenance technicians of the QA/QC Center after the expiry of the warranty period. | Undertake to submit information relating to maintenance and repair of equipment to the equipment maintenance technicians of the QA/QC Center after the expiry of the warranty period. |  |

*Table 2*

**Special technical requirements applicable to equipment**

| **Item No** | **Characteristics** | **Limit values, UoM [indicated]** | **Limit values, UoM (to be specified by Supplier)** |
| --- | --- | --- | --- |
| 1. | **Equipment type:** | | |
| Automatic | Equipment for determination of drag reducer additive concentration in jet fuel in accordance with ASTM D7872-25, composed of:  1. Rotary evaporator with capacity to reach temperature of 180°C, accommodating 1-liter flask containing approximately 400 g of product, equipped with bump trap.  2. Vacuum pump with capacity to reduce pressure in the rotary evaporator system to 6.77 kPa.  3. Gel permeation chromatography system – HPLC chromatograph with an RID (refraction index detector), equipped with a column filled with a stationary phase of 5–10 µm particle size, pore size from 5 to 1000 nm, column length 300 mm, diameter 7.5 mm, operating temperature 20–40 °C, with Heptane as the mobile phase.  4. All other auxiliaries required for performing tests in accordance with ASTM D 7872. |  |
| Semi-automatic | X |  |
| Manual | X |  |
| **Equipment manufacturer, model** | X |  |
| 2. | Software | Software that automatically controls the test procedure, with a standard program for processing the data and calculating the final result. |  |
| 3. | Measuring range, accuracy | Measuring range is from 0 to 100 mg/l DRA, final result is calculated in µg/l, with an accuracy of 1 µg/l. |  |
| 4. | **Sample injection system:** | | |
| Automatic | Automated sample injection system to the chromatograph with an autosampler. Nominal 100 µl sample or calibration solution injection. |  |
| A separate system | X |  |
| Manual | X |  |
| 5. | Heating/cooling system | Heating system with capacity to maintain 180°C temperature in a rotary evaporator. |  |
| 6. | **Connection to other equipment, auxiliaries:** | | |
| Computer | yes |  |
| Keyboard | yes |  |
| Printer | yes |  |
| Computer network via LAN | yes |  |
| Wires | Wires with connectors needed to connect the equipment |  |
| 7. | **Auxiliaries:** | | |
|  | - autosampler vials with caps and closures (gaskets) - 2 packs.  - syringes filled with 100 µl of sample - 2 pcs.  - 0 000 mg/kg FLO XS DRA solution or a prepared 200 mg/l primary DRA solution, aviation fuel without DRA, or commercial DRA calibration solutions of 2, 4, 10, 20, and 100 mg/l. |  |
| 8. | **Calibration and verification:** | | |
| At the QA/QC Center | Yes, with DRA calibration solutions of 2, 4, 10, 20, and 100 mg/l. |  |
| Manufacturer’s calibration and CRM verification certificates | Yes |  |
| 9. | A set of spares for 12 months | Yes. Specified in Table 5. |  |
| 10. | Computer | X |  |
| 11. | Printer | X |  |
| 12. | Certified reference material | Yes |  |
| 13. | **Gas cylinder required (purity class):** | | |
| He | X |  |
| O2 | X |  |
| H2 | X |  |
| Ar | X |  |
| 14. | **Sampling equipment for:** | | |
| Liquefied petroleum gas | X |  |
| Liquid products | X |  |
| Petroleum gas | X |  |
| Other [specify] | X |  |
| 15. | **Equipment for sample conditioning:** | | |
| Homogenizer | X |  |
| Shaker | X |  |
| Other [specify] | X |  |
| 16. | **Balance:** | | |
| Micro-analytical | X |  |
| Analytical | X |  |
| Technical | X |  |
| Other [specify] | X |  |
| 17. | **Dimensions:** | | |
| Height | X |  |
| Width | X |  |
| Depth | X |  |
| 18. | Occupational safety requirements | X |  |

*Table 3*

**General information on the offered equipment**

|  |  |
| --- | --- |
| **Information required** | **Information provided by Supplier** |
| Name/model of equipment |  |
| Information about the manufacturer, country of origin, language of the user manuals, passport |  |
| Confirmation that the equipment complies with the requested test method; additional test methods that the offered equipment complies with. |  |
| A summary of the technical/operational characteristics, highlighting the advantages of the offered equipment. |  |

*Table 4*

**Detailed description of the equipment set, additional equipment and auxiliaries.**

**(to be specified by Supplier)**

|  |  |
| --- | --- |
| **Name** | **Quantity, units** |
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*Table 5*

**Recommended set of spares and consumables for 1 year**

**(to be specified by Supplier)**

|  |  |
| --- | --- |
| **Name** | **Quantity, units** |
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