



**ORDER**

**№ A 228**

**Sofia, 05.06.2024**

Pursuant to Art. 10, para. 1, item 2 of the Law on National Accreditation of Conformity Assessment Bodies, assessment report reg. № 9/5 ЛИК/4/В/05.03.2024, annex reg. № 9/5 ЛИК/9/В/05.04.2024, and EA BAS order reg. № A 227/05.06.2024, I hereby

**AMEND**

EA BAS order reg. № A 138/29.03.2023

**of Pehlivanov-Engineering Ltd.**

**Testing and calibration laboratory**

**Laboratory for Testing of Dust and Gas Emissions and Imissions**

**Management address:** 1505 Sofia, Oborishte District, 16 Murphy Str.

**Laboratory address:** 1505 Sofia, Oborishte District, 11 Murphy Str.

**To perform testing of:**

| <b>Type of the scope:</b> <i>flexible for a part of the scope</i> |                         |  |   |
|---|-------------------------|--|---|
| <b>№</b>  | <b>Tested products</b>  | <b>Type of test / characteristic</b>                     | <b>Testing methods<br/>(standard / validated<br/>method)</b>      |
| <b>1</b>  | <b>2</b>                | <b>3</b>   | <b>4</b>  |
| I   | Atmospheric air:        |  |   |
| 1   | Waste gases - emissions | 1.1 Velocity of gas streams, flow rate                   | ISO 10780 *<br>БДС EN ISO 16911-1*                                |
|   |                         | 1.2. Dust  | БДС ISO 9096*<br>БДС EN 13284-1*                                  |
|   |                         | 1.3. Temperature, pressure / vacuum, barometric pressure | ISO 10780*<br>БДС EN ISO 16911-1*                                 |
|   |                         | 1.4. Dew point, relative humidity, humidity              | БДС EN 14790*<br>ФМ 03/14:2016                                    |
|   |                         | 1.5. Nitrogen oxide / NO                                 | ФМ 03/14:2016<br>БДС EN 14792*                                    |
|   |                         | 1.6. Sulphur dioxide / SO <sub>2</sub>                   | БДС 17.2.4.04*<br>ФМ 03/14:2016<br>БДС EN 14791 (Thorin method) * |
|   |                         | 1.7. Sulphur trioxide/ SO <sub>3</sub>                   | БДС 17.2.4.09*  |
|   |                         | 1.8. Hydrogen fluoride/ HF                               | БДС 17.2.4.12 *<br>ISO 15713*                                     |
|   |                         | 1.9. Hydrogen chloride/ HCl                              | БДС EN 1911*  |

**Type of the scope:** flexible for a part of the scope

| № | Tested products | Type of test / characteristic  | Testing methods<br>(standard / validated method)   |
|---|-----------------|--|--|
| 1 | 2               | 3  | 4  |
|   |                 |  | ФМ 03/14:2016  |
|   |                 | 1.10. Sulfuric acid aerosol/<br>Aerosol H <sub>2</sub> SO <sub>4</sub>   | ФМ 01/13:2013  |
|   |                 | 1.11. Total hydrocarbons, volatile organic compounds, polycyclic aromatic hydrocarbons, total hydrocarbons expressed as total carbon, volatile organic compounds expressed as organic carbon | ФМ 02/14:2014<br>БДС EN ISO 13199*<br>ISO 11338-2*   |
|   |                 | 1.12. Methane /CH <sub>4</sub>   | ФМ 03/14:2016  |
|   |                 | 1.13. Oxygen /O <sub>2</sub>   | ФМ 03/14:2016<br>БДС EN 14789*   |
|   |                 | 1.14. Carbon monoxide /CO  | ФМ 03/14:2016<br>БДС EN 15058*   |
|   |                 | 1.15. Carbon dioxide /CO <sub>2</sub>  | ФМ 03/14:2016  |
|   |                 | 1.16. Nitrogen dioxide /NO <sub>2</sub>  | ФМ 03/14:2016<br>БДС EN 14792*   |
|   |                 | 1.17. Hydrogen /H <sub>2</sub>   | ФМ 03/14:2016  |
|   |                 | 1.18. Hydrogen sulphide / H <sub>2</sub> S   | ФМ 03/14:2016  |
|   |                 | 1.19. Nitrogen oxides /NO <sub>x</sub> /<br>(NO + NO <sub>2</sub> )  | ФМ 03/14:2016<br>БДС EN 14792*   |
|   |                 | 1.20. Ammonia / NH <sub>3</sub>  | ФМ 03/14:2016  |
|   |                 | 1.21. Chlorine / Cl <sub>2</sub>   | ФМ 03/14:2016  |
|   |                 | 1.22. Carbon disulphide /CS <sub>2</sub>   | БДС 17.2.4.10*   |
|   |                 | 1.23. Soot   | БДС 17.2.4.08*   |
|   |                 | 1.24. Determination of total emissions of As, Cd, Cr, Co, Cu, Mn, Ni, Pb, Sb, Ti, V, Zn, Hg, Se, Sn and Tl   | БДС EN 14385*<br>/As, Cd, Cr, Co, Cu, Mn, Ni, Pb, Sb, Tl и V<br>ФМ 04/14:2016<br>/As, Cd, Cr, Co, Cu, Mn, Ni, Pb, Sb, Ti, V, Zn, Hg, Se, Sn и Tl |
|   |                 | Cr(VI)   | ФМ 11/17:2017  |
|   |                 | 1.25. Determining the concentration of total mercury /Hg   | БДС EN 13211 (AC)*   |
|   |                 | 1.26. Determination of the mass concentration of PM10 and PM2.5 in flue gases - measurement of low concentrations by use of impactors  | БДС EN ISO 23210*  |
|   |                 | 1.27. Determining mass concentration of polychlorinated dibenzodioxins / polychlorinated dibenzofurans (PCDDs / PCDF) and polychlorinated biphenyls (PCBs).                                  | БДС EN 1948-2**<br>БДС EN 1948-3**<br>БДС EN 1948-4 + A1**   |

| <b>Type of the scope: flexible for a part of the scope</b>   |  |  |  |
|--|--|--|--|
| <b>№</b>   | <b>Tested products</b>   | <b>Type of test / characteristic</b>   | <b>Testing methods (standard / validated method)</b>   |
| <b>1</b>   | <b>2</b>   | <b>3</b>   | <b>4</b>   |
|  |  | 1.28. Determination of cyanides  | ФМ 07/15:2015  |
|  |  | 1.29. Volatile organic compounds/ VOC <sup>(1)</sup> and formaldehyde <sup>2)</sup>        | СД CEN /TS 13649 <sup>(1)</sup> **<br>ФМ 08/16:2016 <sup>(2)</sup> ; EPA 323 <sup>(2)*</sup>           |
|  |  | 1.30. Dinitrogen oxide /N <sub>2</sub> O   | БДС EN ISO 21258*  |
|  |  | 1.31 Amines and mercaptans   | ФМ 12/17:2017**  |
|  |  | 1.32 Pesticides  | ФМ 13/17:2017**  |
| 2  | Emissions from stationary sources - parallel measurements to ensure the quality of own continuous measurements   | Quality level- 2 (QAL 2) and Annual Surveillance Test (AST)                                | БДС EN 14181(for applicable characteristics under p.I.1)*<br>(according requirements of БДС EN 15259*) |
| 3  | Atmospheric air - immissions   | 3.1. Dust:<br>a) Total<br>b) PM <sub>2,5</sub><br>c) PM <sub>10</sub>                      | БДС 17.2.4.20 (a)*<br>БДС EN 12341 (b,c) *   |
|  |  | 3.2. Determination of: Lead/ Pb, Cadmium/Cd, Arsenic /As, Nickel/Ni in PM 10               | ФМ 04/14:2016  |
|  |  | 3.3. Determination of total polycyclic aromatic hydrocarbons, PAHs (gas and aerosol phase) | БДС ISO 12884**  |
|  |  | 3.4 Pesticides   | ФМ 13/17:2017**  |
| II   | Water:   |  |  |
|  | (1) underground;<br>(2) surface;<br>(3) potable water - for drinking purposes<br>(4) mineral water source, bottled natural mineral, spring and table;<br>(5) waste water / recycled;<br>(6) for construction / building purposes;<br>(7) for industrial purposes;<br>(8) for irrigation; | 1. Active reaction / pH  | БДС EN ISO 10523(1÷8)*<br>БДС 17.1.4.27 (1, 2, 5)*   |
|  |  | 2. Electroconductivity   | БДС EN 27888 (1÷8)*  |
|  |  | 3. Dissolved oxygen  | БДС EN 25813 (1÷4,8)*<br>БДС EN ISO 5814 (1÷8) *   |
|  |  | 4. Dissolved solids  | БДС 17.1.4.04 (1,2,5) *  |
|  |  | 5. Undissolved / suspended solids, loss at ignition of solids                              | БДС 17.1.4.04 (1,2,5) *<br>БДС EN 872 (1÷8)*   |
|  |  | 6. Dry residue   | БДС 17.1.4.04 (1,2,5)*<br>БДС 3546 (3)*  |
|  |  | 7. Colour  | БДС EN ISO 7887 (1÷4) *  |
|  |  | 8. Temperature   | БДС 8451 (1÷8),<br>Amendment 1*  |
| 9. Contents of metals and nonmetals:<br>Silver/Ag; Aluminium/ Al;<br>Arsenic/ As; Boron / B; Barium/ Ba; Beryllium/ Be; Bismuth/ Bi;<br>Calcium/ Ca; Cadmium/ Cd;<br>Cobalt/ Co; Chromium/ Cr;<br>Copper/ Cu; Iron/Fe; Potassium / K; Lithium / Li; Magnesium/ Mg;<br>Manganese/ Mn; Molybdenum/ Mo; Sodium/ Na; Nickel/ Ni; |  | БДС EN ISO 11885 (1÷8)*<br>EPA 6010D (1÷8)*<br>EPA 7473 <sup>2</sup> (1÷8)*                |  |

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| <b>1</b>  | <b>2</b>               | <b>3</b>   | <b>4</b>  |
|   | (9) sea water          | Phosphorus/ P; Lead/ Pb;<br>Sulphur/ S; Antimony/ Sb;<br>Selenium/ Se; Silicon/Si; Tin/ Sn;<br>Strontium/ Sr; Titanium / Ti;<br>Vanadium / V; Tungsten/ W; Zinc / Zn; Zirconium / Zr; Thallium / Tl <sup>1</sup> ; Mercury / Hg <sup>2</sup> |   |
|   |                        | 10. Alkalinity - total, composite, carbonate   | БДС EN ISO 9963-1 (1÷5)*<br>БДС EN ISO 9963-2 (1÷5)*  |
|   |                        | 11. Carbonate / Carbonate ions (CO <sub>3</sub> <sup>2-</sup> )  | БДС EN ISO 9963-1 (1÷5)*  |
|   |                        | 12. Hydrogen carbonate / hydrogen carbonate ions (HCO <sub>3</sub> <sup>-</sup> )  | БДС EN ISO 9963-1 (1÷5)*  |
|   |                        | 13. Chloride ions (Cl) <sup>-</sup> / Chlorides  | ФМ 05/14:2017 (1÷8)<br>БДС 17.1.4.24 (1,2,5)*<br>БДС EN ISO 15682 (1÷8)*                          |
|   |                        | 14. Fluoride ions (F <sup>-</sup> ) / Fluorides  | ФМ 05/14:2017 (1÷8)   |
|   |                        | 15. Ortho-phosphates / Phosphates (PO <sub>4</sub> <sup>3-</sup> )<br>Phosphates (as P) – (P –PO <sub>4</sub> <sup>3-</sup> )  | БДС EN ISO 6878 (1÷8)*<br>ФМ 05/14:2017 (1÷8)<br>БДС EN ISO 15681-1 (1÷8)*                        |
|   |                        | 16. Nitrite ions (NO <sub>2</sub> <sup>-</sup> ) / Nitrite / Nitrite-Nitrogen  | БДС EN 26777 (1÷8)*<br>ФМ 05/14:2017 (1÷8)<br>БДС EN ISO 13395 (1÷8)*                             |
|   |                        | 17. Nitrate ions (NO <sub>3</sub> <sup>-</sup> ) / Nitrate / Nitrate-Nitrogen  | БДС ISO 7890-3 (1÷8)*;<br>ФМ 05/14:2017 (1÷8)<br>БДС EN ISO 13395 (1÷8) *                         |
|   |                        | 18. Ammonia / Ammonium ions (NH <sub>4</sub> <sup>+</sup> ) / Nitrogen ammonium  | ФМ 05/14:2017 (1÷8)<br>БДС EN ISO 11732 (1÷8)*  |
|   |                        | 19. Total nitrogen (N)   | ФМ 05/14:2017 (1÷8)   |
|   |                        | 20. Total phosphorus (P)   | ФМ 05/14:2017 (1÷8)<br>БДС EN ISO 6878 (1÷8)*<br>БДС EN ISO 15681 – 1 (1÷8)*                      |
|   |                        | 21. Total hardness (Ca)<br>Total hardness (sum of calcium and magnesium)   | ФМ 05/14:2017 (1÷8)<br>ФМ 09/16:2016 (1÷8)  |
|   |                        | 22. Turbidity  | ФМ 05/14:2017 (1÷4)   |
|   |                        | 23. Permanganate oxidisability   | БДС 17.1.4.16 (1,2,5)*  |
|   |                        | 24. Chemical oxygen demand/COD   | ФМ 05/14:2017 (1÷8)<br>БДС ISO 15705*<br>(Spectrophotometrically)<br>(1÷8)<br>БДС ISO 6060 (1÷8)* |
|   |                        | 25. Biochemical oxygen demand / BOD <sub>n</sub>   | ФМ 05/14:2017 (2,5,7)   |
|   |                        | 26. Total organic carbon / TOC;<br>Dissolved organic carbon / DOC  | ФМ 05/14:2017 (1÷8)   |
|   |                        | 27. Cyanides (free, volatile, easily degradable, total)  | ФМ 05/14:2017 (1÷8)<br>БДС EN ISO 14403 – 1 (1÷8)*  |

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| <b>1</b>   | <b>2</b>               | <b>3</b>  | <b>4</b>  |
|  |                        | 28. Free /residual/, total and linked or bonded chlorine (Cl <sub>2</sub> )                                     | ΦМ 05/14:2017 (1÷8)   |
|  |                        | 29. Anionic surfactants   | ΦМ 05/14:2017 (1÷8)<br>БДС EN 903(2,3,5)*   |
|  |                        | 30. Petroleum products / hydrocarbons C10÷C40/  | БДС EN ISO 9377-2 (1÷8)*  |
|  |                        | 31. Cr(III); Chromium /total/   | БДС 17.1.4.17 (1,2,5)*  |
|  |                        | 32. Hexavalent chromium / Cr(VI)  | БДС 17.1.4.17 (1,2,5)*  |
|  |                        | 33. Dissolved hydrogen sulphide / Sulfides  | ΦМ 05/14:2017 (1÷8)   |
|  |                        | 34. Sulphates / SO <sub>4</sub> <sup>2-</sup>   | ΦМ 05/14:2017 (1÷8)<br>ΦМ 10/16:2016 (1÷8)  |
|  |                        | 35. Phenols(volatile) / Phenolic index  | ΦМ 05/14:2017 (1÷8)<br>БДС EN ISO 14402 (1÷8)*  |
|  |                        | 36. Fats and oils/Hexane extractables and silica gel treated products   | EPA 1664A - RB (1÷5)*   |
|  |                        | 37. Polycyclic aromatic hydrocarbons /PAH/  | EPA 8270 D- R5 (1÷8)**<br>EPA 525.2 - R2(1÷8) **  |
|  |                        | 38. Pesticides / organochlorine /OCP/; organophosphorus /phosphorus containing /OPP/; nitrogen containing /ONP/ | БДС EN ISO 6468 (1,2,3,5)**<br>БДС EN ISO 10695 (1,2,3,5)**<br>БДС EN 12918 (1,2,3,5)**<br>EPA 525.2 - R2(1÷8) ** |
|  |                        | 39. Polychlorinated dibenzo-p-dioxins /PCDD/, polychlorinated dibenzofurans /PCDF/                              | EPA 8280 B - R2 (1÷8)**   |
|  |                        | 40. Volatile organic compounds /VOC/  | БДС EN ISO 10301 (1,2,3) **   |
|  |                        | 41. Salinity  | EPA 842B-06-003.14 (2,9)*   |
|  |                        | 42. Adsorbable organically bound halogens /AOX/   | ΦМ 05/14:2017 (1÷8)   |
|  |                        | 43. Kjeldahl nitrogen   | БДС EN 25663 (1,2,3,5,8)*   |
|  |                        | 44. Extractable substances  | ΦМ 14/18:2018 (5)   |
| III  | Soils:                 |   |   |
|  |                        | 1. Active reaction / pH   | БДС ISO 10390*<br>БДС 11301*  |
|  |                        | 2. Water content / Moisture; Dry matter   | ISO 11465*  |
|  |                        | 3. Total content of the water soluble salts   | БДС 11301*  |
|  |                        | 4. Chloride ions (Cl <sup>-</sup> ) / Chlorides   | ΦМ 05/14:2017   |
|  |                        | 5. Nitrate ions (NO <sub>3</sub> <sup>-</sup> ) / Nitrate / Nitrate-Nitrogen (N-NO <sub>3</sub> <sup>-</sup> )  | ΦМ 05/14:2017   |
|  |                        | 6. Ammonium ions (NH <sub>4</sub> <sup>+</sup> ) / Nitrogen ammonium (N-NH <sub>4</sub> <sup>+</sup> )          | ΦМ 05/14:2017   |
|  |                        | 7. Sulphate ions/Sulphates/ (SO <sub>4</sub> <sup>2-</sup> )  | ΦМ 05/14:2017   |
|  |                        | 8. Carbonates (CO <sub>3</sub> <sup>2-</sup> )  | БДС EN ISO 10693*   |
|  |                        | 9. Hexavalent chromium/Cr(VI)   | EPA 7196A - R1*   |

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|---|--|---|---|
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| <b>1</b>  | <b>2</b>   | <b>3</b>  | <b>4</b>  |
|   |  | 10. Contents of metals and nonmetals: Aluminium/ Al; Antimony/ Sb; Arsenic/ As; Boron/ B; Barium/ Ba; Beryllium/ Be; Bismuth/ Bi; Calcium/ Ca; Cadmium/ Cd; Cobalt/ Co; Chromium / Cr; Copper/ Cu; Iron/Fe; Potassium/ K; Lithium / Li; Lead/ Pb; Magnesium/ Mg; Manganese/ Mn; Molybdenum/ Mo; Sodium/ Na; Nickel/ Ni; Phosphorus/ P; Sulphur/ S; Selenium/ Se; Silicon/Si; Tin/ Sn; Strontium/ Sr; Titanium/Ti; Vanadium / V; Zinc / Zn; Mercury / Hg | ISO 22036*<br>БДС EN 16170*   |
|   |  | 11. Petroleum products / hydrocarbons C10÷C40/  | БДС EN ISO 16703*   |
|   |  | 12. Polycyclic aromatic hydrocarbons /PAH/  | EPA 8275A – R1**<br>БДС EN 17503**  |
|   |  | 13. Polychlorinated biphenyls /PCB/   | БДС ISO 10382**   |
|   |  | 14. Total phosphorus  | ФМ 05/14:2017   |
|   |  | 15. Total nitrogen  | ФМ 05/14:2017   |
|   |  | 16. Orthophosphates/Phosphates Phosphorus as phosphates   | ФМ 05/14:2017   |
|   |  | 17. Polychlorinated dibenzo-p-dioxins /PCDD/, polychlorinated dibenzofurans /PCDF/  | ISO 13914**   |
|   |  | 18. Kjeldahl nitrogen   | БДС EN 16169*   |
|   |  | 19. Determination of exchange forms of metals   | БДС EN ISO 11260*   |
| IV  | Waste (liquid and solid), eluates, sludges, sediments and treated biowaste (compost):                                |   |   |
|   | (1) liquid waste<br>(2) solid waste<br>(3) eluates<br>(4) sludges<br>(5) sediments<br>(6) treated biowaste (compost) | 1. Active reaction / pH   | БДС 17.1.4.27 (1,3)*<br>БДС EN ISO 10523 (1,3)*<br>БДС EN 15933 (2,4,5,6) * |
|   |  | 2. Electroconductivity  | БДС EN 27888 (1,3)*<br>БДС EN 13038 (2,4,5,6)*                              |
|   |  | 3. Water content/ Moisture; Dry matter  | ISO 11465 (2,4)*<br>БДС EN 15934 (method A) (2,4,5,6)*                      |
|   |  | 4. Total dissolved solids / TDS   | БДС EN 15216(1,3)*  |
|   |  | 5. Total organic carbon/ TOC; Dissolved organic carbon/ DOC   | ФМ 05/14:2017(1 ÷ 5)  |
|   |  | 6. Nitrite ions (NO <sub>2</sub> <sup>-</sup> ) / Nitrite / Nitrite-Nitrogen  | БДС EN 26777 (1,3)*<br>ФМ 05/14:2017 (1÷5)<br>БДС EN ISO 13395 (1,3)*       |

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| № | Tested products | Type of test / characteristic  | Testing methods<br>(standard / validated method)                                     |
|---|-----------------|--|--|
| 1 | 2               | 3  | 4  |
|   |                 | 7. Nitrate ions (NO <sub>3</sub> <sup>-</sup> ) / Nitrate / Nitrate-Nitrogen   | БДС ISO 7890-3 (1,3)*<br>ФМ 05/14:2017 (1÷5)<br>БДС EN ISO 13395 (1,3)*              |
|   |                 | 8. Ammonium ions (NH <sub>4</sub> <sup>+</sup> ) / Nitrogen ammonium   | БДС ISO 7150 – 1 (1,3)*<br>ФМ 05/14:2017 (1 ÷ 5)<br>БДС EN ISO 11732 (1,3)*          |
|   |                 | 9. Chloride ions (Cl) <sup>-</sup> / Chlorides   | БДС 17.1.4.24 (1,3)*<br>ФМ 05/14:2017 (1 ÷ 5)<br>БДС EN ISO 15682 (1,3)*             |
|   |                 | 10. Fluoride ions (F <sup>-</sup> ) / Fluorides  | ФМ 05/14:2017 (1 ÷ 5)  |
|   |                 | 11. Ortho-phosphates /Phosphates (PO <sub>4</sub> <sup>3-</sup> )<br>Phosphates (as P) – (P –PO <sub>4</sub> <sup>3-</sup> )<br>Total phosphorus   | БДС EN ISO 6878 (1,3)<br>*<br>ФМ 05/14:2017 (1 ÷ 5)<br>БДС EN ISO 15681-1<br>(1,3) * |
|   |                 | 12. Sulphate ions (SO <sub>4</sub> <sup>2-</sup> ) / Sulphates/  | ФМ 05/14:2017 (1 ÷ 5)  |
|   |                 | 13. Cyanides (volatile, total)   | ФМ 05/14:2017 (1 ÷ 5)<br>БДС EN ISO 14403 – 1 (1,3)*                                 |
|   |                 | 14. Loss of ignition   | БДС EN 15935 (2,4) *   |
|   |                 | 15. Petroleum products / Hydrocarbons C10÷C40  | БДС EN ISO 16703 (2,4) *<br>БДС EN 14039(2,4) *<br>БДС EN ISO 9377-2(1,3) *          |
|   |                 | 16. Contents of metals and nonmetals:<br>Silver/Ag; Aluminium/ Al;<br>Arsenic/ As; Boron / B; Barium/ Ba; Beryllium/ Be; Bismuth/ Bi;<br>Calcium/ Ca; Cadmium/ Cd;<br>Cobalt/ Co; Chromium/ Cr;<br>Copper/ Cu; Iron/Fe;<br>Potassium/K; Lithium/ Li;<br>Magnesium/Mg; Manganese/Mn;<br>Molybdenum/ Mo; Sodium/ Na;<br>Nickel/ Ni; Phosphorus/ P; Lead/ Pb; Sulphur/ S; Antimony/ Sb;<br>Selenium/ Se; Silicon/Si; Tin/ Sn;<br>Strontium/ Sr; Titanium / Ti;<br>Vanadium / V; Tungsten/ W; Zinc / Zn; Mercury / Hg <sup>1</sup> | БДС EN ISO 11885 (1,3) *<br>EPA 6010D (1,3)*   |
|   |                 | 17. Silver/Ag; Aluminium/ Al;<br>Arsenic/ As; Boron / B; Barium/ Ba; Beryllium/ Be; Calcium/ Ca;<br>Cadmium/ Cd; Cobalt/ Co;<br>Chromium/ Cr; Copper/ Cu;<br>Iron/Fe; Potassium / K; Lithium / Li; Magnesium/Mg; Manganese/ Mn; Molybdenum/Mo; Sodium/ Na; Nickel/ Ni; Phosphorus/P; Lead/Pb; Antimony/Sb;<br>Selenium/ Se; Silicon/Si/SiO <sub>2</sub> ;<br>Tin/Sn; Strontium/Sr;   | EPA 6010D (2,5)*   |

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| <b>1</b>  | <b>2</b>  | <b>3</b>  | <b>4</b>   |
|   |   | Titanium/Ti; Vanadium/V;<br>Zinc/Zn; Thallium/Tl; Mercury/Hg  |  |
|   |   | 18. Aluminium/Al; Antimony/ Sb;<br>Arsenic/As; Boron / B; Barium/<br>Ba; Beryllium/Be; Bismuth/ Bi;<br>Calcium/ Ca; Cadmium/Cd;<br>Cobalt/Co; Chromium/Cr;<br>Copper/Cu; Iron/Fe;<br>Potassium/K; Lithium/Li;<br>Magnesium/Mg; Manganese/Mn;<br>Molybdenum/ Mo; Sodium/Na;<br>Nickel/Ni; Phosphorus/P;<br>Lead/Pb; Sulphur/S;<br>Selenium/Se; Silicon/Si; Tin/Sn;<br>Strontium/ Sr; Titanium / Ti;<br>Vanadium/V; Zinc /Zn;<br>Mercury/Hg | БДС EN 16170 (4,6) *                                 |
|   |   | 19. Hexavalent chromium /<br>Cr(VI)   | EPA 7196A -R1 (1 ÷ 4) *                              |
|   |   | 20. Polycyclic aromatic<br>hydrocarbons /PAH/   | БДС EN 15527 (2,4)**<br>БДС EN 17503 (2,4,6)**       |
|   |   | 21. Polychlorinated biphenyls<br>/PCB/  | БДС EN 17322 (2, 4, 5, 6)**                          |
|   |   | 22. Polychlorinated dibenzo-p-<br>dioxins /PCDD/, polychlorinated<br>dibenzofurans /PCDF/   | ISO 13914 (2,4)**                                    |
|   |   | 23. Phenols (volatile) / phenolic<br>index  | БДС EN ISO 14402 (1,3)*                              |
|   |   | 24. Acid and base neutralization<br>capacity test   | СД CEN/TS 15364 (2,4)*                               |
|   |   | 25. Volatile organic compounds<br>/VOC/   | БДС EN ISO 22155 (2,4,5)**                           |
|   |   | 26. Fats and oils/Hexane<br>extractable and silica gel treated<br>products  | EPA 1664A - RB (1,3)*<br>EPA 9071B - R2 (2,4,5)*     |
|   |   | 27. Adsorbable organically bound<br>halogens /AOX/  | ФМ 05/14:2017 (1 ÷ 5)                                |
|   |   | 28. Kjeldahl nitrogen   | БДС EN 16169 (2,4,6)*<br>БДС EN 25663 (1,3)*         |
| V   | Noise:  |   |  |
|   |   | 1 Equivalent noise level  | БДС ISO 8297*<br>ФМ 06/14:2014                       |
|   |   | 2 Total sound power level   | БДС ISO 8297*<br>ФМ 06/14:2014                       |
| VI  | Sludge from sewage treatment plants (for agriculture) |   |  |
|   |   | 1. Active reaction / pH   | БДС EN 15933*  |
|   |   | 2. Electroconductivity  | БДС EN 13038*  |
|   |   | 3. Polycyclic aromatic<br>hydrocarbons /PAH/  | БДС EN 17503**                                       |
|   |   | 4. Polychlorinated biphenyls<br>/PCB/   | БДС EN 17322**                                       |



| <b>Type of the scope:</b> <i>flexible for a part of the scope</i> |                        |  |  |
|---|------------------------|--|--|
| <b>№</b>  | <b>Tested products</b> | <b>Type of test / characteristic</b>   | <b>Testing methods (standard / validated method)</b> |
| <b>1</b>  | <b>2</b>               | <b>3</b>   | <b>4</b>   |
|   |                        | 5. Water content/ Moisture; Dry matter   | БДС EN 15934 (method A)*                             |
|   |                        | 6. Kjeldahl nitrogen   | БДС EN 16169*  |
|   |                        | 7. Nitrogen ammonium   | ФМ 05/14:2017  |
|   |                        | 8. Nitrate-Nitrogen  | ФМ 05/14:2017  |
|   |                        | 9. Sulphates; Sulphates such as sulphur  | ФМ 05/14:2017  |
|   |                        | 10. Calcium, magnesium, potassium, phosphorus - exchange forms   | ФМ 15/18:2018  |
|   |                        | 11. Determination of metals and non-metals - extractable form - arsenic /As/, cadmium /Cd/, copper /Cu/, nickel /Ni/, lead /Pb/, zinc /Zn/, mercury /Hg /, chromium /Cr/, phosphorus /P/ phosphorus calculated as P <sub>2</sub> O <sub>5</sub> , potassium /K/ potassium /calculated as K <sub>2</sub> O/, magnesium /Mg/, calcium /Ca/ | БДС EN 16170*  |

**Flexible scope:**

\*Implementing a new version of standards/documents or standards/ documents replacing them is allowed. An updated list of standards/documents and their dated versions is provided by CAB.

\*\* Within its competence, the laboratory is authorized to determine all the characteristics (column 3) according to the marked test methods (column 4) belonging to the product group (column 2) after verification / validation, provision with CRM / RM and calibrated technical equipment's. The laboratory maintains a detailed, dated list of products and characteristics, belonging to the products and characteristics mentioned in the scope of accreditation products and characteristics.

\*\*\*Repealed but not replaced standard with regard to the testing method.

**Fixed scope references:**

ФМ 01/03 Method for determining the content of aerosol sulfuric acid in gases from sulfuric acid production and other production sources from 2013.

ФМ 02/14 Stationary emission sources. Method for sampling and automatic determination of concentrations of total hydrocarbons, volatile organic compounds, total hydrocarbons expressed as total carbon, volatile organic compounds expressed as organic carbon from 2014.

ФМ 03/14 Stationary emission sources. Method for sampling and automatic determination of concentrations of: O<sub>2</sub>, NO, NO<sub>2</sub>, NO<sub>x</sub>, SO<sub>2</sub>, CO, CO<sub>2</sub>, HC, CH<sub>4</sub>, H<sub>2</sub>S, H<sub>2</sub>, HCl, Cl<sub>2</sub>, NH<sub>3</sub> and H<sub>2</sub>O (humidity) in gases from 2016.

ФМ 04/14 Method for determining the content of metals in emissions from stationary sources and immissions from 2016.

ФМ 05/14 Spectrophotometric method for determining the content of components in water, soil, waste (liquid and solid), sludge, sediment and sludge from treatment plants (for agriculture) from 2017.

ΦM 06/14 Methodology for determining the total acoustic power emitted into the environment by an industrial plant and determining the noise level at the point of impact from 2014.

ΦM 07/15 Determination of cyanide content in waste gases from 2015.

ΦM 08/16 Determination of formaldehyde content in emissions from stationary sources from 2016.

ΦM 09/16 Determination of total hardness as the sum of calcium and magnesium by ICP-OES from 2016.

ΦM 10/16 Determination of sulphates in water by FIA from 2016.

ΦM 11/17 Determination of hexavalent chromium / Cr(VI) content in emissions from stationary sources from 2017.

ΦM 12/17 Method for determining the content of amines and mercaptans in emissions from stationary sources from 2017.

ΦM 13/17 Method for determination of pesticide content in emissions from stationary sources and emissions from 2017.

ΦM 14/18 Method for determination of extractable substances in waters of 2018.

ΦM 15/18 Determination of exchange / mobile / forms of metals in sludge from sewage treatment plants (for agriculture) from 2018.

**To perform sampling of:**

| <b>Type of the scope:</b> <i>flexible for a part of the scope</i> |                             |   |
|---|-----------------------------|---|
| <b>№</b>  | <b>Product</b>              | <b>Sampling method<br/>(standardized / validated)</b> |
| <b>1</b>  | <b>2</b>                    | <b>3</b>  |
| I.  | Atmospheric air             |   |
| 1   | Atmospheric air – emissions | БДС 17.2.4.04*  |
| 2   | Atmospheric air – emissions | БДС EN 13284-1 *                                      |
| 3   | Atmospheric air – emissions | БДС ISO 9096 *  |
| 4   | Atmospheric air – emissions | БДС EN 1911 *   |
| 5   | Atmospheric air – emissions | БДС EN 14790*   |
| 6   | Atmospheric air – emissions | ΦM 01/13:2013   |
| 7   | Atmospheric air – emissions | ΦM 02/14:2014   |
| 8   | Atmospheric air – emissions | ΦM 03/14:2016   |
| 9   | Atmospheric air – emissions | ISO 10780*  |
| 10  | Atmospheric air – emissions | БДС 17.2.4.09*  |
| 11  | Atmospheric air – emissions | БДС 17.2.4.10 *                                       |
| 12  | Atmospheric air – emissions | БДС 17.2.4.12 *                                       |
| 13  | Atmospheric air – emissions | БДС EN ISO 23210*                                     |
| 14  | Atmospheric air – emissions | БДС EN ISO 16911-1 *                                  |
| 15  | Atmospheric air – emissions | БДС EN ISO 13199*                                     |
| 16  | Atmospheric air – emissions | БДС EN 15058*   |
| 17  | Atmospheric air – emissions | БДС EN 1948-1*  |
| 18  | Atmospheric air – emissions | БДС EN 1948-4+A1*                                     |
| 19  | Atmospheric air – emissions | БДС EN 13211-(AC)*                                    |
| 20  | Atmospheric air – emissions | БДС EN 14385*   |
| 21  | Atmospheric air – emissions | ΦM 07/15:2015   |

| <b>Type of the scope:</b> <i>flexible for a part of the scope</i> |   |  |
|---|---|--|
| <b>№</b>  | <b>Product</b>  | <b>Sampling method<br/>(standardized / validated)</b>  |
| <b>1</b>  | <b>2</b>  | <b>3</b>   |
| 22  | Atmospheric air – emissions   | СД CEN/TS 13649*                                       |
| 23  | Atmospheric air – emissions   | БДС EN ISO 21258*                                      |
| 24  | Atmospheric air – emissions   | ISO 11338-1*   |
| 25  | Atmospheric air – emissions   | ISO 15713*   |
| 26  | Atmospheric air – emissions   | БДС EN 14792*  |
| 27  | Atmospheric air – emissions   | БДС EN 14789 *   |
| 28  | Atmospheric air – emissions   | БДС EN 14791*  |
| 29  | Atmospheric air – emissions   | EPA 323*   |
| 30  | Atmospheric air - immissions  | БДС 17.2.5.01*   |
| 31  | Atmospheric air - immissions  | БДС 17.2.4.20*   |
| 32  | Atmospheric air - immissions  | БДС EN 12341*  |
| 33  | Atmospheric air - immissions  | БДС ISO 12884*   |
| II.   | Water:  |  |
|   | Water - surface<br>- Lakes and dams<br>- Rivers and streams                           | БДС ISO 5667-4*<br>БДС EN ISO 5667-6*                  |
|   | Drinking water<br>-for drinking purposes  | БДС ISO 5667-5*  |
|   | Water - waste<br>- Waste / Recycled<br>- Boiler installations<br>- Wet deposition     | БДС ISO 5667-10*<br>БДС ISO 5667-7*<br>БДС ISO 5667-8* |
|   | Marine water  | БДС ISO 5667-9 *                                       |
|   | Groundwater   | БДС ISO 5667-11*                                       |
|   | Water for industrial purposes   | БДС EN 1008*   |
|   | III.  | Soils:   |
| 1   |   | БДС 17.4.5.01*   |
| 2   |   | БДС ISO 18400 – 102*                                   |
| 3   |   | БДС ISO 18400 – 104*                                   |
| IV.   | Waste (liquid and solid), eluates, sludges, sediments and treated biowaste (compost): |  |
| 1   |   | СД CEN/TR 15310-2*                                     |
| 2   |   | СД CEN/TR 15310-3*                                     |
| 3   |   | СД CEN/TR 15310-4*                                     |
| 4   |   | СД CEN/TR 15310-5*                                     |
| 5   |   | БДС ISO 5667-12 *                                      |
| 6   |   | БДС EN ISO 5667-13*                                    |
| 7   |   | БДС ISO 5667-17*                                       |
| 8   |   | БДС ISO 8213*  |
| V.  | Sludge from sewage treatment plants (for agriculture)                                 |  |
| 1   |   | БДС EN 12579*  |
| 2   |   | БДС EN ISO 5667-13*                                    |

**Flexible scope:** *Implementing a new version of standards/documents or standards/documents replacing them is allowed. An updated list of standards/documents and their dated versions is provided by CAB.*

**Fixed scope references:**

ФМ 01/03 Method for determining the content of aerosol sulfuric acid in gases from sulfuric acid production and other production sources from 2013.

ФМ 02/14 Stationary emission sources. Method for sampling and automatic determination of concentrations of total hydrocarbons, volatile organic compounds, total hydrocarbons expressed as total carbon, volatile organic compounds expressed as organic carbon from 2014.

ФМ 03/14 Stationary emission sources. Method for sampling and automatic determination of concentrations of: O<sub>2</sub>, NO, NO<sub>2</sub>, NO<sub>x</sub>, SO<sub>2</sub>, CO, CO<sub>2</sub>, HC, CH<sub>4</sub>, H<sub>2</sub>S, H<sub>2</sub>, HCl, Cl<sub>2</sub>, NH<sub>3</sub> and H<sub>2</sub>O (humidity) in gases from 2016.

ФМ 07/15 Determination of cyanide content in waste gases from 2015.

ФМ 08/16 Determination of formaldehyde content in emissions from stationary sources from 2016.

**To perform calibrating of:**

| <b>Type of the scope:</b> <i>fixed</i> |                                 |  |   |                                |                           |
|--|---------------------------------|--|---|--------------------------------|---------------------------|
| <b>№</b>                               | <b>Measuring instrument</b>     | <b>Measured value, unit of measure</b>   | <b>Measurement range</b>  | <b>Measurement uncertainty</b> | <b>Calibration method</b> |
| <b>1</b>                               | <b>2</b>                        | <b>3</b>   | <b>4</b>  | <b>5</b>                       | <b>6</b>                  |
| 1                                      | Gas analyzers                   | Oxygen (O <sub>2</sub> )<br>%  | from 0 % to 25 %  | 2 %                            | КГ-PI-01-08<br>(2016)     |
|  |                                 | Carbon dioxide (CO <sub>2</sub> )<br>%/ppm/<br>mg/Nm <sup>3</sup>                        | from 0 % to 51 %<br>from 0 ppm<br>to 510000 ppm<br>from 0 mg/Nm <sup>3</sup><br>to 1002150 mg/Nm <sup>3</sup> | 2 %                            |                           |
|  |                                 | Hydrogen (H <sub>2</sub> )<br>% /<br>ppm /<br>mg/Nm <sup>3</sup>                         | from 0 % to 5 %<br>from 0 ppm<br>to 50 000 ppm<br>from 0 mg/Nm <sup>3</sup><br>to 4450 mg/Nm <sup>3</sup>     | 2 %                            |                           |
|  |                                 | Nitrogen oxide (NO)<br>ppm /<br>mg/Nm <sup>3</sup>                                       | from 0 ppm to 5000 ppm<br>from 0 mg/Nm <sup>3</sup><br>to 6695 mg/Nm <sup>3</sup>                             | 2 %                            |                           |
|  |                                 | Nitrogen dioxide (NO <sub>2</sub> )<br>ppm /<br>mg/Nm <sup>3</sup>                       | from 0 ppm to 2000 ppm<br>from 0 mg/Nm <sup>3</sup><br>to 4100 mg/Nm <sup>3</sup>                             | 3 %                            |                           |
|  |                                 | Sulphur dioxide (SO <sub>2</sub> )<br>ppm /<br>mg/Nm <sup>3</sup>                        | from 0 ppm to 10000 ppm<br>from 0 mg/Nm <sup>3</sup><br>to 28570 mg/Nm <sup>3</sup>                           | 2 %                            |                           |
|  |                                 | Hydrogen sulphide (H <sub>2</sub> S)<br>ppm /<br>mg/Nm <sup>3</sup>                      | from 0 ppm to 2000 ppm<br>from 0 mg/Nm <sup>3</sup><br>to 3042 mg/Nm <sup>3</sup>                             | 3 %                            |                           |
|  |                                 | Ammonia (NH <sub>3</sub> )<br>ppm /<br>mg/Nm <sup>3</sup>                                | from 0 ppm to 1000 ppm<br>from 0 mg/Nm <sup>3</sup><br>to 760 mg/Nm <sup>3</sup>                              | 2 %                            |                           |
|  |                                 | Carbon monoxide (CO)<br>% /<br>ppm /<br>mg/Nm <sup>3</sup>                               | from 0 % to 15 %<br>from 0 ppm<br>to 150000 ppm<br>from 0 mg/Nm <sup>3</sup><br>to 187500 mg/Nm <sup>3</sup>  | 2 %                            |                           |
|  |                                 | Total hydrocarbons (HC) C <sub>x</sub> H <sub>y</sub><br>% / ppm /<br>mg/Nm <sup>3</sup> | from 0 % to 50 %<br>from 0 ppm<br>to 500000 ppm<br>from 0 mg/Nm <sup>3</sup><br>to 980000 mg/Nm <sup>3</sup>  | 2 %                            |                           |
|  |                                 | Nitric oxide (N <sub>2</sub> O)<br>ppm<br>mg/Nm <sup>3</sup>                             | from 0 ppm to 1000 ppm<br>from 0 mg/Nm <sup>3</sup><br>to 1960 mg/Nm <sup>3</sup>                             | 2 %                            |                           |
| 2                                      | Dust meters and flow meters for | Dust:<br>µg/Nm <sup>3</sup>  | from 1 µg/m <sup>3</sup>  | 3,5 %                          | КПД-PI-01-15<br>(2015)    |

| Type of the scope: <i>fixed</i> |   |  |  |  |                         |
|---------------------------------|---|--|--|--|-------------------------|
| №                               | Measuring instrument  | Measured value, unit of measure  | Measurement range  | Measurement uncertainty  | Calibration method      |
| 1                               | 2   | 3  | 4  | 5  | 6                       |
|                                 | continuous measurement of gases<br><br>Dust meters:<br>Immissions(a)<br>Emissions (b)<br><br>Flow meters: | mg/Nm <sup>3</sup><br><br><br><br><br><br><br>Flow rate:<br>Nm <sup>3</sup> /h | to 2000 µg/m <sup>3</sup><br><br>from 0,3 mg/Nm <sup>3</sup><br>to 2000 mg/Nm <sup>3</sup><br><br><br><br>from 2 Nm <sup>3</sup> /h<br>to 4000000 Nm <sup>3</sup> /h | 3,5 %<br>(to 10 mg/Nm <sup>3</sup> )<br><br>2,5 %<br>(above 10 mg/Nm <sup>3</sup> )<br><br><br>2,0 % |                         |
| 3                               | Hygrome-ters  | Relative humidity,<br>% RH<br><br><br><br>Absolute humidity,<br>%              | from 11,0 % RH<br>to 12,0 % RH<br><br>from 12,0 % RH<br>to 99,0 % RH<br><br>from 0,3 % to 0,5 %<br>from 0,5 to 40 %  | 1,2 % RH<br><br>от 1,2 % RH<br>до 2,4 % RH<br><br>от 0,03 %<br>до 0,96 %                             | KB-PI-01-13<br>(2015)   |
| 4                               | Temperature measuring instruments   |  |  |  |                         |
| 4.1                             | Digital thermometers  | Temperature<br>°C  | from 0 °C to 200 °C<br><br>from 200 °C to 660 °C   | from 0,2 °C<br>to 0,6 °C<br><br>from 0,6 °C<br>to 2,5 °C   | KT-PI-01-2016<br>(2016) |
| 4.2                             | Resistance temperature transducers  | Temperature<br>°C  | from 0 °C to 200 °C<br><br>from 200 °C to 660 °C   | from 0,1 °C<br>to 0,4 °C<br><br>from 0,3 °C<br>to 2,5 °C   |                         |
| 4.3                             | Thermoelectric temperature converters (thermocouple)  | Temperature<br>°C  | from 0 °C to 650 °C<br><br>from 650 °C to 1200 °C  | from 0,4 °C<br>to 3 °C<br><br>from 2 °C to 5 °C  |                         |

#### References:

КГ-PI-01-08 Method for calibration of gas analyzers from 2016.

КПД-PI-01-15 Method for calibration of dust meters and flow meters for continuous measurement of gases from 2015.

KB-PI-01-13 Method for calibration of humidity meters from 2015.

KT-PI-01-16 Methodology for calibration of temperature measuring instruments (digital thermometers, resistance temperature transducers, thermoelectric temperature transducers (thermocouples)) from 2016.

#### Notes:

1. The calibration of gas analyzers, dust meters at continuous measurement of gases and humidity meters can be carried out at the premises of the laboratory or on site at the client.

2. The calibration of flow meters at continuous measurement of gases is done only on site at the client.

3. The calibration of Digital thermometers, Resistance thermometers and thermocouples to 650 °C can be carried out at the premises of the laboratory or on site at the client, the calibration of thermocouples from 650°C to 1200°C is done only on site at the client.

## I ORDER

To issue the certificate of accreditation reg. № 5 ЛИК/05.06.2024, valid until 01.07.2025, and this order as an integral part of it.

The certificate of accreditation with the enclosure to be received by the head of Testing and calibration laboratory, Laboratory for Testing of Dust and Gas Emissions and Imissions, at Pehlivanov-Engineering Ltd, or other authorized person in the office of EA BAS.

Upon receipt of the certificate and the enclosure issued, the accredited person is obliged to return to EA BAS the originals of accreditation certificate № 5 ЛИК/29.03.2023, valid until 01.07.2025 and its enclosure – EA BAS order reg. № A 138/29.03.2023.

This order shall be notified to the Testing and calibration laboratory, Laboratory for Testing of Dust and Gas Emissions and Imissions, at Pehlivanov-Engineering Ltd, within 3 (three) days from its issuance.

**Eng. Irena Borislavova**

*Executive Director of EA BAS*

