**TECHNICAL SPECIFICATION**

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| Required range of work | **Mechanical decoking of the NTH furnace 2512-H01** |

**SCOPE**

Mechanical decoking of coils in the NTH furnace 2512-H01 (fired heater of straight run naphtha into the hydrotreating reactor) including Ultrasonic inspection (by “intelligent” pigging to prove decoking efficiency and to inspect coils). Decoking is required in the next planned unit Turn-around in March-April 2026.

**GENERAL INFORMATION**

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| Company | ORLEN UNIPETROL RPA s.r.o. |
| Company address | Zaluzi 1, 436 70 Litvinov, Czech Republic |
| Plant address | Otto Wichterleho 810, Kralupy nad Vltavou, Czech Republic |

**SYSTEM INFORMATION**

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| Process unit | Naphtha hydrotreater unit (NHT, 2512) |
| Process fluid | Straight run naphtha + hydrogen-rich recycle gas |
| Amount of furnaces | 1 |
| Furnace specification | 2512-H01 |
| Amount of coils per furnace | 4 |
| Planned cleaning date | 21.3. – 15.4.2022 |
| Coils installed | 04/2018 |
| Last cleaning date | None after installing new coils |
| Tube material | 5 Cr – 1/2 Mo (17 102.2) |
| U-bends | yes |
| Temperature inlet | 240°C |
| Temperature outlet | 315°C |
| Inlet pressure | 3,56 MPag |
| MAWP | 4,18 MPa |
| MAWT | 410°C |
| Hotspots | none |
| Inlet flange | DN 150 |
| Position of inlet flange | 19 m above ground level |
| Outlet flange | DN 150 |
| Position of outlet flange | 13 m above ground level |
| Presence of removable pipe elbows on the inlet/outlet pipelines | Yes/no |
| Total volume of coils (radiant +convection) | 4x 2,900 m3 |

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| **Radiant SECTION** | |
| Amount of sections | 2 |
| Amount of coils (passes) | 4 (A,B,C,D) |
| Position of radiant tubes | horizontal |
| Material/tube/flange | SA335M P/SA335M P5/SA182 F5 (5,00Cr-0,50Mo) |
| Amount of tubes/elbows | 4x12/4x11(180°)/4x4 (90°) |
| Tube diameter outside x wall thickness/diameter inside (mm) | DN150 (152,00x8,00/137,00) |
| Length of one tube (mm) | 10244,00 |
| Elbow diameter outside x wall thickness/diameter inside (mm) | DN150 (168,30x14,00/137,00) |
| **transition from convection to radiant section** | |
| Material/tube/flange | SA335M P/SA335M P5/SA182 F5 (5,00Cr-0,50Mo) |
| Amount of tubes/elbows | 4x3 (90°) |
| Tube diameter outside x wall thickness/diameter inside (mm) | DN150 (152,00x10,00/137,00) |
| Length of one tube (mm) | 2777,00 |
| Elbow diameter outside x wall thickness/diameter inside (mm) | DN150 (168,30x14,00/137,00) |
| **Convection SECTION** | |
| Amount of convection | 2 |
| Amount of coils (passes) | 4 |
| Position of convection tubes | vertical |
| MATERIÁL/TRUBKA/PŘÍRUBA | SA335M P/SA335M P5/SA182 F5 (5,00Cr-0,50Mo) |
| Amount of tubes | 4x13 thorned/4x1 smooth |
| Tube diameter outsite x wall thickness/diameter inside (mm) | DN150 (152,00x10,00/137,00) |
| Lenght of one tube (mm) | 2777,00 |
| Elbow diameter outsite x wall thickness/diameter inside (mm) | DN150 (168,30x14,00/137,00) |

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| **Unipetrol utilities** | |
| Diesel fuel | no (to be always supplied by contractor) |
| Water (fire water) | yes |
| Crane with operator | yes |
| Forklift with operator | yes |
| Vacuum truck with operator | yes |
| Waste water drain | yes |
| Scaffolding | on demand |

Attachment:

* Tube drawing documentations
* Preliminary position of the equipment
* Photos of connecting spots (previous connections)