

 NATIONAL RECOVERY PLAN	 Republic of Poland	Funded by the European Union NextGenerationEU   BANK GOSPODARSTWA KRAJOWEGO
	Specification of Essential Terms of Contract for the task: WASTE-TO-HYDROGEN COMPLEX	

Appendix A0

Technical information on the subject of the

BID / CONTRACT

 NATIONAL RECOVERY PLAN	 Republic of Poland	Funded by the European Union NextGenerationEU   BANK GOSPODARSTWA KRAJOWEGO
	Specification of Essential Terms of Contract for the task: WASTE-TO-HYDROGEN COMPLEX	

CONTENTS

1	INTRODUCTION.....	3
1.1	GENERAL INFORMATION	3
1.2	LEGAL BASIS	3
2	SUBJECT MATTER AND PURPOSE OF THE BID / CONTRACT	4
3	BASIC TECHNICAL REQUIREMENTS OF THE SUBJECT OF THE CONTRACT	7
4	REQUIRED ATTRIBUTES OF THE SUBJECT MATTER OF THE CONTRACT	8

 NATIONAL RECOVERY PLAN	 Republic of Poland	Funded by the European Union NextGenerationEU   BANK GOSPODARSTWA KRAJOWEGO
	Specification of Essential Terms of Contract for the task: WASTE-TO-HYDROGEN COMPLEX	

1 INTRODUCTION

1.1 GENERAL INFORMATION

ORLEN S.A. (hereinafter the Ordering Party or ORLEN) intends to construct a chemical recycling facility for municipal waste, comprising a WASTE-TO-HYDROGEN COMPLEX. The primary objective is the production of hydrogen from synthesis gas (syngas) for automotive applications. A secondary product will be liquefied carbon dioxide to be captured and utilized by ORLEN.

The WASTE-TO-HYDROGEN COMPLEX is planned as a Zero-Waste installation, minimizing waste from the installation by using streams originating from one process as feedstock for another, thereby streamlining production and reducing the quantity of waste otherwise requiring disposal. In its current configuration, the WASTE-TO-HYDROGEN COMPLEX will primarily accept sorted MUNICIPAL SOLID WASTE (MSW), its various fractions, and waste from selective collection.

This project is ORLEN's response to proposed European Union climate policy and to the recycling and waste-treatment requirements imposed on Member States.

Under the ORLEN 2030 strategy, ORLEN aims to increase the availability of alternative fuels (including synthetic hydrocarbons), and reduce emissions in absolute terms by 25%, compared to the 2019 baseline year. Carbon neutrality is integral to this strategy, which includes a commitment to a long-term Group objective of net-zero carbon footprint by 2050.

The WASTE-TO-HYDROGEN COMPLEX, including all necessary equipment, shall be located at the ORLEN Plock Refinery. The Complex shall process sorted fractions of MUNICIPAL SOLID WASTE (MSW) and produce the following outputs:

- Hydrogen in accordance with ISO 14687 (Grade D) / PN-EN 17124;
- Two separate streams of liquefied CO₂, delivered at different pressures and temperatures;
- By-products (solid, liquid, sludge) that cannot be converted to H₂ or CO₂.

1.2 LEGAL BASIS

The WASTE-TO-HYDROGEN COMPLEX should be designed and built in compliance with all applicable laws, regulations, standards (including ORLEN's standards) and directives in force in Poland and the European Union, including in particular Directive 2010/75/EU on industrial emissions (IED) and the applicable BAT Conclusions, including the Waste Incineration BREF (WI) and the associated BAT-AELs.

 NATIONAL RECOVERY PLAN	 Republic of Poland	Funded by the European Union NextGenerationEU   BANK GOSPODARSTWA KRAJOWEGO
	Specification of Essential Terms of Contract for the task: WASTE-TO-HYDROGEN COMPLEX	

2 SUBJECT MATTER AND PURPOSE OF THE BID / CONTRACT

STAGE I

The subject matter of the STAGE I is the provision of a PDP-LF Proposal (and in consequence conclusion of the PDP-LF AGREEMENT(s)) covering, among others, the PDP and LF scope and preparation and submission of the EPCC BID on a lump-sum basis for the WASTE-TO-HYDROGEN COMPLEX to be located at the Płock Refinery, and comprising in particular:

- The WASTE-TO-HYDROGEN COMPLEX as a thermal conversion plant using gasification of sorted MSW fractions (pre-RDF and waste from aerobic treatment), and a design hydrogen production target of minimum 5 000 Mg/a net over the entire life cycle (SOR and EOR conditions); detailed provisions regarding requirements concerning warranties and guaranteed parameters are set out in Appendix A6 and A6.1;
- A service life of 25 years and an operating time of 7 800 h/a (main products production systems), adopted as design assumptions for PDP + LF purposes;
- Preparation of a basis of design / design criteria, process description, mass & energy balance, PFDs, preliminary P&IDs, utilities and off-sites balances/requirements, definition of Battery Limits (B.L.) and tie-ins under the conditions and between the points of contact specified in Appendix A3, plot plan and layout, and interface definition in accordance with Appendices A3;
- An HSE concept appropriate for the PDP + LF stage;
- Technical inputs for permitting (without obtaining permits on STAGE I);
- Author's support during reviews and clarifications with the ORDERING PARTY.

STAGE II

Subject to successful completion of STAGE I and verification/acceptance of the PDP + LF by the ORDERING PARTY, the ORDERING PARTY may, at its sole discretion, conduct a subsequent procurement and invite tenders for an EPCC/turnkey contract for execution of the WASTE-TO-HYDROGEN COMPLEX. Participation in STAGE I does not create any right or expectation of invitation to STAGE II or to award EPCC CONTRACT.

For avoidance of doubt, the STAGE II will cover, inter alia:

- comprehensive multi-discipline design in all phases of execution and author's supervision;

 NATIONAL RECOVERY PLAN	 Republic of Poland	Funded by the European Union NextGenerationEU 	 BGK BANK GOSPODARSTWA KRAJOWEGO
	<p align="center">Specification of Essential Terms of Contract for the task: WASTE-TO-HYDROGEN COMPLEX</p>		

- obtaining, excluding the ORDERING PARTY’S PERMITS, all administrative decisions, consents, certificates, clearances, permits, approvals and opinions from the competent authorities and other entities required under the statutory requirements for engineering, designing, constructing, commissioning and operating the WASTE-TO-HYDROGEN COMPLEX and conducting take-over of the same; including making the required connections to other ORLEN Units at the B.L., under the conditions and between the points of contact specified in Appendix A3, and performing all other works necessary to ensure execution within the scope defined in Appendices A3, A4, A5 and A14. CONTRACTOR should obtain among others:
 - necessary data for the preparation of an environmental impact assessment report,
 - decision on the location of a public purpose investment (ULICP),
 - all opinions designs and agreements allowing for the execution of works in accordance with the provisions of the BUILDING LAW,
 - building permit,
 - occupancy permit,
 - an update of the Integrated Permit for Orlen refinery and petrochemical complex in Płock (Zakład Produkcyjny w Płocku),
 - submission of the necessary data for preparation of the application for the issuance of the GHG emission permit decision,
 - arrangement of documentation of pressure equipment, OTI or NB approval, CLDT and the necessity of certification,
- documentation including among others basic design package and detailed design
- complete deliveries of equipment and materials;
- construction and assembly works in all trades;
- trials, tests and acceptance, including take-over;
- training of the ORDERING PARTY’s staff;
- pre-commissioning (cold run);
- commissioning (hot run), including start-up, adjustment run and performance test run with guarantee measurements.

 NATIONAL RECOVERY PLAN	 Republic of Poland	Funded by the European Union NextGenerationEU   BANK GOSPODARSTWA KRAJOWEGO
	Specification of Essential Terms of Contract for the task: WASTE-TO-HYDROGEN COMPLEX	

Performance guarantees, training, pre-commissioning/commissioning obligations and other EPCC terms and metrics shall be specified exclusively in STAGE II tender documents. STAGE II execution shall be performed in accordance with the technology defined in the PDP+LF PROPOSAL (PROPOSED TECHNOLOGY) and PDP + LF accepted by the ORDERING PARTY, subject to the terms of the STAGE II procedure.

The CONTRACTOR shall procure all LICENCES and other intellectual property rights necessary for the performance of the PROJECT (in particular EPCC CONTRACT) and the operation of the WASTE-TO-HYDROGEN COMPLEX. The CONTRACTOR shall ensure that the ORDERING PARTY shall receive from the LICENSORS all LICENCES and rights to use the LICENSED PROCESSES to the extent necessary for the ORDERING PARTY to achieve its objectives and fulfil its requirements in connection with the EPCC CONTRACT, including the design, construction, commissioning, operation, maintenance, repair, modification and expansion of the WASTE-TO-HYDROGEN COMPLEX. To the extent that the CONTRACTOR is the owner of any technology, know-how or intellectual property rights incorporated in or related to the PDP + LF, the CONTRACTOR shall grant to the ORDERING PARTY a license to use such technology, know-how and intellectual property rights on terms and conditions specified in a separate agreement.

 NATIONAL RECOVERY PLAN	 Republic of Poland	Funded by the European Union NextGenerationEU   BANK GOSPODARSTWA KRAJOWEGO
	Specification of Essential Terms of Contract for the task: WASTE-TO-HYDROGEN COMPLEX	

3 BASIC TECHNICAL REQUIREMENTS OF THE SUBJECT OF THE CONTRACT

In order to define and substantiate the hydrogen production design objectives specified for the WASTE-TO-HYDROGEN COMPLEX, the PDP + LF shall cover, between the points of contact specified in Appendix A3, at least the following elements:

- main gate to the WTH and to refinery and the petrochemical complex in Płock named as gate no 9 with road system, perimetral and internal fence;
- MSW SORTING UNIT (feedstock storage and conditioning system);
- GASIFICATION UNIT (gasification, syngas preparation system, product preparation system, reagent storage, solid product conditioning system, wastewater conditioning system, cooling system and gasification flare system);
- TERMINAL UNIT (terminals for products – in particular automotive hydrogen);

and:

- connections WTH to other systems (process media and utilities);
- definition of equipment and installations necessary for power supply (at PDP + LF level);
- definition of equipment and installations necessary for control and data acquisition (control philosophy) to enable comprehensive supervision and analysis of the WASTE-TO-HYDROGEN COMPLEX;
- all necessary buildings (administration, social ect.) and other objects and installations.

As a minimum, under the PDP + LF AGREEMENT CONTRACTOR shall provide PDP + LF documentation package as defined in Appendix A16.1.

 NATIONAL RECOVERY PLAN	 Republic of Poland	Funded by the European Union NextGenerationEU   BANK GOSPODARSTWA KRAJOWEGO
	Specification of Essential Terms of Contract for the task: WASTE-TO-HYDROGEN COMPLEX	

4 REQUIRED ATTRIBUTES OF THE SUBJECT MATTER OF THE CONTRACT

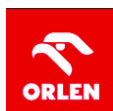
The WASTE-TO-HYDROGEN COMPLEX shall be designed to:

- achieve high energy and process efficiency consistent with the requirements, principles and standards set out in the applicable BAT Conclusions/BREFs; the CONTRACTOR shall deliver a BAT Compliance Matrix demonstrating alignment with the relevant BAT and BAT-AELs;
- be optimized on a techno-economic basis;
- provide high flexibility of operation and maintenance, including definition of turndown range, feedstock variability (fractions/moisture), redundancy/maintainability assumptions and planned availability;
- ensure optimal use of the available land, with provision for maintenance access, heavy-lift/road transport routing and repair areas; the PDP + LF shall include plot plan/layout and access/clearance requirements;
- meet design limits for waste, wastewater and discharges not exceeding the values specified in Appendix A4; the PDP + LF shall include mass- and water-balance calculations and emission/load estimates supporting compliance;
- reflect current EU and national environmental protection requirements as design basis;
- treat the parameters specified in Appendix A4, A6, A6.1 as design targets for PDP + LF purposes.

The ORDERING PARTY expects that the process systems of the WASTE-TO-HYDROGEN COMPLEX shall be specified at PDP + LF level with all systems and elements necessary for proper operation, including (without limitation) OSH, fire protection, environmental protection, Explosion Risk Assessment (ATEX), technical and process safety, and other matters defined in this specification and in the applicable laws and regulations, including the provisions of the OTI to the extent applicable to elements of the WASTE-TO-HYDROGEN COMPLEX.

Definitions used in the Appendix:

BID	A set of documents submitted to the ORDERING PARTY as an offer in compliance with the requirements of the SETC and BIDDING DOCUMENTATION and including prices. As BID shall be understood either the
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Specification of Essential Terms of Contract for the task:
WASTE-TO-HYDROGEN COMPLEX

	<p>PDP-LF PROPOSAL (STAGE I) or the EPCC BID (STAGE II), depending on the context and the stage to which the given definition refers.</p> <p>(Polish: Oferta)</p>
CONTRACT	<p>As the CONTRACT shall be understood either the PDP+LF AGREEMENT (resulting from STAGE I) or the EPCC CONTRACT (resulting from STAGE II), depending on the context in which the definition is used.</p> <p>(Polish: Kontrakt/Umowa)</p>
WASTE-TO-HYDROGEN COMPLEX / WTH	<p>The sorting and thermal conversion plant, the full set of integrated units, realising MSW preparation and gasification process of sorted MSW fractions and other processes to produce gaseous hydrogen (as the main end-product) to be designed, built, new and/or revamped, and operated by the ORDERING PARTY in Płock, Poland, with all auxiliary facilities, systems, and infrastructure, within the BL.</p>
MSW	Municipal Solid Waste
SOR	Start of Run
EOR	End of Run
PDP and LIGHT FEED (PDP + LF)	Process Design Package and Light Feed
BAT/BREF	<p>BREF reference documents for Best Available Techniques, in particular:</p> <p>COMMISSION IMPLEMENTING DECISION (EU) 2018/1147 of 10 August 2018 establishing best available techniques (BAT) conclusions for waste treatment, under Directive 2010/75/EU of the European Parliament and of the Council;</p> <p>COMMISSION IMPLEMENTING DECISION (EU) 2019/2010 of 12 November 2019 establishing the best available techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council, for waste incineration;</p> <p>COMMISSION IMPLEMENTING DECISION (EU) 2022/2427 of 6 December 2022 establishing the best</p>



Specification of Essential Terms of Contract for the task:
WASTE-TO-HYDROGEN COMPLEX

	available techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions, for common waste gas management and treatment systems in the chemical sector
PFD	Process Flow Diagram. (Polish: Schemat przepływowy)
P&ID	Piping and Instrumentation Diagram. (Polish: Schemat technologiczno-pomiarowy)
HSE	Health, Safety, and Environment management system that aims to protect the health and safety of employees while minimizing the negative impact of a company's operations on the natural environment. It is a framework of principles, procedures, and practices designed to prevent accidents, occupational illnesses, and environmental damage.
STAGE I	covers the award and execution of PDP+LF PROPOSAL
STAGE II	covers the award and execution of EPCC CONTRACT
EPCC	Engineering Procurement Construction and Commissioning
ORDERING PARTY'S PERMITS	The administrative decisions, consents, permits, arrangements, attestations, certificates, approvals, representations, notifications and opinions relating to the WTH listed in Appendix A14 to the CONTRACT [Division of Obligations]
BUILDING LAW	The Act dated 7 July 1994 (consolidated text in the Journal of Laws of 2019, item 1186 as amended), including secondary legislation. (Polish: Prawo Budowlane)
OTI	Office of Technical Inspection in accordance with the Act of 21 December 2000 on Technical Inspection (consolidated text in the Journal of Laws of 2019, item 667 as amended) (Polish: Urząd Dozoru Technicznego – UDT)



Specification of Essential Terms of Contract for the task:
WASTE-TO-HYDROGEN COMPLEX

NB	Notified Body. (Polish: Jednostka Notyfikowana – JN)
CLDT	Central Laboratory of Technical Supervision. (Polish: Centralne Laboratorium Dozoru Technicznego)
LICENSES	The licences for the Licensed Processes.
LICENSOR	Any and all legal entities listed in relevant Appendix [<i>List of the Licensors</i>] to the PDP+LF AGREEMENT whose LICENSED PROCESSES are incorporated in the PDP and are necessary for the performance of the EPCC CONTRACT and for the operation of the WTH. For avoidance of doubt, the LICENSOR may either be the owner of the LICENSED PROCESSES or possess rights necessary to grant LICENCES to such LICENSED PROCESSES (i.a. be a licensee with right to grant further licenses under applicable law), both to the LICENSED PROCESSES as whole or in part.
LICENSED PROCESSES	Jointly all the technological processes to be used in operation of the WTH and for performance of the EPCC CONTRACT. For avoidance of doubt, LICENSED PROCESSES shall include all patents, know-how and any other Intellectual Property Rights incorporated in or forming part of such technological processes.
MSW SORTING UNIT	A party of WTH dedicated to MSW preparation (sorting, crushing, metals removing ect,)
GASIFICATION UNIT	A part of WTH dedicated for hydrogen production
TERMINAL UNIT	A part of WTH dedicated for loading hydrogen onto trailers
OSH	Occupational Safety and Health. (Polish: Bezpieczeństwo i Higiena Pracy - BHP)
SETC	Specification of Essential Terms of Contract for the submission of BIDS. (Polish: Specyfikacja Istotnych warunków Zamówienia – SIWZ)

 NATIONAL RECOVERY PLAN	 Republic of Poland	Funded by the European Union NextGenerationEU 	 BANK GOSPODARSTWA KRAJOWEGO
	Specification of Essential Terms of Contract for the task: WASTE-TO-HYDROGEN COMPLEX		

Signatures for the CONTRACTOR

1.....

2.

Signatures for the ORDERING PARTY

1.....

2.