

CREATING ENERGY TRANSFORMATION - TOGETHER

ASE ATEX

elmech

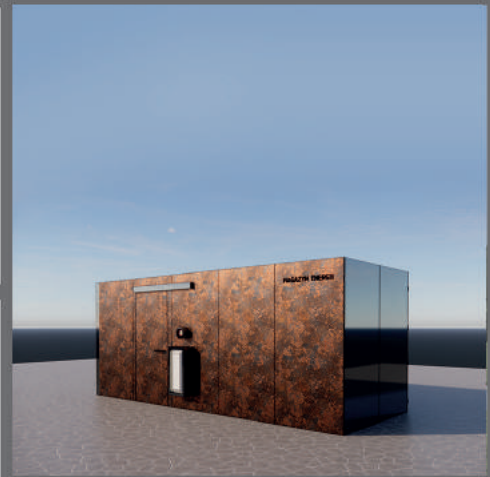


BIPRORAF

**ASE**  
TECHNOLOGY GROUP



PROJMORS



**TOGETHER WE CREATE FUTURE TECHNOLOGY**  
ASE Technology Group





# TOGETHER WE CREATE FUTURE TECHNOLOGY



The ASE Technology Group, associating over ten specialist companies, is a multi-industry and multi-layer business partner for the largest clients from the energy market, Oil & Gas and Offshore, both in Poland and Europe.

We keep up with the times, our experience evolves and knowledge is constantly expanded. We focus on continuous development to provide best expert support for our partners. Due to that We can be

found in many hydrogen projects. We are the co-founder of the Cluster of Hydrogen Technologies and Clean Coal Technologies. We would like to present why we are an ideal and reliable partner for you.

We are a member of the Polish Chamber of Chemical Industry.

**More information:**

[www.grupaase.com.pl](http://www.grupaase.com.pl)



# ASE TECHNOLOGY GROUP

## FUNCTIONAL STRUCTURE OF THE GROUP



**CONSTRUCTION  
DESIGN  
ENGINEERING**

**BIPRORAF**

**PROJMORS**

**CAMINO  
PROJECT**

**CONSULTING  
TRAINING  
HR**

**EKO-KONSULT**

**LKK / CNK**

**INTEGRATOR**

**ASE ATEX**

**SQUADRON**

**PRODUCER**

**ELMECH-ASE**

**EKSPORT  
START-UP**

**MIEP**

**ASE BALTIC**

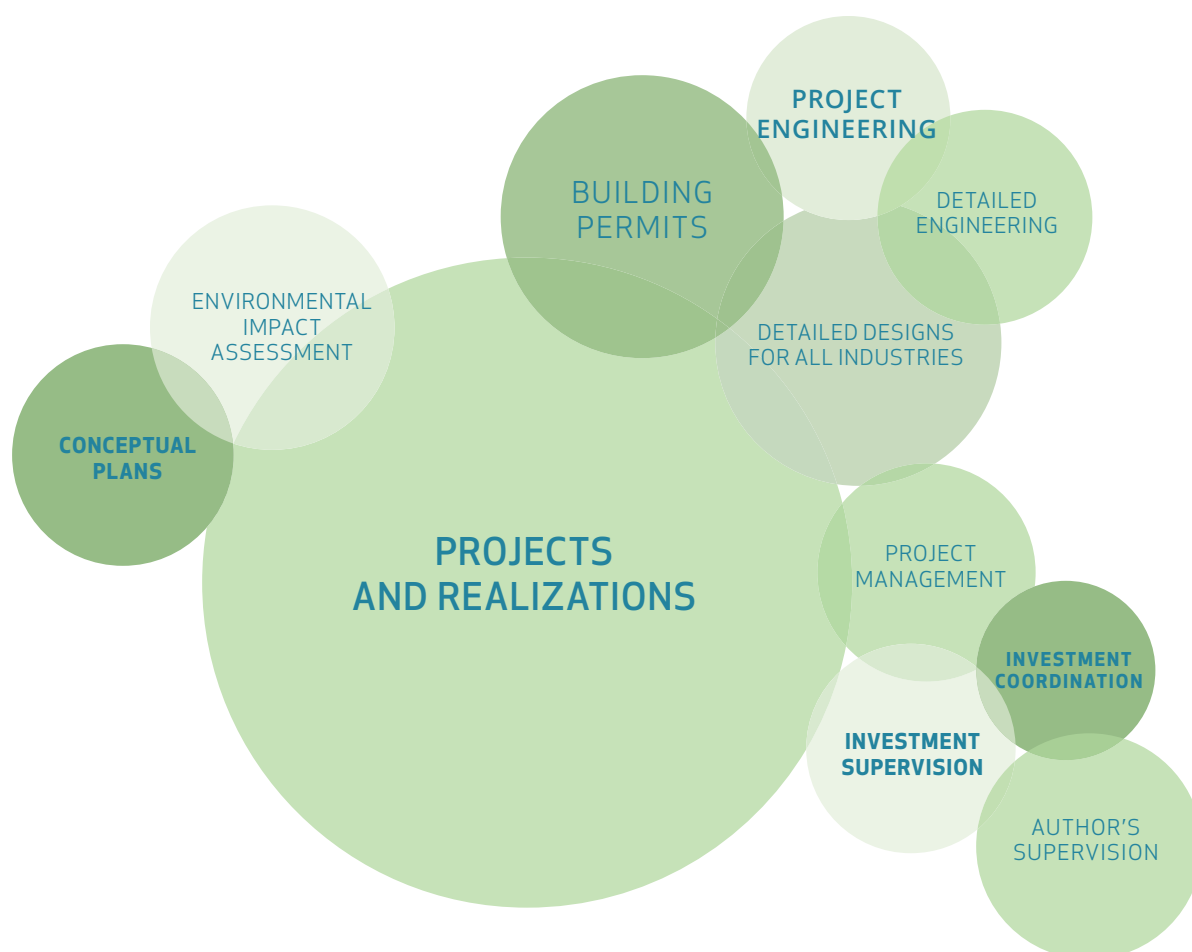
**ASE EAST  
AFRICA**

**PROJMORS  
INDIA**





# DESIGN SERVICES IN THE ASE TECHNOLOGY GROUP





## BIPRORAF LTD

An engineering company specializing in the design and complex implementation of investments. We support our clients at every stage of the investment process: from the choice of technology through a feasibility study, program and spatial concept, budgeting, construction projects, detailed designs, completion of deliveries, construction and assembly works, commissioning, start-ups, functional tests and final acceptance of the investment.

BIPRORAF has evolved from a design company to a General Contractor, a company implementing projects mainly in the formula of EP (engineering, procurement) and EPC (engineering, procurement, construction), having an expert project team, global relations with technology suppliers in the Oil & Gas industry and developed experience in construction subcontractors in Poland (reinforced concrete, steel, structures, buildings, piping, etc.).



## BIPRORAF'S experience in the field of hydrogen projects:



**Hydrogen  
production plant**  
for customers from  
the Oil & Gas industry

Implementation of installations based on steam reforming, production of 4.0 quality hydrogen from methane. EPC projects built to the highest safety standards.



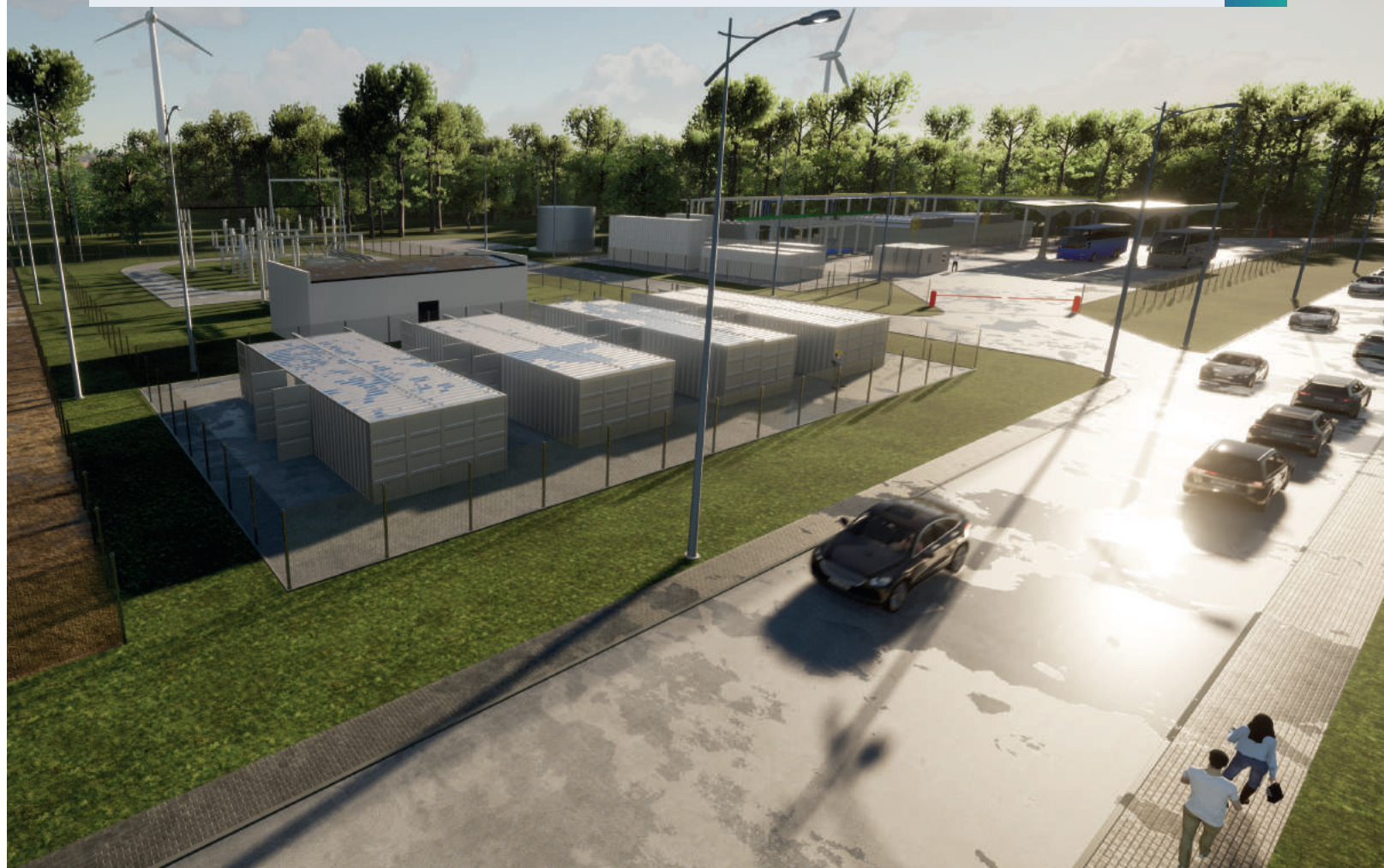




## Hydrogen Purification to 5.0 for Oil & Gas customers

Installations based on innovative technologies, hydrogen purification to 5.0 quality for automotive needs with a capacity of 500 Nm<sup>3</sup> / h (1000 kg / day). EPC projects which, in addition to the technology, include the compression process (up to 500 bar) and storage in high-pressure tanks with refueling for tube trailers.





## Green Hydrogen

for private customers

Construction of installations in the EPC formula for the production of green hydrogen based on renewable energy and the electrolysis process. We design and build some of the first installations in Poland for the production, compression, storage and distribution of green hydrogen - for cars, buses and forklifts..

## Hydrogen Refueling Stations (HRS)

We design and deliver technology with engineering supervision to the first public HRS stations in Poland in the largest cities in the country.







Oil &amp; Gas

Chemical  
IndustryPower  
Engineering

Construction

- ➔ 5,000 multi-sector installation projects
- ➔ 40 years of experience and uninterrupted activity
- ➔ EPC experience in the of turnkey installations
- ➔ INVESTMENT SUPERVISION support for foreign investors



## Engineering Procurement Construction (EPC)

- ➔ Project management
- ➔ Preparation of the investment schedule
- ➔ Preparation of project documentation
- ➔ Technology contracting and arrangements with licensors
- ➔ Contracting of devices and apparatuses
- ➔ Contracting of contracting companies
- ➔ Construction and assembly works
- ➔ Inspections
- ➔ Start-ups
- ➔ Tests





## The most important **BIPRORAF** projects

### Projects for ORLEN Group – the largest multi-energy concern in CEE:

- Design, delivery and construction of a turnkey installation for the production of propylene glycol (1,2-MPG) by converting distilled glycerin 99.5%, with an efficiency of 30,000 tons per year (Glycol Installation) with Auxiliary Installations, i.e. Installation Glycerin purification and the Hydrogen Production Installation and Additional Infrastructure
- Implementation in the „EPC” formula Modernization of the DRW III installation to increase the yield of high-margin products
- Replacement of condensing turbines with highly efficient electric motors (in EPC formula)
- Metathesis Installation



## The most important **BIPRORAF** projects

- Implementation of fire protection recommendations in main buildings at EDF Poland
- Construction of a new VRU installation in the EPC turnkey formula for Lotos Group
- Adaptation of the bitumen oxidation installation to new technological recipes for Lotos Group
- Innovative INNUPS wastewater treatment installation for PGE Energia Ciepła at EC Gdynia
- Implementation of fire protection recommendations in main buildings at EDF Poland at the Coast branch in Gdańsk

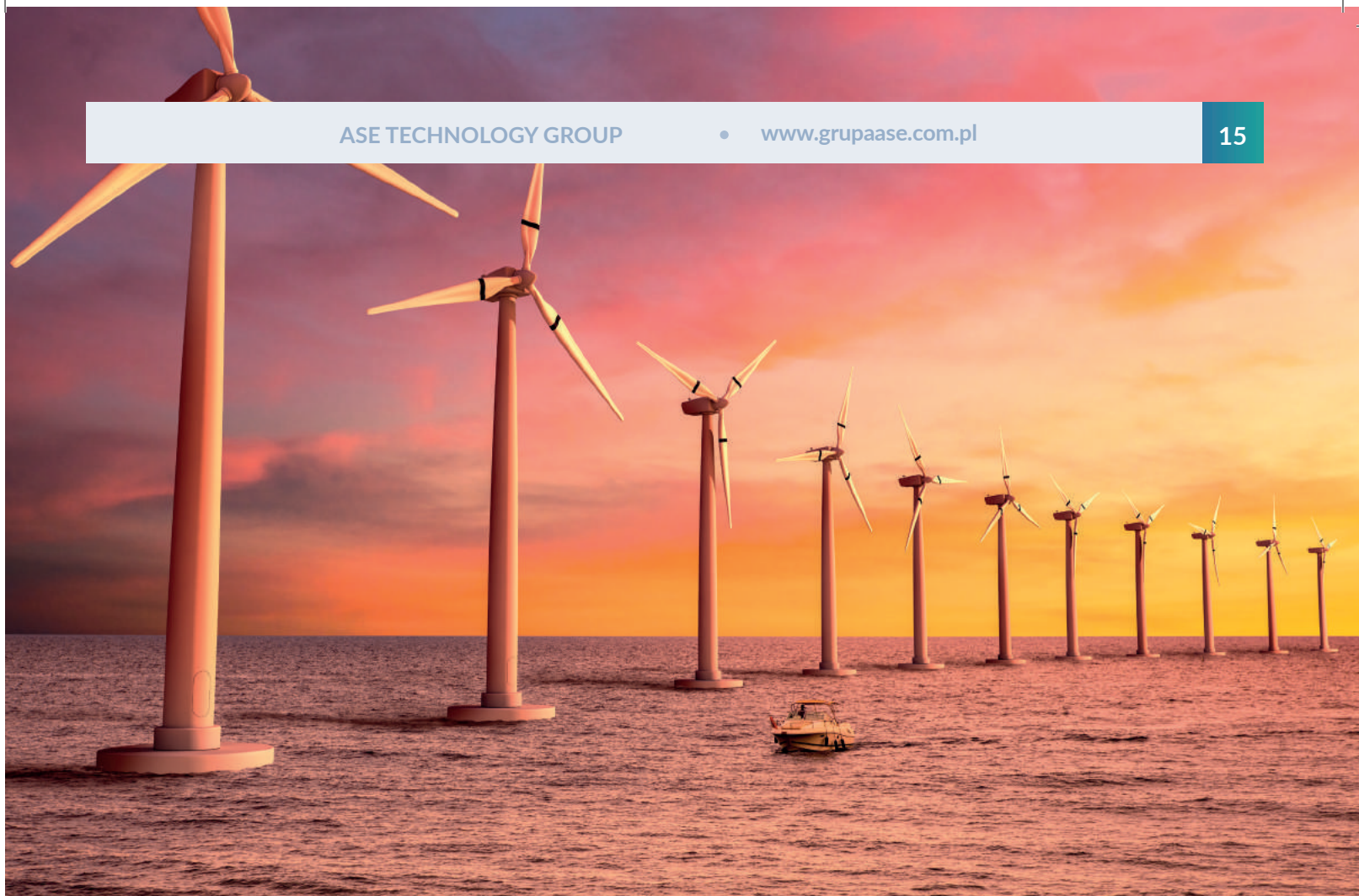




## CONCEPTS for a green future

**BIPRORAF** designs and implements, together with all supplies, projects in the field of green hydrogen production based on electrolyzers by global producers. We also provide expert technical consultancy services, preparing, inter alia, technical concepts of such projects. The partners are not only companies from the Oil & Gas industry but also public and private sector companies (the largest production and energy companies in Poland) actively participating in the green energy transformation. The production range includes electrolyzers.

The production range includes electrolyzers with a capacity of 50 kg to even 4,500 kg (10 MW) per day, along with the entire infrastructure - water treatment, H<sub>2</sub> drying, compression, storage and refueling. Already at this stage, BIPRORAF has established partnerships with technology suppliers from the USA, Canada and Europe in the field of electrolyzers (PEM, AEM - all sizes), high capacity compressors, high pressure tanks, filling and refueling systems.



## Eko-Konsult LTD

**EKO-KONSULT** is a consulting company providing safety services for industry and the environment, supporting the energy market, including offshore in the Oil & Gas and renewable energy sectors, as well as other sectors of the industry: chemical, petrochemical, mining and food in the stages of environmental consulting (e.g. environmental documentation), hazard and risk, explosion, fire-protection analyses as well as in SEVESO, HAZOP or SIL. EKO-KONSULT participates in numerous

projects in the maritime and coastal zones, including for the storage and transmission of natural gas or for the exploration and production of crude oil and natural gas at sea. EKO-KONSULT participated in the preparation of a report on the environmental impact of offshore wind farms for MEWO S.A. and prepared an analysis of the provisions of several decisions on environmental conditions for offshore wind farms for CDM Smith. It is also a permanent partner of Lotos Petrobaltic S.A.



## EKO-KONSULT experience in the field of hydrogen projects:



### **Pure H<sub>2</sub> (5.0)** for Grupa Lotos, Gdansk

Participation in the Pure H<sub>2</sub> Project Information Card covering the scope of the analysis of legal conditions and sources of information regarding the implementation of the planned project, development of environmental analyses in the field of fauna and flora and protected areas, as well as issues in the field of informing the public - an information campaign regarding the planned project.



### **Hydrogen Production plant** for a customer from the Oil & Gas industry

Conducting audits and technical supervision for the installation of the Hydrogen Plant implemented by BIPRORAF.

ASE Technology Group carries out **green oil chemistry** projects





**Replacement of the C100  
compressor efficiency  
control system  
in the Hydrogen  
Recovery Installation  
for PKN Orlen, Płock**

Replacement of the C100 compressor efficiency control system at the Hydrogen Recovery Installation:

**Stage I** - Analysis of the existing technological and technical documentation of the indicated systems

**Stage II** - HAZOP and SIL analysis for specific technological systems

**Stage III** - Preparation of the final report on the HAZOP and SIL study.

Performing HAZOP, SIL, fire safety, explosion safety analyses as part of the project to develop and design a power-to-gas (P2G) system based on a stack of electrochemical cells with solid oxide operating in the electrolyser mode.



**Analysis for the Institute  
of Power Engineering,  
Research Institute**





## Hydrogen Academy

EEKO-KONSULT is the originator and coordinator of the Hydrogen Academy of a series of profiled training courses taking into account the development of hydrogen technologies and the increased risks associated with the production, distribution and storage of hydrogen.



## Hydrogen Webinars

EKO-KONSULT conducts hydrogen webinars together with a demonstration of exemplary 3D models of hydrogen production and refueling installations, presenting the applied fire and explosion protection solutions.





## ASE STUDIO

Our studio is a team of specialists from all industries needed to complete the project: architects, interior designers, artists, constructors, engineers. We comprehensively conduct our clients' investments, from the initial conversation about the idea, to supervision and interior design. We make detailed visualizations of the interior or the body of the building, paying special attention to every smallest detail. We strive to implement projects that offer integration between the built environment and its

natural context. We promote the design and construction of facilities integrated with flora adequate to the climate zone. Our philosophy is Biophilic design - a concept used within the building industry to increase occupant connectivity to the natural environment through integrating nature into urban design and planning.

We invite you to cooperation:  
[www.asestudio.pl](http://www.asestudio.pl)







## ASE ATEX LTD

In the beginning of ASE ATEX in 2011 the company's main focus was primarily on the selection and delivery of explosion protected electrical equipment by the German manufacturer R. Stahl. Currently, the scope of activity includes: electric heating systems, explosion protection, gas, flame, leakage and emission detection, fire detection and extinguishing, solutions for tanks, measuring instruments, technological installations and devices as well as IT systems for industry.

Along with the development of the market, the scope of activity also evolved. ASE ATEX handles projects from design, through the selection, delivery and installation of optimal solutions,

We focus on ensuring fire and explosion protection in industrial installations.

as well as subsequent service. The acquired competences allowed to undertake small EPC (sEPC) projects and turnkey projects. The interdisciplinary experience and knowledge allow us to operate in a wide spectrum.

## SELECTED PROJECTS

**Water fire fighting installations** for new coal feeding system at the power plant

- More than 9000 m of pipelines
- More than 500 t of steel
- VDS Standard

Complex **fire protection solutions** in aluminium powder production plant

- Fire detection and signalization systems for the entire production plant
- Gas extinguishing system with argon agent  
Gas detection systems
- Aspirating gas detection systems for monitoring O<sub>2</sub> level in explosion protection function

**Modernization of the fire protection system** of the ship docking station in methanol terminal

- Preparation of the detailed design for methanol ship terminal modernization
- Relocation and commissioning of water-foam monitors
- Delivery the remote control unit for fire monitors
- Delivery, installation and startup of 2in1 CCTV and fire detection cameras on docking station
- Modernization and relocation of existing fire water pump station



**ASE ATEX** experience  
in the field of hydrogen  
projects:



### **Hydrogen Production plant** for a customer from the Oil & Gas industry

Deliveries of EX devices and carrying out implementation consultations in the field of EX zones during the implementation of projects by BIPRORAF.



## PRODUCTS & SOLUTIONS



### Fire Suppression

- Fire detection and extinguishing systems
- Water and foam fire extinguishing systems
- Gas extinguishing systems
- Spark detection and extinguishing
- Ventilation and smoke extraction systems



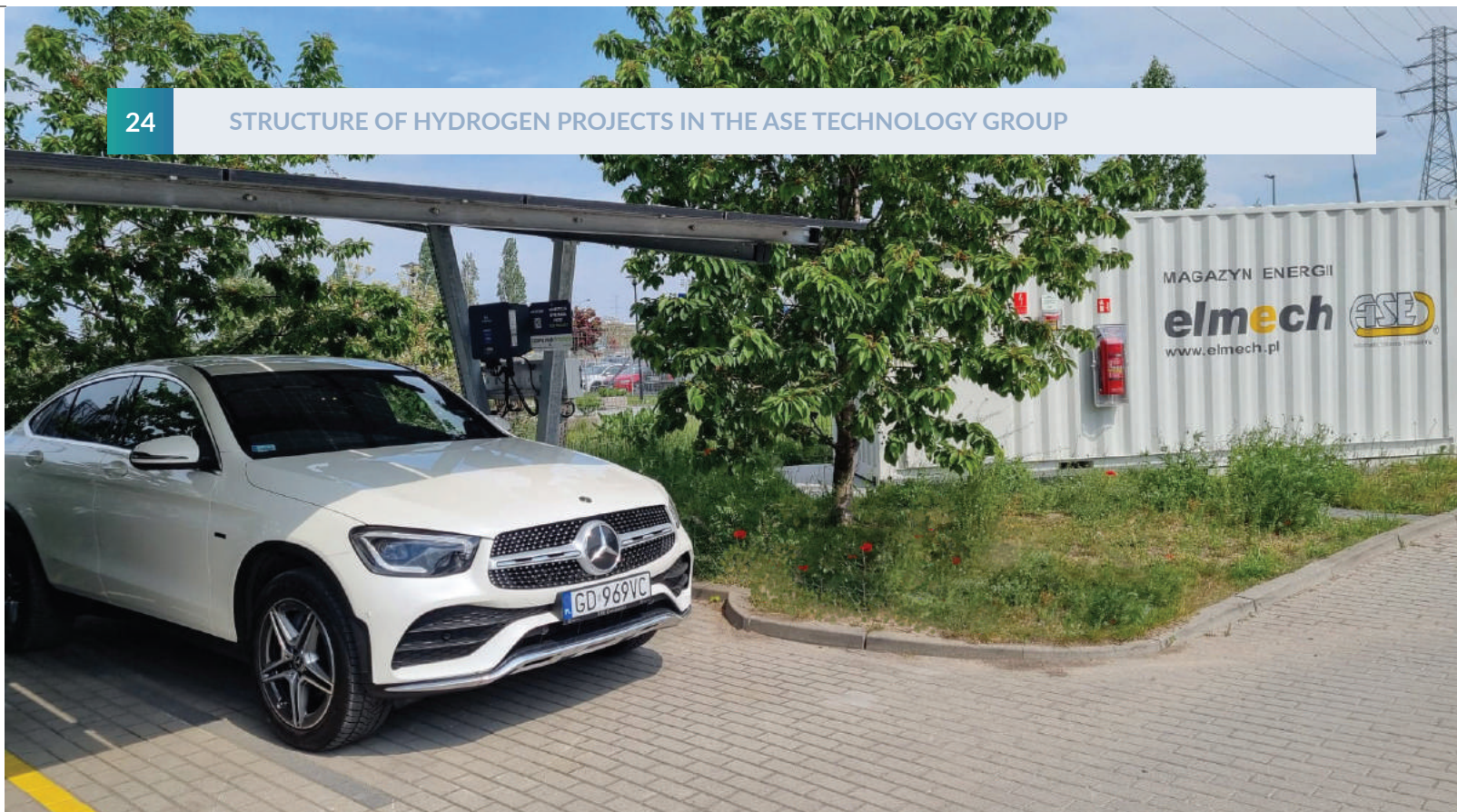
### Gas & Flame Detections

- Gas detectors
- Flame detectors
- Central units for detectors
- Signalling devices
- Portable detectors

Our mission: providing products and solutions to make the industry safe







## ELMECH-ASE LTD

ELMECH is a member of the Polish Energy Storage Association

ELMECH-ASE is a company that was established on the Polish market in 1987. From the beginning of its activity, it has been involved in the design and production of electronics and power electronics. The company has developed many innovative designs for guaranteed power supply, energy conversion, charging, battery supervision and management, and energy quality improvement. Currently, based on their own studies, they implement system solutions to improve energy quality and power management in industrial plants fit for the 21st century. ELMECH-ASE offers a whole range of devices for improving the quality of electricity, both for specific receivers and entire segments of the power grid. The parameters of the devices are selected individually for the needs of specific applications, and all construction activities are preceded by precise measurements of parameters that need to be corrected.

**ELMECH - ASE** experience in the field of hydrogen projects:



**Renewable energy sources  
(RES)**

ELMECH-ASE has designed and implemented a modular, scaled, prosumer photovoltaic installation with an energy storage with the ability to eliminate micro power failures and to compensate for reactive power in the low voltage power grid managed by the system along with its delivery.

## What is Energy storage?

The storage process converts and stores electricity from a given source into another form of energy that can be converted back into electricity when needed. In addition, energy storage is a key element in improving both the stability of supplies and the quality parameters of the supplied energy.

## Our energy storage facilities:

- work with RES installations
- work with car chargers (EV)
- manage electricity in peak / off-peak tariff zones
- stabilize the power supply and constitute an emergency power supply

## Advantages of energy storage:

- ensuring energy supplies when there is no production,
- covering the increased demand
- stabilization of voltage and other power parameters
- better management of produced or purchased electricity, minimization of electricity costs
- a source of immediate energy
- regulation function at peak load
- balancing energy networks
- energy stability
- change of a virtual warehouse with a discount system to a physical warehouse with 1: 1 energy reception

**energate** ENERGY STORAGE POWERED BY  
**elmech**





## PROJMORS LTD

We participate in the development of offshore wind energy.

Owing to experience in offshore construction, as well as to cooperation with partners from Poland and abroad, we develop our potential in the field of offshore wind energy.

PROJMORS is a leading design office on Polish Marine Waters. One of the dynamically growing sectors at the Polish sea is offshore wind energy industry.

Offshore wind energy is the fastest developing technology in the area of energy generation from renewable sources in the world.

Wind energy is one of the main pillars of Polish energy transformation, which may contribute to guaranteeing the country's energy security and strengthening the Polish economy by building a modern and strong supply chain for offshore wind farms.

PROJMORS provides comprehensive support in preparing of designs for offshore wind farms, including obtaining of all necessary permits, opinions, decisions, approvals and ultimately a building permit.

# WE DESIGN A NEW REALITY



PROJMORS provides comprehensive support in preparing of designs for offshore wind farms, including obtaining of all necessary permits, opinions, decisions, approvals and ultimately a building permit.

PROJMORS has been designing hydrotechnical maritime structures since 1948 in Poland and for many locations around the world. We also design and provide permitting services for offshore wind power projects as well industrial, public and military facilities.

Our clients include almost all offshore wind power engineering investors in Poland, several global design offices, ports, shipyards, maritime

authorities, as well as the military, police and organisations managing the national defence infrastructure and NATO infrastructure.

Currently, there are 100 specialists employed in our office. Our staff are highly qualified in a number of areas of engineering, which allows us to carry out projects based on our in-house resources.

**PROJMORS** has provided services in multiple locations around the world. Currently we have international offices in India and Nigeria.





## KEY COMPETENCES AND SERVICES

SEAPORTS, TERMINALS,  
QUAYS, BREAKWATERS

SEA AND INLAND SHIPYARDS

PROJECTS FOR STATE  
DEFENCE AND SECURITY

TURNKEY WORKS

PROJECT MANAGEMENT

OFFSHORE WIND FARMS, OFFSHORE  
PIPELINES, OFFSHORE POWER STATIONS

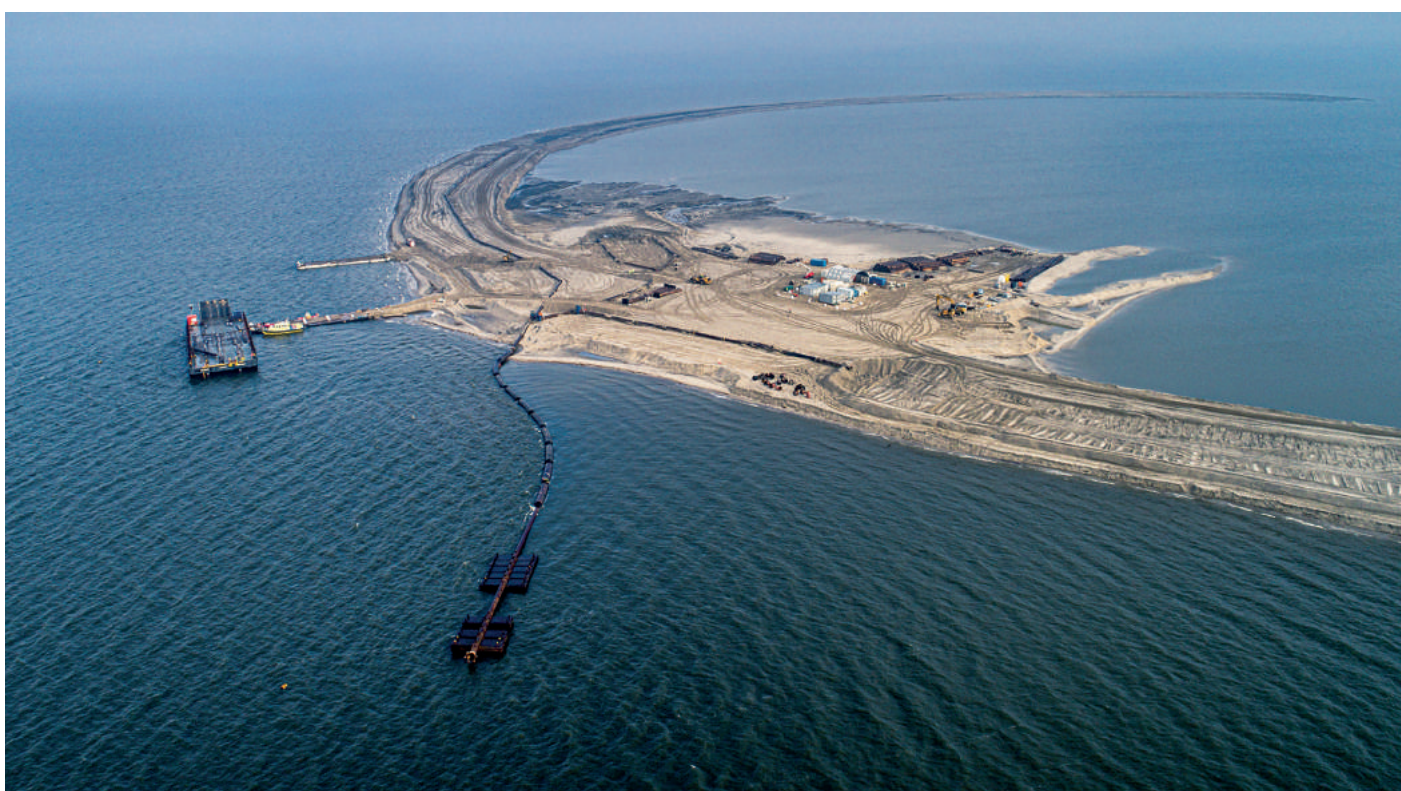
INDUSTRIAL PROJECTS, STORAGE  
AND TRANSHIPMENT DEPOTS

INDUSTRIAL AND PUBLIC UTILITY  
PROJECTS

COMPREHENSIVE ROLE OF A CLIENTS  
CONTRACT ENGINEER IN ACCORDANCE  
WITH FIDIC AND OTHER PROCEDURES,  
AUTHOR'S AND INVESTOR'S SUPERVISION

# THE BIGGEST LATEST PROJECTS

## MODERNIZATION OF THE SWINOUJSCIE - SZCZECIN FAIRWAY



The project objective is to increase the capacity of the 67-kilometre fairway by deepening it from 9.5 m to 12.5 m. Owing to that, larger ships with greater draft will be able to enter the ports. Two artificial islands will be built, too and the natural, unreinforced bank slopes will be redeveloped (engineered). In addition, three manoeuvring basins, those being the Police, Orli Isthmus and Kanal Grabowski, will also be deepened and the navigational aids will be upgraded and adapted to the new fairway geometry.

Image source:  
Dredging International  
nv and Van Oord  
Dredging and Marine  
Contractors by Joint  
Venture



## LNG Terminal with a protective breakwater, **SWINOUJSCIE**

The quay for LNG unloading was the first project of this type in Poland and on the Baltic Sea. The project included the construction of a completely new external port and a terminal for ships up to 215,000 DWT, as well as 3 km of breakwaters with a manoeuvring basin and a 14.5 m deep access channel. Design works are underway pertaining to the extension of the gas port consisting in the construction of the second pier with the entire service infrastructure.



## CENTRAL PORT, **GDANSK**



A new large exterior port, located on the Bay of Gdansk, between the entrance to the Inner Port and the Northern Port. The concept and feasibility study include two container terminals, an LNG (Liquefied Natural Gas) terminal, a shipyard and a passenger terminal. The dock area is nearly 1,400 ha, and the terminals area 410 ha. The breakwater is almost 8,500 m long, and the quay are 19,000 m long.

## VISTULA SPIT CANAL

The investment includes the construction of a ship canal, a sheltering port, a road system with moveable bridges, a lock, the construction of an artificial island, as well as the construction of a fairway and the redevelopment of the River Elblag. The total length of the new waterway will be nearly 23 km and its depth will be 5 m. Ultimately, this waterway will permit vessels up to 100 m long and 20 m wide to enter the port in Elblag. Image source: NDI SA

Image source: NDI SA







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