PÖRNER GRUPPE

PROCESS PLANT ENGINEERING RETHOUGHT

For sustainable productivity

C_3-SPLITTER

Customer: PCK Raffinerie GmbH

Location: Schwedt, Germany

Project: FCC Overcracking Plant

- Production of gas, LPG, gasoline and diesel
- FCC main column with gas concentration unit, LPG purification and separation
- C_3 splitter to produce propylene of polymer-grade quality
- Tallest building at the refinery having a total height of 84 m and a column diameter of 5.2 m

As a specialist in renewable energies and with proprietary sustainable technologies both in construction of new and refurbishment of existing plants as well as with its high level of process competence EDL has become an important part of the Pörner Group. When it comes to larger, international projects our companies complement each other. The synergies resulting from this are beneficial for our customers and contribute substantially to the Group's success.

Andreas Pörner, Managing Partner, EDL – Pörner Group

PROCESS PLANT ENGINEERING RETHOUGHT

Inspiring technologies for the energy transition

Resource efficiency, climate compatibility and renewable energies are just some of the challenges of our time. We need sustainable energy and economic cycles to secure our future and that of future generations.

We as EDL face these challenges and as medium-sized plant engineering company provide innovative and custom-tailored solutions. With our process know-how, we help our customers to successfully implement their projects and thus ensure greater profitability and sustainability.

Since our company was founded more than 30 years ago as a subsidiary of Edeleanu, we have earned an excellent reputation in the refinery and chemical sectors by professional competence and reliability as well as creativity and flexibility and have developed into one of the leading technology-oriented plant engineering companies in Germany.

We serve the domestic and foreign industry with a high level of process expertise and long years' experience, both as technology provider and conventional plant engineering firm in all phases of the project business.

Since 2003 we have been an integral part of the Austrian Pörner Group based in Vienna.

Based on our pioneering technologies and our high professional competence we shape the future together with our customers.

Daniel Oryan, Managing Director (CEO) of EDL Anlagenbau, Leipzig

JETTY

Customer: Globally acting chemical group

Location: North Rhine-Westphalia, Germany

Project:

- New shipping pier
- 160 m long jetty for a total of four loading arms
- New loading arm specifically designed for optimized naphtha unloading
- 1,100 t steel construction incl. loading arm and piping
- Transport in four modules via river Rhine

In the upcoming transformations, it is our ambition to be a competent consultant and implementation partner of leading energy and production companies.

Peter Sanftenberg, Director Financial Services

MISSION AND VISION

It is visions that take us forward.

We as EDL set standards in plant engineering when it comes to quality, technologies, service and safety.

We fascinate our customers with innovative solutions and custom-tailored planning and design: from new plants through to modernization of existing plants. In doing so we capitalize on decades of experience and, to the extent possible we use standardized modular systems and solutions.

Excellent technologies and outstanding services are means to create sustainable values for our customers thus securing their market leadership in the long run.

Our relations to customers, business partners and employees are based on reliability and responsibility.

PROPANE DEASPHALTING

Customer: H&R Ölwerke Schindler GmbH

Location: Hamburg, Germany

Project:

- Construction of propane deasphalting plant (PDA)
- Production of deasphalted oil from vacuum residue by liquid-liquid extraction
- Solvent used: propane

We listen carefully. We watch closely – and put ourselves in the position of our customers in order to find the optimum solution.

Peter Sonntag, Business Development International

INNOVATION MEETS EXPERIENCE

We combine tradition and innovation.

The beginnings of our company go back to Dr. Lazăr Edeleanu who founded in Berlin in 1910 a company to market his process of selective extraction of aromatic compounds by liquid sulfur dioxide.

In 1930, the company was renamed Edeleanu GmbH. Several changes of ownership followed. In 1991, the Edeleanu GmbH Leipzig (EDL) was finally founded as a subsidiary of Edeleanu GmbH with employees from the former Chemieanlagenbaukombinat Leipzig-Grimma (CLG).

In 2003, EDL became EDL Anlagenbau Gesellschaft mbH and part of the Pörner Group.

For decades liquid extraction processes and advanced process technologies have been one of our core competences.

We have gained the trust of leading customers in the industry by first-class solutions and plants in the following sectors:

- Oil & gas
- Lubricants & waxes
- Petrochemicals
- Chemicals
- Renewable energy & specialities.

Iso C_4

Customer: OMV Deutschland Operations GmbH & Co. KG

Location: Burghausen, Germany

Project:

- Production of high-purity isobutene from feedstock of the metathesis plant, installation of storage tanks and tank car loading
- Savings of 20,000 t of CO_2 emissions per year by integration of the new Iso C_4 plant in the existing metathesis plant
- Worldwide first implementation of a novel technology developed by BASF and OMV

Our process competence builds on excellent skills and long years' experience of our process engineers and forms the basis of successful project work.

Jan Schwartze, Director Technology & Process

PROCESS COMPETENCE

In process engineering we lay the foundation for putting customer technologies, processes from renowned licensors and proprietary technologies successfully into practice.

Our process specialists develop complex solutions tailored exactly to the framework conditions, requirements and wishes of customers.

As a trusting and independent consultant we provide advice and assistance to our customers in the important project start-up phase concerning all questions of concept development, selection and procurement of own and third-party technologies. It requires knowledge and expertise which we have gained over many years of engineering, complex process simulations and process designs.

Oil & gas	Lubricants & waxes	Petrochemicals	Chemicals	Renewable energy & specialities
▪ Atmospheric & vacuum distillation ▪ FCC/HC/Visbreaker/ Coker/POX ▪ Extraction ▪ Desulphurization ▪ Hydrotreating ▪ Alkylation ▪ Isomerization ▪ Aromatics ▪ Fischer-Tropsch synthesis ▪ Methanol ▪ Amine treating & acid gas removal ▪ Gas processing	▪ Vacuum distillation ▪ Deasphalting ▪ Extraction/TDAE/ TRAE ▪ Dewaxing ▪ Deoiling ▪ Hydrotreating ▪ Hydrofinishing ▪ Complex greases ▪ Wax packing ▪ Depolymerisation ▪ Used oil re-refining	▪ Butadiene ▪ Propylene ▪ Phenol ▪ Aromatics/BTX Aromatics extraction	▪ Epoxy resins ▪ Bisphenols ▪ Ether/Glycidyl ether ▪ Cyclohexanone ▪ Trichlorsilane ▪ Multi-purpose distillation	▪ Power-to-X/ Biomass-to-X ▪ Direct Air Capture ▪ Carbon Capture & Utilization ▪ Plastics recycling ▪ Infrastructure

SDA PLUS TEST STAND

The necessary process parameters and optimal process conditions are determined at own pilot plants on the basis of customers', process and product requirements.

We assist our customers in using valuable raw materials in an optimal manner for the manufacture of long-lasting products.

Jan Schwartze, Director Technology & Process

SDA PLUS
EDL•TECHNOLOGY

EXTRACTION
EDL•TECHNOLOGY

DEWAXING
EDL•TECHNOLOGY

DEOILING
EDL•TECHNOLOGY

LEPD
EDL•TECHNOLOGY

GREASE
EDL•TECHNOLOGY

AROMEX
EDL•TECHNOLOGY

EDL TECHNOLOGY PORTFOLIO

Inspiring technologies by EDL

The constant improvement of our technological know-how and the development of proprietary technologies is an investment in the future not only for our own company but primarily for our customers as plant operators.

The focus of our process activities is on an improved and in particular sustainable processing of heavy refinery residues and used oils.

Equally being in the centre of attention is the manufacture of climate-neutral fuels and base chemicals on the basis of resource-saving processes meeting all current safety and environmental standards.

Highly specialized and committed engineers pool their wealth of technological know-how and long years‘ experience in plant engineering. Added to the potential is a broad spectrum of advanced software ensuring an efficient outcome of high quality.

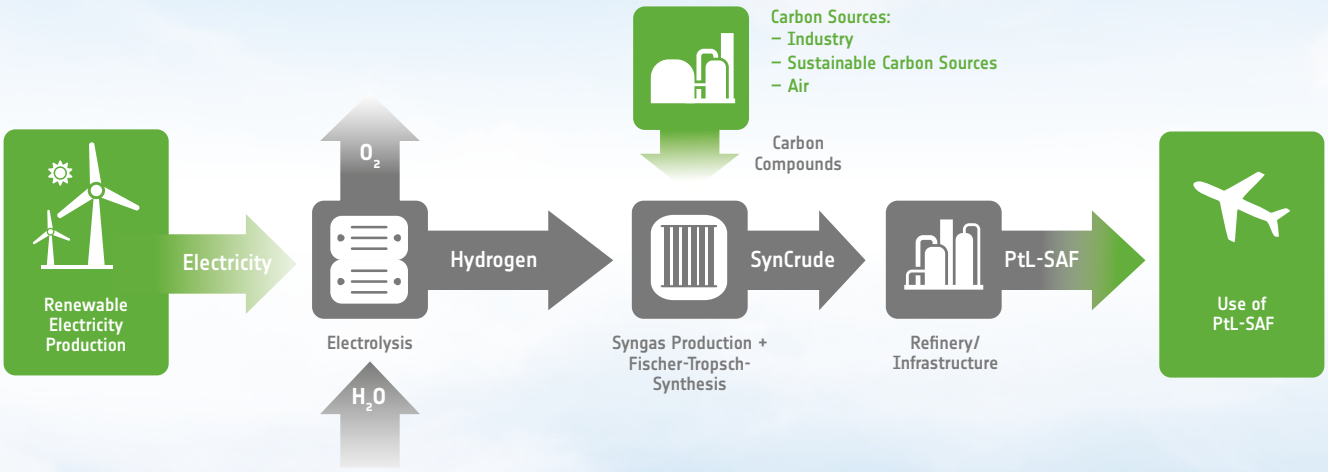
Our technologies in the areas of

- Solvent deasphalting
- Solvent extraction
- Dewaxing
- Deoiling
- LEPD
- Grease
- BTX aromatics extraction

facilitate the production of a variety of premium products, such as environmentally friendly tender oils (TDAE, TRAE) or de-oiled waxes, and largely contribute to our customers’ competitiveness.

POWER2X

EDL•TECHNOLOGY



Our sustainable power-to-X-/biomass-to-X solutions make a major contribution towards reducing greenhouse gas emissions.

Andreas Wind, Head of Technology

HYKERO PLANT

Location: Böhlen-Lippendorf / Germany

Project:
- Development of a plant for industrial production of 50,000 TPA PtL-SAF, PtL-naphtha and green hydrogen
- Feedstock: Renewable electrical energy, sustainable carbon sources and water

FUTURE-ORIENTED PTX SOLUTIONS

With creativity, long years' experience and great enthusiasm for innovations we develop and market trendsetting technologies.

Green hydrogen generated from water and renewable electricity in an electrolysis facility is considered an important part of the energy transition and will also be used in the future to produce so-called efuels, i.e. fuels based on renewable power. They are used in particular in the aviation industry, since there are almost no alternatives to liquid fuels.

As technology-oriented company and system integrator combined with decades of experience in plant engineering we have developed industrial solutions for the generation of power-based Sustainable Aviation Fuel (SAF), also known as Power-to-Liquid (PtL) SAF.

Quality features include:

- industrial operational safety
- superior CO_2 efficiency
- full scalability
- standard-compliant, high-quality SAF products.

These are achieved not least by the integration of processes from world leading system partners into EDL technologies.

Whether energy transition, resource conservation or digitalization – plant engineering is the key to ecological transformation. We are actively shaping this change: through efficient systems, future-proof technologies and holistic thinking.

Daniel Oryan, CEO

USED OIL RE-REFINING

Customer: Puralube GmbH

Location: Tröglitz, Germany

Project:

- Technological quantum leap: world's first production of base oils API Group III from used oils
- Expansion of the HyLube2 plant by a new process stage engineered by EDL in due time and within the stipulated budget

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The processes applied in the industrial production of base oils from used oils set new standards in terms of energy savings and CO_2 emission prevention.

COMMITTED TO MORE SUSTAINABILITY

We take responsibility for the sustainability of our activities.

Sustainability means for us to think about tomorrow today and safeguard the basis of existence of future generations which includes, for example, the conservation of limited resources and responsible conduct towards fellow humans at all levels. Our organizational structures and processes are reviewed regularly to ensure sustainability.

Our novel, climate-friendly technologies and innovative solutions, for example, make a valuable contribution to the reduction of CO_2 emissions and help to adapt to the effects of climate change (goals 9, 12 and 13 of the Agenda 2030 of the United Nations).

All services for new plants and plant modernization from one source with professional project management at all stages

Studies & Project Development

- Value engineering
- Conceptual design
- Process optimization
- Energy & safety-related optimizations
- Risk assessment
- Cost-effectiveness analysis
- Plant evaluation
- O&M philosophies
- Project financing
- Pilot testing

Basic Engineering & FEED

- Basic engineering/FEED
- Process simulation (steady state/dynamic)
- PINCH analysis
- Fired heater analysis
- Flare network calculation
- HAZID/HAZOP
- Process safety engineering
- Authority engineering
- Cost estimation

Detail Engineering & Procurement

- FEED check
- Detail engineering
- Constructability review/4-D analysis
- Procurement
- Shipping & forwarding
- Material management
- Expediting & Inspection
- Cost & schedule control

Construction & Commissioning

- Construction supervision
- Subcontractor management
- Quality control
- Cost & schedule control
- Training
- Pre-commissioning & commissioning
- Start-up preparation & support
- As-built documentation
- Digitalization

FROM STUDIES THROUGH TO EPCM/EPC IMPLEMENTATION

Maximum flexibility for optimal solutions

Each process plant is unique and has its own complexity and specific requirements. Technical and commercial processes have to be planned and coordinated in an exact manner.

Our performance portfolio enables us to cater to the specific needs of our customers and their project requirements.

With our engineering services in all disciplines of plant engineering and advanced tools we create the best solutions for our customers.

Engineering from a single source

- of high quality
- on schedule
- resource-saving
- cost-efficient

From consulting service, conceptual design, planning and procurement through to construction and commissioning we provide both individual services and complete packages – individually tailored to customer needs and always following the latest developments.

Robert Kühberger, Director Engineering

PCK SHUTDOWN „KLEINER 16“

Customer: PCK Raffinerie GmbH

Location: Schwedt/Oder, Germany

Project: Execution of 4 projects in parallel during complex shutdown of the refinery:

1. Crude oil 1 plant: Revamp of vacuum section with new vacuum column
2. Crude oil 1 plant: Revamp of stripper section with new stripping column
3. FCC plant: Revamp of regenerator section with new regenerator
4. FCC plant: Revamp of LCO recovery

- Project execution meeting the quality standards, deadlines and budget without any accident.
- A true logistical feat was the replacement of the regenerator of the FCC plant: temporary drive-over bridges, demolition of the entire regenerator periphery, five heavy lifts in narrow conditions.
- Modular pre-dressing of the vacuum column in three segments as well as of the stair tower with precisely planned dismantling and installation sequences to meet the stipulated shutdown time.

… Thanks go out to all colleagues who paved the way for this success, also to the colleagues of the partner companies who day by day kept working hard, with iron determination, disciplined and with a due portion of fun in all weathers for and with PCK in the four weeks of PCK-TÜV’s “kleiner”. It was a delight to work with service providers who are the best. …

Josef Maily, PCK CEO
Thomas Schulze, Shutdown Manager “kleiner” in special edition of Märkische Oderzeitung

DECADES OF EXPERIENCE IN LARGE-SIZE REVAMPS

EDL – the revamp specialist

With a wealth of successfully completed large-size projects across Europe we are specialists for revamps in refineries.

The complex conversions of plants and plant units within short shut-down periods do not only require a wealth of experience at the site but also a very thorough preparation.

With profound expertise and long years' experience in revamps during TAR/T&I we ensure the adherence to tightest deadlines. We serve our customers in all technical issues throughout the entire lifecycle of the project – competently and with a sense of proportion:

- Tailor-made process-related solutions to upgrade existing plants
- Active implementation of innovative technologies and new technical solutions
- Competent and efficient project and site management
- Preparation and implementation of the most advanced safety-related and environmentally compatible plant concepts
- Execution of revamp measures during extremely short shutdown periods
- Precise planning of dismantling and installation activities as well as preparation of detailed logistics concepts for the transport of special equipment.

Benefits for our customers:

- Maximization of plant efficiency with minimum revamp costs and shortest shutdown periods
- Higher product yields
- Improved product qualities
- Greater operational safety
- Optimization of operating costs
- Minimization of energy consumption
- Increase of environmental compatibility

The implementation of modernization projects gives customers a long-term added value because it gets easier to meet market requirements and competitiveness can be increased.

Daniel Oryan, CEO

METHYL CELLULOSE PLANT

Customer: DOW Deutschland Anlagenbaugesellschaft mbH

Location: Bomlitz/Bitterfeld, Germany

Project: Plant extension to increase the production capacity of methyl cellulose at Bitterfeld and increase the blending and loading capacities in Bomlitz

We engineer and build industrial plants and units reliably, safely and sustainably as well.

Thomas Wendt, Head of Quality/HSE Management

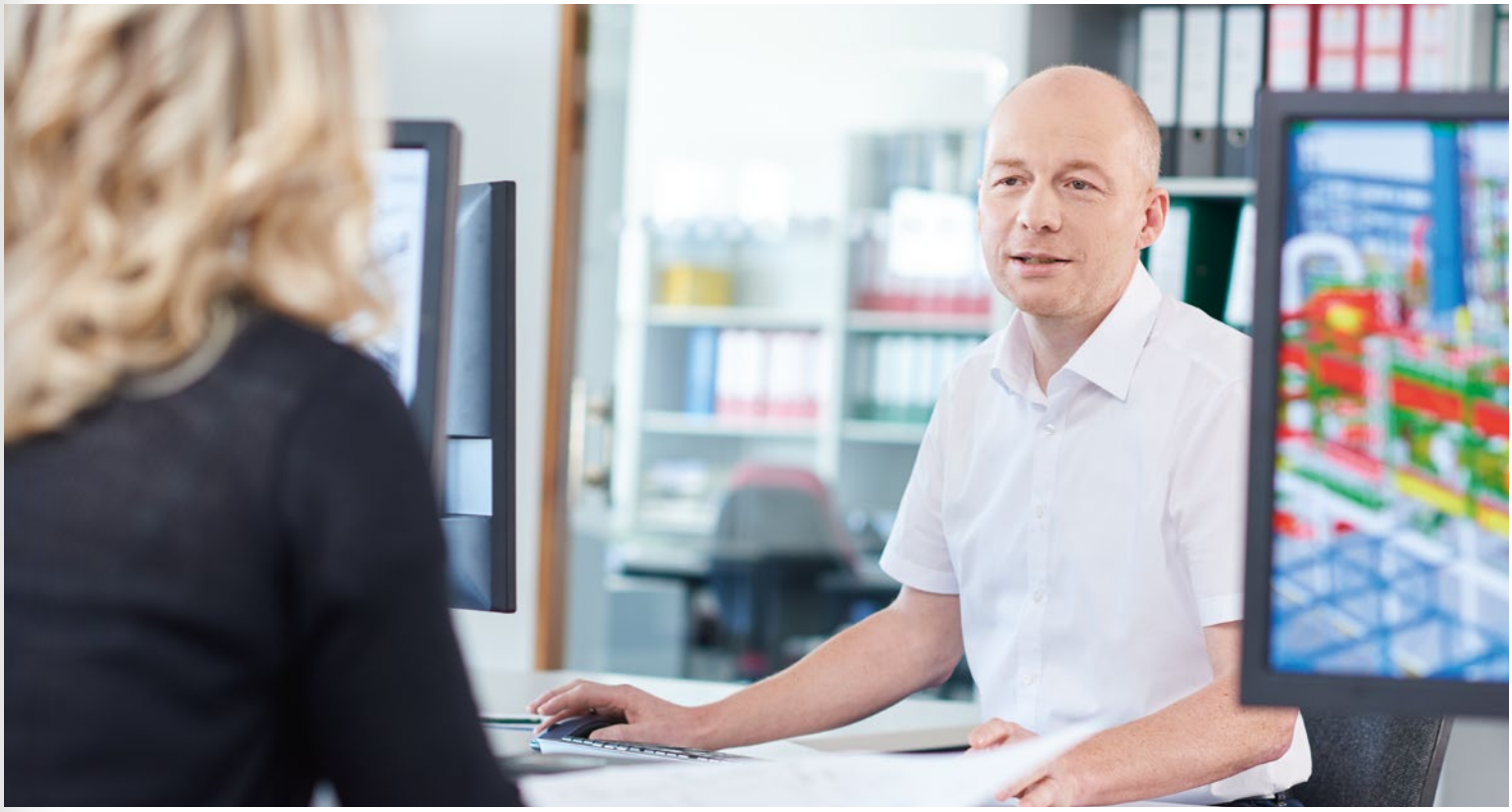

CERTIFICATE

TÜV AUSTRIA

Management system as per EN ISO 9001:2015 and SCC**:2011

EDL Anlagenbau Gesellschaft mbH
Lindenthaler Hauptstraße 140
D-04158 Leipzig

Licensing, process design, engineering, procurement, construction supervision, commissioning and start-up of plants and systems for the oil, gas, chemical, petrochemical and pharmaceutical industry, biotechnology



QUALITY CREATES CONFIDENCE

Outstanding quality and quality assurance are our aspiration. It applies to each individual member of staff – every day.

Our quality policy is aimed at meeting the requirements of our customers and our own strict standards especially when it comes to costs and deadlines. This aim is achieved by a stringent system of quality assurance in all phases of project execution.

Safety, health and environmental protection are central elements of our corporate activities and a major prerequisite for the high quality of our services and our business success. For all activities and work processes we follow an efficient HSE management system and are guided by the following principle: Life and health of humans are what counts.

FLUE GAS DESULFURIZATION

Customer: Gunvor Raffinerie Ingolstadt GmbH

Location: Ingolstadt, Germany

Project:

- Engineering and installation of a flue gas desulfurization unit for efficient reduction of sulfur dioxide emissions

 © Gunvor Raffinerie Ingolstadt

PROFESSIONAL PROJECT EXECUTION

The needs of our customers are always in the focus of our work.

Permanent orientation to our customers' requirements plays a major part in our daily activities.

It also means transparency in project execution because mutual trust is the basis of a successful partnership. At the same time our customers are involved in all major decisions.

Our customer-oriented execution concept is characterized by:

- Transparency and communication across all levels – from the executive level via specialized departments through to the specialist engineer
- Project manager acts as one face to the customer, with full responsibility for cost, schedule and quality
- Efficient management of interfaces
- High degree of network integration using most advanced software.

Optimal project results for the customer are achieved through close cooperation of all parties involved – because viable solutions can only be developed together.

Luis Villalobos, Director Project Execution

PÖRNER GRUPPE

TECHNOLOGY
ENGINEERING
CONTRACTING

EDL ANLAGENBAU GESELLSCHAFT MBH

Headquarter Leipzig
Lindenthaler Hauptstraße 145 | 04158 Leipzig | Germany
Phone: +49 341 4664-400

Cologne office
Alfred-Nobel-Straße 29 | 50226 Frechen | Germany
Phone: +49 341 4664-400

Email: gf@edl.poerner.de

www.edl.poerner.de