



Competence in Plant Engineering

C₃ SPLITTER

Customer: PCK Raffinerie

Site: Schwedt/Germany

Project: FCC Overcracking Plant

- Production of gas, LPG, gasoline and diesel
- FCC main column with gas concentration unit, LPG purification and separation
- C₃ 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 refurbishment and revamps as well as with its technologies and process competence EDL has become an important part of the Pörner Group. We are glad about the good cooperation of the individual sites. The synergies resulting from it are beneficial for our customers and contribute substantially to the Group's success.

Peter Schlossnikel and Andreas Pörner, Managing partners of the Pörner Group

COMPETENCE IN PLANT ENGINEERING

Everything we do, we do with passion for plant engineering.

Rapidly changing market conditions, stricter environmental laws and dwindling resources force plant owners increasingly to look for new ways to keep their products competitive and come with new, high-quality products respectively.

We as EDL face these challenges and as medium-sized plant engineering company provide innovative and custom-tailored technological solutions – from feasibility studies through to turnkey plants.

Based on a long history and after the refoundation about 25 years ago as a subsidiary of the traditional Edeleanu we have established an excellent reputation in the refinery

and chemical sectors by professional competence and reliability as well as creativity and flexibility. This is not only true to the domestic German market but also to an international environment.

We serve the industry with our process know-how and many years of experience both as technology provider and conventional plant engineering company in all phases of the project business.

Since 2003 EDL has been an integral part of the Austrian Pörner Group based in Vienna. The Pörner Group is an international engineering network with over 500 engineers at eight locations.



From consulting, conceptual design, planning and procurement through to construction and commissioning we provide an allround no-worry package custom-tailored to the requirements and always being state-of-the-art.

Dr. Michael Haid and Wolfgang Kursch, Managing Directors of EDL Anlagenbau Gesellschaft mbH, Leipzig

VACUUM DISTILLATION

Customer: PCK Raffinerie GmbH

Site: Schwedt/Germany

- Project:**
- Replacement of vacuum column
 - Improvement of energy efficiency of vacuum distillation unit
 - Conversion to modern deep-cut operation



It is our ambition to be a competent partner and consultant of leading refineries and chemical companies.

Dr. Michael Haid, CEO



IT IS VISIONS THAT TAKE US FORWARD

Mission and Vision

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, revamps of existing plants through to demanding engineering services. In doing so we capitalize on decades of experience and, to the extent possible we use standardized modular systems and solutions.

Our relations to customers, business partners and employees are based on reliability and responsibility, and constant improvement is what we want to achieve.

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

PROPANE DEASPHALTING

Customer: H&R Ölwerke Schindler GmbH

Site: Hamburg/Germany

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



We are committed to our long-standing plant engineering tradition in Leipzig. We want to achieve an even greater recognition of Leipzig's plant engineering as a byword for quality, creativity and reliability beyond our national borders.

Andreas Liebscher, Head of Sales Division



WE COMBINE TRADITION AND INNOVATION

For decades liquid-liquid extraction processes and advanced process technologies have been among our core competences.

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. After several changes of ownership the Edeleanu GmbH Leipzig (EDL) was finally founded in 1991 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 Pömer Group.

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

- Oil & gas
- Lubricants & waxes
- Petrochemistry
- Chemistry
- Renewable energies & specialities



CRUDE OIL DISTILLATION

Customer: OMV Refining & Marketing GmbH

Site: Schwechat/Austria

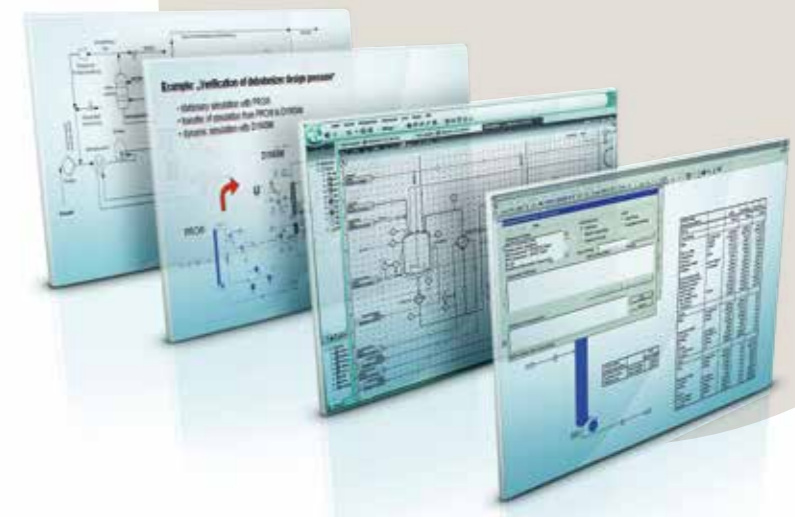
Project: Modernization of crude oil distillation plant (TD4) in several phases to increase plant capacity

- Stabilization of naphtha from main column and pre-flasher
- Stable parallel operation of two reboilers of the stabilization column by reboiler output control



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

Dr. Rolf Gambert, Head of Process Engineering Division



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 reliable 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 gained in calculating, process simulations and process design over many years.

Oil & Gas	Lubricants & Waxes	Chemicals	Petrochemicals	Renewable Energy/Specialities
<ul style="list-style-type: none"> ▪ Crude & vacuum distillation ▪ FCC/Visbreaker ▪ Coker ▪ Extraction ▪ Desulfurization ▪ Hydrotreating ▪ Alkylation/Isomerization ▪ Fischer-Tropsch synthesis ▪ Methanol ▪ Amine treating ▪ Acid gas removal ▪ Gas processing ▪ Utilities & offsites 	<ul style="list-style-type: none"> ▪ Deasphalting ▪ Extraction ▪ Dewaxing/Deoiling ▪ Hydrotreating/Hydrofinishing ▪ Grease & lube blending ▪ Wax packing ▪ Depolymerization ▪ Spray micronization ▪ Used oil re-refining 	<ul style="list-style-type: none"> ▪ Epoxy resins ▪ Bisphenols ▪ Glycidyl & other ethers ▪ Cyclohexanone ▪ Trichlorosilane ▪ Multi-purpose distillation 	<ul style="list-style-type: none"> ▪ Butadiene ▪ Propylene ▪ Phenol ▪ Aromatics ▪ BTX aromatics extraction 	<ul style="list-style-type: none"> ▪ Power-to-X (e-fuels, e-waxes, e-chemicals) ▪ Photovoltaic ▪ CHP plants ▪ Plastics recycling ▪ Pilot plants



SDA 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.



With mature technology and equipment coupled with low investment and operating costs we provide for sustainability on our customers' side.

Jan Schwartz, Head of Technology

EDL TECHNOLOGIES

EDL offers efficient processes for the production of premium products.

SDA PLUS **EXTRACTION** **DEWAXING** **DEOILING** **MICRONIZATION** **AROMEX**
EDL-TECHNOLOGY EDL-TECHNOLOGY EDL-TECHNOLOGY EDL-TECHNOLOGY EDL-TECHNOLOGY EDL-TECHNOLOGY

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 chemical base materials on the basis of resources-saving processes meeting all current safety and environmental standards.

Highly specialized and committed engineers pool their wealth of technological know-how and many years of 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
- BTX aromatics extraction
- Spray micronization

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



**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 assessments
- Cost-effectiveness analysis
- Plant evaluation
- O&M philosophies
- Project financing (ECA, structured, etc.)

Basic Engineering & FEED

- Basic engineering/FEED
- Process simulation (steady state/dynamic)
- PINCH analysis
- Fired heater analysis
- Flare network calculation
- HAZID/HAZOP
- Authority engineering
- Advanced process control (APC)
- Operator training simulator (OTS)
- Cost estimation

Detail Engineering & Procurement

- FEED check
- Detail engineering
- Constructability review
- Procurement
- Shipping & forwarding
- Expediting
- Inspection & QA/QC control
- Cost & schedule control

Constructing & Commissioning

- Construction supervision
- Subcontractor management
- Quality inspection
- Cost & schedule control
- Training
- Pre-commissioning & commissioning
- Start-up preparation & support

**FROM STUDIES THROUGH
TO EPCM/EPC SOLUTIONS**

Maximum flexibility for optimal solutions

Each process plant is unique. Each 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 exactly meet 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 one source

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



*The art of planning lies in forestalling
the difficulties of execution.*

Wolfgang Kursch, Managing Director

PCK SHUTDOWN „KLEINER 16“

Customer: PCK Raffinerie GmbH

Site: Schwedt/Germany

Project: Execution of 4 projects in parallel during complex shutdown of the refinery in 2016:

1. Revamp of crude oil 1 plant:
Replacement of vacuum column
 2. Revamp of FCC plant:
Replacement of regenerator
 3. Revamp of crude oil 1 plant:
Replacement of stripper column
 4. Revamp of FCC plant: 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
 - Optimized prefabrication for the replacement of the vacuum column with precisely planned dismantling and installation sequences during shutdown



EXPERIENCE FROM OVER 50 LARGE-SIZE REVAMPS

EDL – the revamp specialist

With over 50 completed large-size projects across Europe we are specialists for revamps in refineries.

The complex conversions of plants and plant units within short shutdown 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



... 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 diligence, determination, discipline and with a due portion of fun in any wind and weather for and with PCK in the four weeks of PCK-TÜV „kleiner“. It was a pleasure to work with service providers who are brilliant ...

Josef Maily, PCK CEO

Thomas Schulze, Shutdown Manager „kleiner“ in special edition of Märkische Oderzeitung

The implementation of modernization projects gives customers a long-term added value because market requirements can be met in a target-oriented manner and competitiveness can be increased.

Klaus Schneider, Head of Project Management Division

BISPHENOL TMC

Customer: Toyo Engineering Corporation for Hi-Bis GmbH

Site: Bitterfeld/Germany

Project: Production plant for Bisphenol TMC from phenol and acetone



It is our aim to engineer and build industrial plants reliably, safely and sustainably. To this end we implement our quality, safety, health and environmental policy.

René Pelz, Head of QA/HSE Management



QUALITY THAT SPEAKS FOR ITSELF

Beside competitiveness, flexibility and adherence to schedule the safety, health and environmental protection and the quality assurance is of special importance in plant engineering.

It is therefore our objective to always meet the requirements of our customers and our own strict requirements. The tool to achieve it is a complete system of quality assurance in all phases of project execution.

Safety comes first. Life and health of humans is what counts above all. Our employees are guided by this principle in everything they do and in all work processes.





CERTIFICATION IN RUSSIA

For several years EDL has been certified in Russia and thus is entitled to perform engineering services, construction and installation services for the Russian refining industry according to Russian standards.



THE NEEDS OF OUR CUSTOMERS ARE ALWAYS IN THE CENTRE OF OUR ATTENTION.

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

Our customer-oriented execution concept is characterized by:

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.

- project management 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



It is the close cooperation of all parties involved in the project that helps achieve the project goal with optimal results.

Lutz Nündel, Head of Plant Design Department



DESULFURIZATION PLANT
Customer: PAO „Tatneft“
Site: Nizhnekamsk, Republic of Tatarstan, RF
Project: 2 HDS plants for diesel and kerosene



ENGINEERING & CONTRACTING

EDL ANLAGENBAU GESELLSCHAFT MBH

Lindenthaler Hauptstrasse 145 | 04158 Leipzig | Germany
Telephone: +49 341 4664-400 | Telefax: +49 341 4664-409
Email: gf@edl.poerner.de