



ENGLISH 2015



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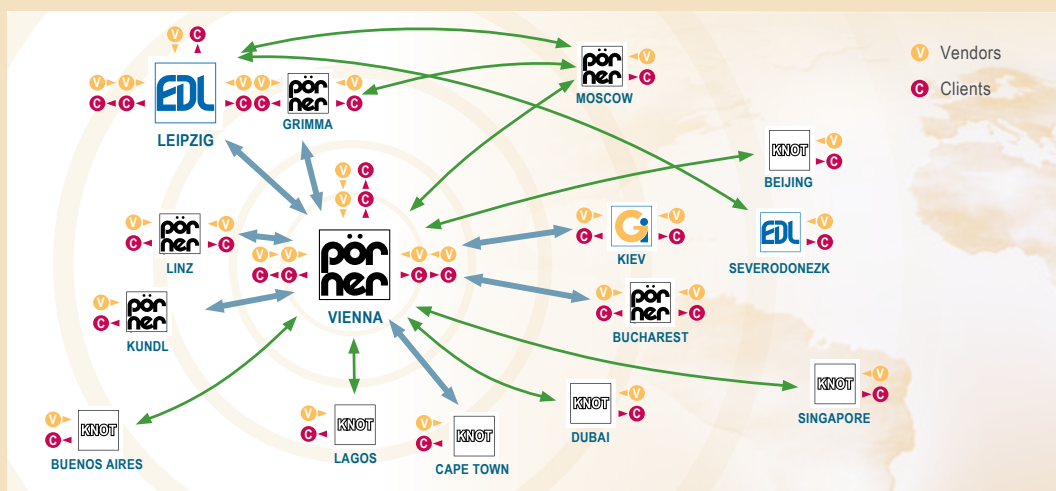




Revamp HDS1 plant, OMV Refining & Marketing GmbH,  
Vienna / Schwechat, Austria

# PLANT ENGINEERING FROM LEIPZIG WITH TRADITION

The beginnings of EDL Anlagenbau Gesellschaft mbH are in 1991. The company was founded on 1 September with the staff of the former Chemieanlagenbaukombinat Leipzig, Grimma (CLG). On 1 January 2003 EDL became the subsidiary of the globally operating Pörner Group (Austria). Thus, the over 70-year old tradition of plant construction is successfully continued in Leipzig.



A network of engineering competence: The Pörner Group has a presence at nine locations in Europe.

As a medium-sized company EDL is firmly integrated in the Pörner Group and today it is very active in Germany and elsewhere where it has specialized in the areas of:

- **REFINERY INDUSTRY**
- **PETROCHEMICAL INDUSTRY**
- **CHEMICAL INDUSTRY**
- **GAS INDUSTRY**
- **SPECIAL-PURPOSE TECHNOLOGIES**



Partnership with clients at home and abroad that is based on trust



## EDL — THE SPECIALIZED AND INNOVATIVE SERVICE PROVIDER FOR THE PROCESS INDUSTRY

EDL undertakes the planning and construction of complete plants and plant units reliably and competently.

Over many years and with numerous projects executed to the clients' satisfaction, EDL has built a reputation of excellence in the process industry.

### REFINING

#### Fuel Oil Refineries

- Crude oil and vacuum distillation
- Desulphurization (diesel, naphtha, vacuum gasoil, kerosene, etc.)
- FCC
- Alkylation
- Isomerization
- Visbreaking
- Fractionation
- Benzene removal



500 m<sup>3</sup> reactor for Desus 1 desulfurization plant, PCK Raffinerie GmbH Schwedt, Germany

#### Lube Oil Refineries

- Crude oil and vacuum distillation
- Solvent extraction
- Used oil re-refining (hydrogenation to Group 2 and 3)
- Hydrotreating and hydrofinishing (base oils, technical and medical white oils)
- Paraffin hydrotreating (food grade)
- Paraffin packing (spray micronization)
- Lube oil blending



Epoxy resin plant, Leuna Epilox GmbH, Germany

### CHEMICAL / PETROCHEMICAL

- Synthetic resins (epoxy resins, bisphenols, etc.)
- Special-purpose plastics / chemicals
- Multi-purpose distillation
- BTX aromatics extraction
- Butadiene production / purification
- Propylene production

### GAS INDUSTRY

- Natural gas treatment
- Gas condensate treatment
- Processing of associated gases
- Compressor systems



Propane deasphalting plant, H&R Ölwerke Schindler GmbH Hamburg, Germany

## EDL PROCESS KNOW-HOW AND TECHNOLOGY: THE KEY TO SUCCESS

As a technology-oriented plant engineering company, with a market presence of more than 20 years, EDL continues to focus on the strengthening of its process competence. Over 30 highly specialized and creative process engineers pool their profound knowledge and long years' experience together to build state-of-the-art plants. This potential is complemented by a broad range of software, ensuring efficient working processes and high-quality results.



### Process activities focus in particular on:

- Process simulation (steady-state and dynamic)
- Process optimization to boost energy efficiency and safety
- PINCH analyses
- Flare network designs
- Batch processes
- Laboratory and pilot plant tests

Process engineering lays the foundation for the successful implementation of clients' technologies, processes of renowned licensors as well as EDL technologies.

### Such EDL special-purpose technologies include:

- Propane deasphalting (PDA)
- Solvent deasphalting (SDA)
- Solvent dewaxing / wax deoiling
- Solvent extraction - Lube cuts / DAO
- Solvent extraction - TDAE / TRAE
- BTX aromatics extraction
- Depolymerization
- Catalytic high-pressure hydrogenation of coal, crude oil residues, biomass
- Lube oil blending
- Base oil hydrofinishing / hydrotreating, wax hydrotreating



SDA testing

**SDA**  
BY PÖRNER GROUP

Innovative plant engineering from Leipzig

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DK2-desulfurization Column, PCK Raffinerie GmbH Schwedt,  
Germany





# SERVICE PORTFOLIO

Regardless of whether it is a new plant or a revamp, time is always of the essence for the client, when it comes to implementing innovative technologies, novel engineering solutions and research findings so that new and high-quality products can be rolled out in a short time.

Based on the project requirements and customer needs, EDL provides the full range of services of a plant engineering and construction company from a single source: from conceptual design, planning and construction of turn-key plants through to commissioning of industrial plants with challenging technical processes.

## EVERYTHING FROM ONE SOURCE

### PROJECT DEVELOPMENT / STUDIES

- Feasibility studies / profitability analyses
- Conceptual design / consulting
- Environmental impact assessment
- Safety risk analyses / safety reports
- Market studies
- Technology selection and procurement
- Laboratory tests

### ENGINEERING / PROCUREMENT

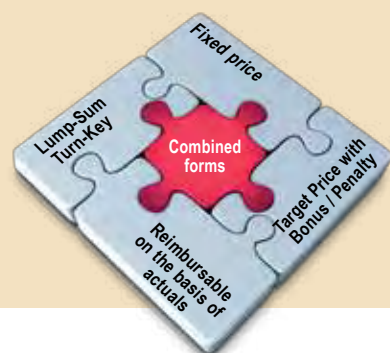
- Basic engineering
- FEED / extended basic engineering
- Authority engineering
- Detail engineering
- Global sourcing of equipment, materials and services
- Supply of equipment and materials

### PROJECT MANAGEMENT

- Project management
- Time scheduling
- Contracting
- Cost control and verification of invoices
- Change management
- After-sales services

### CONSTRUCTION / INSTALLATION

- Construction supervision
- Site management
- Commissioning
- Training of plant personnel
- Operator Training System (OTS)



## EACH PROJECT HAS ITS OWN CONTRACTUAL FORM

Whatever the project size and the requirements are EDL offers tailor-made contracts.

## EDL – THE REVAMP SPECIALIST

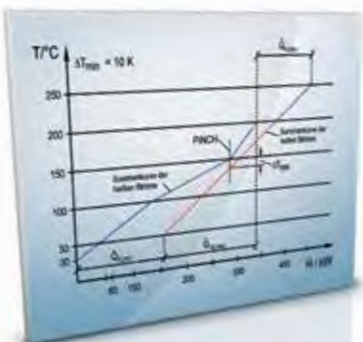
With over 40 large-size projects, EDL has built up a reputation as specialist for refinery revamps. The complex alterations of plants and plant units to be carried out within a short time while the plant is shut down not only require a wealth of experience but also very exact preparations.

Thanks to its process competence, EDL is capable of quickly grasping the performance requirements, reviewing them and converting them into a plant engineering process. Adherence to the schedule at all times despite tight deadlines and keeping within the client's budget are qualities that are appreciated by clients.

## REVAMPED BY PÖRNER GROUP

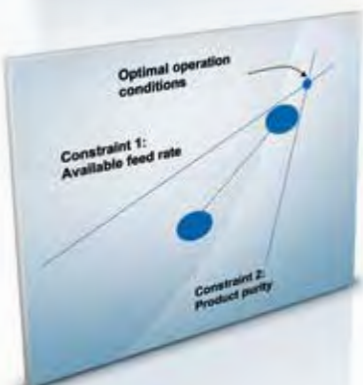


Erection of a two-piece column for PCK Raffinerie GmbH Schwedt, Germany



### Process Optimization to boost Energy Efficiency

In view of declining resources the optimization of processes to boost energy efficiency becomes increasingly important in all stages of a project. Whether it is the PINCH analysis, design of heat exchangers or use of heat pump technologies – EDL assists clients in finding innovative, energy-efficient solutions for new plants or refurbishments.



### Advanced Process Control (APC)

For plant operation EDL teams up with competent partners to develop solutions that enhance the reliability and safety of technological processes and lead to significant energy savings.

A case in point are the complex, multi-variable control and optimization algorithms that are used to heighten the efficiency of plant operation. The Operator Training System (OTS) designed for that purpose uses virtual plant worlds for effective training of plant personnel.



## EDL – COMPETENT AND MOTIVATED

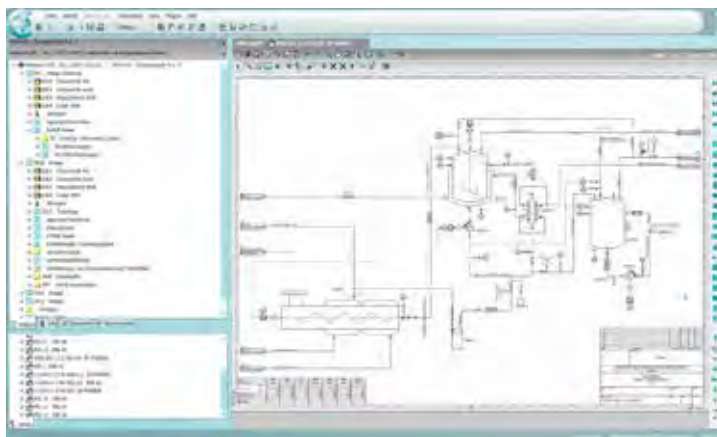
To cope with the multifaceted tasks of project execution, EDL has a team of well-trained, talented university graduates and competent, experienced engineers. Over 90% of the employees studied at a university or engineering college. About 80% of them have work experience of 10 years and longer.

A flat hierarchy and fast decision-making processes have proved a recipe for efficient working. An identical organizational structure of the members of the Pörner Group produces useful synergy effects.

### State-of-the-art engineering software

EDL has been using a variety of state-of-the-art software tools and EDP systems for all stages of project planning and execution. Special simulation programs and smart 3-D plant design software make it possible to virtually access plants at an early point in the project.

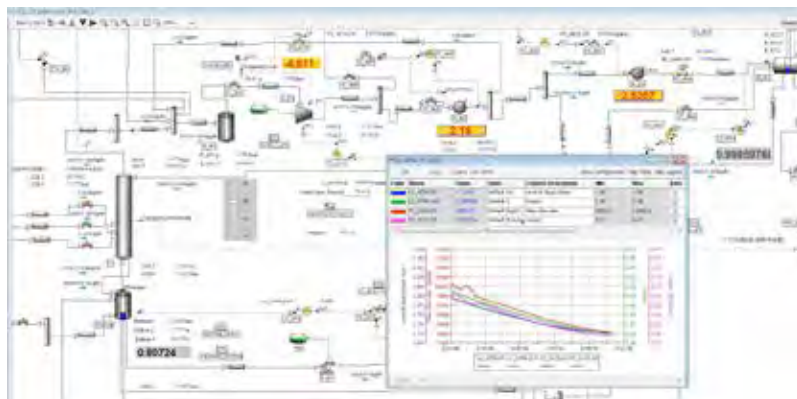
The clients' benefit: high degree of transparency and easier decision-making.



COMOS software allows continuous plant engineering work and consistent data management thus ensuring a permanent flow of all project-related data through all project phases.

### Dynamic simulations

Dynamic simulations of industrial processes make up more and more of the focus of process-related considerations since they can open up new and significant cost and energy saving potential. Moreover, relevant malfunctions that may occur during start-up and shutdown procedures can be simulated using an adequate process model.



Dynamic model using DYNsIM software



C<sub>3</sub> splitter – with 84 m the highest structure in the region, PCK Raffinerie GmbH Schwedt, Germany



# QUALITY CONTROL AND SAFETY

It is the professed goal of EDL to plan and build industrial plants with utmost reliability, safety and environmental compatibility.

A consistent system of quality assurance in all stages of engineering and project execution is the basis of success and customer satisfaction. This is what EDL stands for.

Maintaining safety, health and environmental protection is a key factor for business activities. Statutory requirements, laws and regulations are adhered to in all stages of a project, and EDL's personnel receives regular training in matters of health protection, safety and environment.

EDL works on the basis of applicable standards, such as DIN, VDE, ASME, ASTM, ANSI, TEMA, GOST, and clients' works standards.



## License for Russia

For several years, EDL has been certified in Russia and thus is entitled to conduct, on the basis of this license, planning work and construction as well as assembly services for the Russian refining industry according to Russian standards.



## INNOVATIVE SOLUTIONS — CLIENT-ORIENTED AND CROSS-BORDER

As medium-sized company EDL offers its customers a multitude of benefits, such as:

- client-oriented execution concepts
- independent selection of vendors
- increase in value
- high return on investment
- savings through optimized processes
- environmentally friendly plant construction
- project languages: German, English and Russian





## REFERENCES: REFINERIES

EDL is known to be a specialist for refinery revamps in Central Europe. Refurbishments, capacity increases or debottlenecking for international refinery clients are core areas of activity. New plants and demolition projects as well as the cooperation with international licensors are also areas, where EDL can draw on long years' experience.



### NEW PROPANE DEASPHALTING PLANT

Construction of a new propane deasphalting plant (PDA) to obtain deasphalted oil from vacuum residue by means of liquid propane extraction

**EDL scope:** Basic engineering, detail engineering, procurement, construction supervision, commissioning

**Client:** H&R Ölwerke Schindler GmbH

**Location:** Hamburg / Germany

**Year:** 2011



### MODERNIZATION OF CRUDE OIL DISTILLATION UNIT

Modernization of crude oil Distillation plant (RD4) at Schwechat done in several phases with different focuses.

**EDL scope:** FEED, detail engineering, procurement and expediting, construction supervision, commissioning.

**Client:** OMV Refining & Marketing GmbH Vienna

**Location:** Schwechat / Austria

**Year:** 2010 / 2014 / 2016



### REVAMP VACUUM DISTILLATION UNIT

Replacement of the vacuum column in order to increase energy efficiency of the vacuum distillation plant and change to deep cut operation

**EDL Scope:** Extended basic engineering, detail engineering, procurement, construction supervision

**Client:** PCK Raffinerie GmbH

**Location:** Schwedt / Germany

**Year:** 2013



### REVAMP FCC PLANT

Revamp of the FCC gas concentration plant incl. replacement of the FCC main column, increase of refinery operation flexibility by installation of a new reactor in the FCC plant, revamp of the FCC plant by regenerator replacement and LCO recovery.

**EDL Scope:** Basic engineering, detail engineering, procurement, construction supervision, commissioning

**Client:** PCK Raffinerie GmbH

**Location:** Schwedt / Germany

**Year:** 2010 / 2013 / 2016



#### USED OIL RE-REFINING PLANT

Construction of a new used oil re-refining plant (Hylube2) based on a UOP process

**EDL scope:** Basic engineering, detail engineering, procurement, commissioning

**Client:** Puralube Raffinerie GmbH

**Location:** Zeitz / Germany

**Year:** 2008



#### REVAMP OF DESULFURIZATION PLANT

Revamp of hydrodesulfurization plant HDS1

**EDL scope:** Detail engineering, procurement, construction supervision, commissioning

**Client:** OMV Refining & Marketing GmbH Vienna

**Location:** Schwechat / Austria

**Year:** 2008



#### FCC OVERCRACKING

Revamp of an FCC overcracking plant with new C<sub>3</sub> splitter as core component (diameter 5.2 m, total height 84 m) to produce propylene of polymer quality.

**EDL scope:** Basic engineering, detail engineering, procurement, construction supervision

**Client:** PCK Raffinerie GmbH

**Location:** Schwedt / Germany

**Year:** 2007

#### FURTHER REFERENCES

Plant	Client	Location / Country	Year
Modernization of HDS3 reactor	OMV Marketing & Refining GmbH	Schwechat / Austria	2016
HDS plants for diesel and kerosene	JSC "Tatneft"	Nizhnekamsk / Russia (Tatarstan)	2015
Revamp of alkylation plant	TOTAL Raffinerie Mitteldeutschland GmbH	Leuna / Germany	2014
Replacement of FCC reactor and revamp of FCC gas plant	TOTAL Raffinerie Mitteldeutschland GmbH	Leuna / Germany	2014
Revamp of atmospheric and vacuum distillation unit (AWT)	Russian refinery	Russia	2012 / 2014
Revamp of atmospheric and vacuum distillation unit (AWT)	Ukrainian refinery	Ukraine	2011
Gasoil hydrotreater	Shell Deutschland Oil GmbH	Heide / Germany	2009



## REFERENCES: CHEMICAL / PETROCHEMICAL

The list of projects undertaken by EDL for chemical / petrochemical sector clients is also long. The company teams up with clients and partners to get novel, innovative technologies up and running.



### NEW BISPHENOL-TMC PLANT

Plant for the production of bisphenol TMC from phenol and acetone for the Operator Hi-Bis GmbH

EDL: Detail Engineering  
 Scope: Toyo Engineering Corporation  
 Client: Bitterfeld / Germany  
 Location: 2014  
 Year:



### NEW BISPHENOL F PLANT

Construction of two plants for the production of bisphenol F

EDL: Basic engineering, detail engineering, procurement, construction and installation supervision  
 Scope: Leuna Epilox GmbH  
 Client: Leuna / Germany  
 Location: 2005 / 2008  
 Year:



### NEW GLYCIDYL ETHER PLANT

Construction of two plants for the production of glycidyl ether

EDL: Basic engineering, detail engineering, procurement, construction and installation supervision  
 Scope: LEUNA-Harze GmbH  
 Client: Leuna / Germany  
 Location: 2004 / 2008  
 Year:

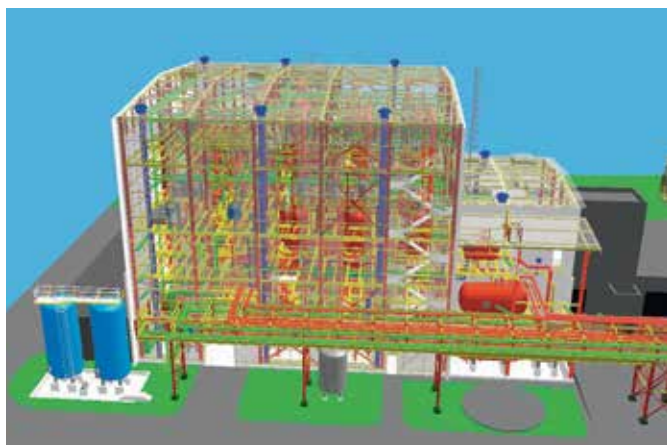


### NEW EPOXY RESIN PLANT

Construction of a plant for the production of epoxy resins (Leuna Harze 3)

EDL: Basic engineering, detail engineering, procurement, construction and installation supervision  
 Scope: LEUNA-Harze GmbH  
 Client: Leuna / Germany  
 Location: 2007  
 Year:





#### NEW PLANT FOR POLYMERIC SULFUR

Planning and construction of a plant for the production of polymeric sulfur according to the latest technology

**EDL** Detail Engineering,  
**Scope:** construction supervision  
**Client:** Flexsys Verkauf GmbH  
**Location:** Nienburg / Germany  
**Year:** 2007



#### NEW MADB / PBS SYNTHESIS PLANT

Construction of a pilot plant for the production of polymeric precursors for the production of ceramic fibers for further processing in CMC

**EDL** Detail engineering, procurement, construction supervision, testing and inspections  
**Scope:**  
**Client:** Fraunhofer-Institut für Silicatforschung ISC  
**Location:** Würzburg / Germany  
**Year:** 2005

Photo: K. Dobbertke for Fraunhofer ISC



#### NEW PBT / CBT PLANT

Construction of a PBT / CBT plant for the production of a new high-tech plastic material

**EDL** Detail engineering, procurement, construction supervision, commissioning support  
**Scope:**  
**Client:** Cyclics Europe GmbH  
**Location:** Schwarzheide / Germany  
**Year:** 2004

#### FURTHER REFERENCES

Plant	Client	Location / Country	Year
Cyclohexanone plant	DOMO Caproleuna GmbH	Leuna / Germany	2015
Butadiene production plant	OMV Refining & Marketing GmbH	Schwechat / Austria	
Extension of polymerization plant	Fraunhofer-Institut für Silicatforschung ISC	Würzburg / Germany	2008
Catalytic post-combustion plant	LEUNA-Harze GmbH	Leuna / Germany	2008
Compounding plant	RP Compounds GmbH	Leuna / Germany	2006

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