



## WHO WE ARE



TECHNOLOGY PROVIDER



ENGINEERING SERVICES



PLANT CONSTRUCTION



>1000  
Projects



> 300  
Employees



> 40 years  
of Experience

✓ As a general contractor we offer you all the necessary services required for the successful delivery of your project. At our subsidiary in Alzenau we are experts in the fields of polymers & fibers, as well as in chemical plant construction.

✓ Plant revamping, optimization, maintenance work and staff training are integral parts of our extensive services.

Member of the **EPC GROUP**



- Polymers & Fibers
- Chemistry & Specialty Chemistry
- Renewable Energies
- Biotechnologies
- Engineering Services & Infrastructure
- Pharmaceuticals & Fine Chemistry



- Cryogenic Systems
- Systems for Compression & Liquefaction of Gases
- Air Separation Systems
- High Purity N<sub>2</sub> Generation
- CO<sub>2</sub> Recovery



- Construction Engineering
- Infrastructure
- Building & Civil Engineering
- Project Management
- Technical Building Equipment



- Building Automation
- E/I&C Technology
- Electrical Engineering & Telecommunications
- Ventilation & Air-Conditioning Systems
- Heating & Sanitary Systems

A MEMBER OF  
**EPC GROUP**

IDEAS INSIDE <sup>EPC</sup>



## Tailor-made Revamp Solutions

Plant Modernization | Revamp | Capacity Increase



### CONTACT

**EPC Engineering & Technologies GmbH**

Siemensstrasse 24 - 26  
63755 Alzenau  
Germany

Phone: + 49 6023 5017 - 2110  
Fax: + 49 6023 5017 - 2117  
Email: [alzenau@epc.com](mailto:alzenau@epc.com)  
Web: [www.epc.com](http://www.epc.com)



EPC Group is certified per DIN EN ISO 9001



### Sustainable Business Solutions for PET, PBT and PET-G

Revamp, capacity increase or plant modernization is in many cases the right solution to re-establish competitiveness and comply with market demands. We are offering tailor-made solutions for the revamping of existing polycondensation plants. We will eliminate existing bottlenecks and identify the optimal investment costs and plant output with regards to quantity and product quality.

EPC PETvantage® is the most cost-effective alternative to investing in a new plant. Depending on the plant configuration, a return on investment can be achieved in less than 2 years.

IDEAS INSIDE <sup>EPC</sup>



## EPC PETvantage® Strategic technology upgrade of your polymer plant

Revamp is in many cases the right solution to re-establish competitiveness and comply with new market demands. During the first step, a plant assessment will be carried out as the basis for a feasibility study, to identify the bottlenecks and potentials of the plant. Taking into consideration the local conditions and future market demands, various revamp concepts will be created.

The feasibility study will also consider the operation costs before and after the revamp; a significant reduction of the fix costs can often be realized. The comparison of these various scenarios will help to determine the optimal investment costs, plant output and operation costs after revamp.

### A Technological Feasibility Study shall lead to the creation of a business-technological concept of possible scenarios, targeting:

- Best market-driven retrofit-strategy for the client
- Very competitive production cost
- High flexibility to adapt to market changes
- Most feasible Return on Investment (ROI)
- Minimum plant shut-down time during implementation of revamping scope

**i** Polycondensation capacity lift is a “Must” to stay competitive through the “Economics-of-Scale”.

### 5 Steps in the creation of the most effective revamping concept



## Advanced Process Control - insidePET®

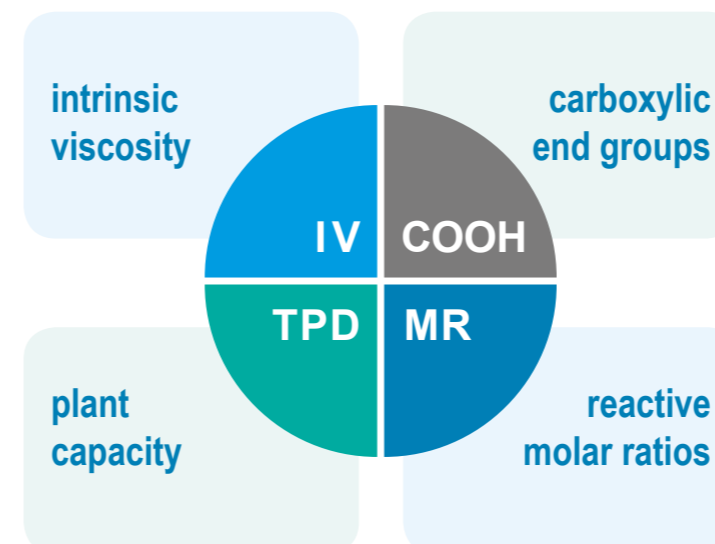
EPC has developed the EPC insidePET, an Advanced Plant Process Control System. The system ensures a consistent product quality even with fluctuating raw material qualities and a simplified PET Polycondensation plant operation.

### The following features are integrated:

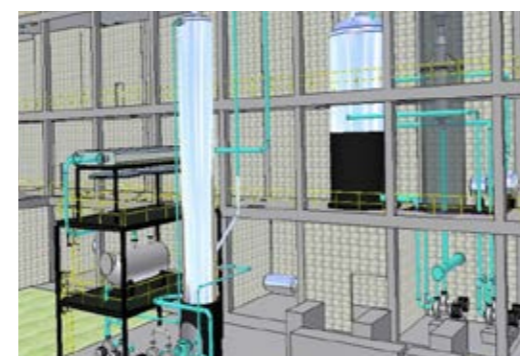
- Real-time process material balancing
- Sophisticated IV-control
- -COOH end groups & reactivity control
- Reactive molar ratio control / correction
- Plant throughput control

### Customized Solution:

- Consistent Product Quality
- Compensation of raw materials fluctuation
- Simplified PET Plant Operation
- All Process Parameter =  $f$  (throughput)



## EPC PETvantage® – Techno-economic objectives



- Capacity lift potential: 50 – 100 % of name plate capacity
- Reasonable investment cost requiring no change of existing reactors
- Smart project execution: Pre-Assembly of new equipment and plan down-time << 4 weeks
- Plant conversion for alternative raw materials, or production of new polymers (e.g from textile to bottle-PET, or PET-G).
- Flexibilization through polymers modification for specialties application
- Flexibilization of direct spinning to produce specialties in fibres/ filament yarns



**YOU WOULD LIKE TO LEARN MORE ABOUT OUR SERVICES?**  
Let us know! We are looking forward to helping you.

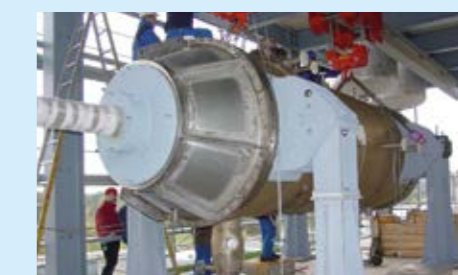


Dipl.-Ing. / MBA  
**Michael Streng**  
Member of the Managing Board  
Phone: + 49 6023 50 17 - 21 20  
E-Mail: michael.streng@epc.com



M.Sc. Dipl.-Ing.  
**Cesar Pena**  
Project Engineer  
Phone: + 49 6023 50 17 - 21 18  
E-Mail: cesar.pena-olarte@epc.com

### Selected references of our Revamp Conceptions



#### Trevira®

De-bottlenecking of existing esterification unit to reach 175% of its capacity before. Integration of second polycondensation line for a capacity of 125% (additional). Special polymer melt line distribution for direct spinning of textile fibre specialties.

Bobingen / Germany | 2002-2004



#### IBN Rushd (a SABIC affiliate)

Process- and mechanical re-design and installation of EPC sophisticated upgrade technology, including the most modern process control software insidePET. Special remark: No change of melt phase reactors was required. Installation of an additional SSP plant.

Yanbu / Saudi Arabia | 2007-2009



#### ARTENIUS HELLAS

Process and mechanical re-design and supply of a new finisher and agitator, incl. sophisticated hydraulic drive system. Vacuum system upgrade, polymer pumps, heat distribution. Implementation of EPC's polycondensation process control for molar ratios, intrinsic viscosity and improved throughput control.

Volos / Greece | 2003-2005

