Examples of References: Biotechnological Plants

Pharmaceutical Plants
Project LANTUS® Insulin, Aventis Pharma

- **Client**
  Aventis Pharma Deutschland GmbH

- **Location**
  Frankfurt/M., Germany

- **Type of Order**
  Plant for the production of the insulin derivative Insulin Glargine (trade name Lantus®)

- **Product**
  Recombinant insulin derivative with depot effect due to engineered amino acid sequence

- **Production Process**
  Biotechnological fermentation

- **Total Investment**
  appr. 150 Mio. €

- **Handover**
  2002

- **Scope of Work**
  - Engineering „Lump sum“ (appr. 25 Mio. €)
  - Basic and detail engineering, procurement (on behalf and on account), civil engineering, mounting, commissioning, qualification

Pharmaceutical Plants
Plant for the Fractionation of Human Blood Plasma

- **Client**
  Aventis Behring GmbH

- **Location**
  planned for Marburg, Germany

- **Type of Plant**
  Plant for the fractionation of human blood plasma

- **Products**
  Basic fractions of human blood plasma and products of downstream processing

- **Total Investment**
  160 Mio. €

- **Scope of Work**
  - Concept and design (3,7 Mio. €)
  - basic engineering for process, architecture, civil engineering, infrastructure, IT
Pharmaceutical Plants
Biotechnological Production of Recombinant Factor VIII

- **Client**: Bayer AG, Leverkusen
- **Location**: Germany, planned for Wuppertal-Elberfeld
- **Product**: Recombinant blood coagulation factor VIII
- **Type of Plant**: Plant for the production of the pharmaceutical ingredient in high-cell-density perfusion cultures of BHK cells and purification of the glycoprotein
- **Total Investment**: appr. 160 mio. €
- **Planning Period**: December 2000 - June 2001

**Scope of Work**
- Know how and technology transfer from production and R&D into design basis
- Conceptual design for all disciplines

Multipurpose Plant
for the Production of Steroid Agents

- **Client**: Schering-Jenapharm
- **Location**: Jena / Germany
- **Type of Order**: Turnkey plant in compliance with GMP regulations; EPCM including qualification
- **Biotechn. Process Steps**: Stereospecific transformation of steroids, fermentation and downstream processing
- **Capacity**: 2 Pilot fermenter a 500 l, 2 Production fermenter a 10.000 l
- **Commissioning**: 1995
Biotechnological Production of Hepatitis B Surface Antigen (HBsAg)

- **Type of Order**
  Process development

- **Partner and Process Supplier**
  Rhein Biotech, Düsseldorf, Germany

- **Scope of Work**
  Concept for the transfer of the laboratory process to production scale, financing, planning and construction of the pilot plant; assistance during the runs of the pilot plant and in the preparation of the development report; concept of a production process in compliance with GMP

- **Capacity**
  50 Liters per batch; equivalent to 15 mio doses/a

- **Planning Period**
  1998

- **Result**
  Marketable procedure; e.g. license contract issued to Pasteur-Merieux-Connaught; authorisation for Argentina

Plant for Fractionation of Human Blood Plasma

- **Client**
  Biotest Pharma GmbH

- **Location**
  Dreieich / Germany

- **Type of Order**
  New plants for the fractionation of blood plasma and the production of blood coagulation factors

- **Products**
  Immunoglobulines, Human Albumines and Blood Coagulation Products

- **Scope of Work**
  Qualification, project management and controlling, engineering, site coordination, controlling

- **Planning Period**
  2001 and 2002
Examples of References:  Biotechnological Plants

Pharmaceutical Plants
Biotech Performance Park Leuna

- **Client**  
  INFRALEUNA  
  Infrastruktur und Service GmbH
- **Location**  
  Leuna / Germany
- **Type of Order**  
  Consulting service for a biotech park
- **Result**  
  Finished fast track conceptual design with cost estimate
- **Planning Time**  
  3 Weeks in 2002

**Scope of Work**
- Elaboration of user requirements and design basis
- Conceptual design studies of two biotech multipurpose plants
- Park development concept

Pharmaceutical Plants
Plant for the Production and Packaging of Antibiotics

- **Client**  
  ENZIM, Ladyzhin
- **Location**  
  Ladyzhin / Ukraine
- **Product**  
  Antibiotics (lyophilisate)
- **Type of Order**  
  New plant, consisting of
  - product lines for sublimation drying
  - sterile packaging
  - water treatment plant (high purity)
- **Scope of Work**  
  Turnkey plant in compliance with GMP
- **Completion**  
  1998

Preparation of the antibiotic solution