

ACID CONCENTRATION AND MORE

DDPS has a unique combination of products and competences. Specialised and experienced chemical engineers work on all process-relevant questions from the customer enquiry, through internal planning and consultation up to commissioning of the plant on customer's site.

From a wide experience with corrosion resistant materials, DDPS is not only capable in designing and manufacturing a wide range of key process equipment, but provides also in-house process know-how. We offer:

BASIC ENGINEERING

- Mass and energy balances
- Trial Experiments in the QVF pilot plant facility
- Process flow diagram (PFD)
- Preliminary layout of the plant
- apparatus and pump specification

DETAIL ENGINEERING

- P&ID
- General arrangement drawing
- Isometric drawing
- Manufacturing drawings
- Valve specification
- E&I Specification

PROCUREMENT

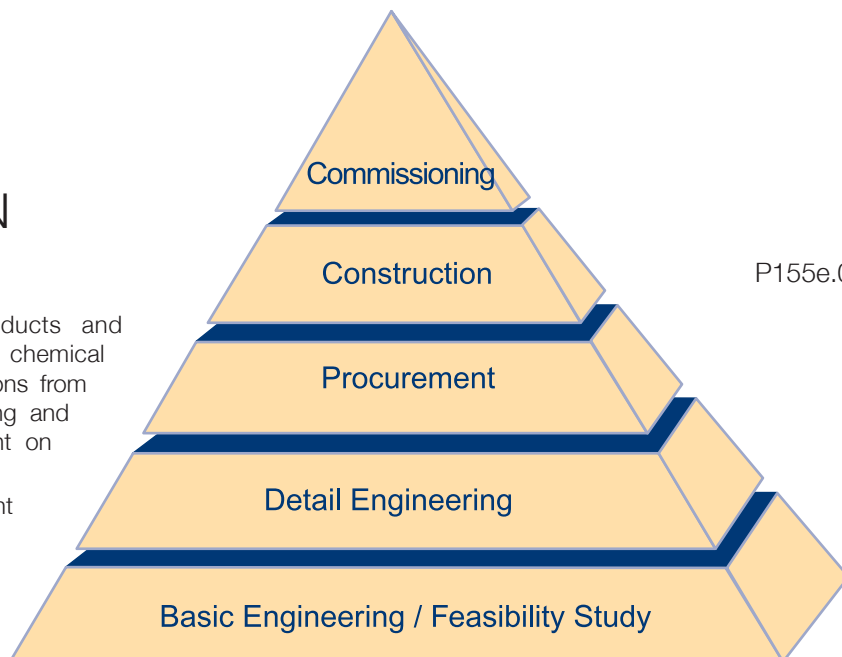
- Enquiry
- Award
- Project control
- Acceptance

CONSTRUCTION

- Construction management
- Scheduling
- Interface management
- Troubleshooting
- Acceptance coordination (PED)

COMMISSIONING

- Loop check
- Test run with water
- Commissioning
- Performance test

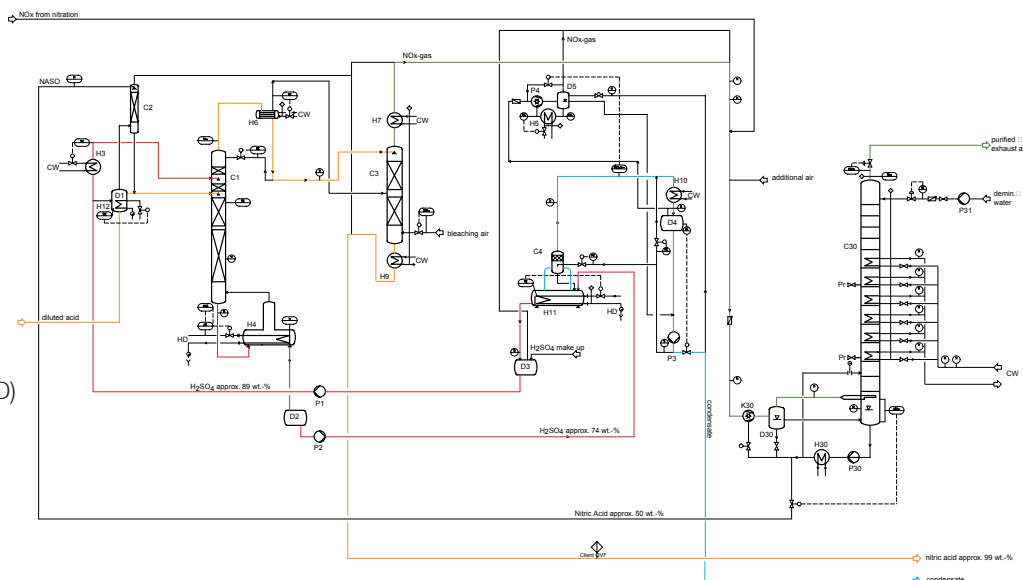


P155e.0

TEST FACILITY

Individual process steps can be tested in the test facility if it is not possible to fall back on DDPS know-how for new products or processes. Therefore DDPS has a filter/drying test facility at Rosenmund site and one for chemical engineering at QVF in Mainz.

The customer test facility is used to develop company-own components and processes as well as for testing and optimising customer-specific tasks. Also the production of small amounts of samples is possible.



MAIN FOCUS ACID CONCENTRATION

Mineral acids are very important in chemical procedures. Not only as a reaction participant and catalyst, but also as an aid, as in the case of sulfuric acid for drying gasses or during extractive distillation, but also as a cleaning agent as used in the electronic industry.

Through our experience with corrosion-resistant materials, we have process know-how in mineral acid handling and offer you in part our own processes, such as for example the energy-saving concentration of nitric acids (USA 10/296,297).

By the combination of borosilicate glass and glass-lined steel you get most of the key process equipment from one source. We offer our know-how in:

PRODUCT RECOVERY AND PRODUCT PURIFICATION

- Solvent recovery by evaporation, distillation and rectification like MDC, NMP, DMF, alcohols, Cleaning Solvent, etc.
- Rectification of binary and multi-component mixtures (e.g. epichlorhydrin)
- Production of absolute alcohol by extractive or azeotropic distillation
- Recovery of organics by solvent extraction: phenol, pyridine, DMF, NMP
- Recovery of metal salts and acids by solvent extraction: acetic acid, thioglycolic acid; Ferric chloride, ammonium molybdate
- Dehydration of organics (amines, THF) by caustic packed bed adsorption
- Purification of natural extracts (e.g. essential oils)



WASTE WATER TREATMENT

- Stripping of partly miscible components (toluene, chloroform, MDC etc.)
- Stripping of ammonia
- Extraction of high boiling impurities without recovery
- Multiple-effect evaporation of waste water with or without solvent recovery (e.g. NMP, DMF, phenol)

EXHAUST GAS PURIFICATION

- Drying of SO₂ or Cl₂ using sulphuric acid
- Absorption of HCl, HBr, SO₃, and Cl₂, Br₂, SO₂
- Combined absorption of HCl and SO₂
- NO_x-Absorption
- Absorption of ethylene oxide or ammonia
- Absorption and recovery of volatile organic components VOC
- Solvent Condensation Unit

RECOVERY, CONCENTRATION AND PURIFICATION OF MINERAL ACIDS

- Sulphuric Acid Dilution
- Sulphuric Acid Concentration
- Nitric Acid Concentration
- Denitration and recovery of mixed acids from nitration plants
- Hydrochloric acid recovery
- Concentration of HCl by extractive distillation or two pressure process
- Purification of spent acids from etching processes
- High purified (electronic grade) acids: HCl, HNO₃, H₂SO₄

REACTION WITH HALOGENS / HCL

- Bromine recovery from sea water
- Debromination/ bromine recovery from salt solutions
- Iodine Recovery
- NaOCl Production
- H₂S – Gas Production

QVF ENGINEERING GMBH

Post box 33 69
D-55023 Mainz
Hattenbergstraße 36
D-55122 Mainz

Phone.: (+49) 0 61 31/ 97 04-0
Fax: (+49) 0 61 31/ 97 04-500
mail@qvf.de
www.qvf.com

