Ingenieurbüro Andreas Holl

Schulungen, Consulting, Ingenieursdienstleistungen

Temporary
project support
Technical gases
Hydrogen / Oxygen

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H2 – O2 – N2 – NH3 – CO2 – CO - He – Ne – C2H2 –Ar – N2O – Gas mixtures

Phase 1

Plant conceptual design / Plant engineering / Process engineering – Flow chart development / Compliance with relevant regulations and standards / Algorithm for operation, purging and safety

- **Purity of required gases**
- **Sampling systems (online / offline) for monitoring required quality ISO 14867 - SAEJ2719 – DVGW G260**
- **Compliance with relevant international codes and standards**
  - **ASTM B31.12**
  - **CAN 1784-000**
  - **IGC DOC 121 / 15 / 75 / 154 / 211 and more**
  - **ISO 14687 / SAEJ2719**
  - **CGA G-5.4**
  - **API-5L / API-941**
- **Safety distances for hydrogen and oxygen systems**
- **Conceptual design of cost-efficient hydrogen storage**
- **Creation of process flow diagrams**
- **Creation of algorithms**
- **Degree of cleanliness of the system**

Phase 2

Application of regulations / Technically permanently leak-tight / Component and part list / Creation of part list / Creation of technical specifications / Supplier selections / Obtaining offers

- **Material requirements**
- **Corrosion – Hydrogen embrittlement**
- **Material selection for oxygen / Ammonia / other technical gases**
- **Design review**

Phase 3

Briefing and training of personnel in plant construction / Compliance with regulations / Supervision of execution

Phase 4
Final inspection and acceptance of the plant / Support during the legally required inspection and handover to the end costumer / Training and instruction of operating personnel

- **Oxygen cleaning**
- **Impact zones in oxygen systems**
- **Tube dimensioning**
- **Requirements for tubing – stainless steel / steel**
- **Specification of fittings, threads and flanges**
- **Material selection for sealing materials**
- **Purity level of tubes and components according to application**
- **Specification of valves and pressure reducers**
- **Requirements for materials, lubricants and cleaning of components**
- **Sizing and calculation of valves and pressure regulators**
- **Specification of additional fluid system components such as Check valves, deflagration protection, filters, pressure transducer, sensors, control valves, shut-off valves andsafety valves**
- **Storage and transport of components**
- **Assembly guidelines**
- **Compliance with permanent technical leak-tightness**
- **Procedures for pressure testing and leak testing**
- **Procedures for system purging, inerting and commissioning**
- **High-pressure systems from 400 bar**
- **High-pressure systems from 1000 bar**
- **Design and determination of safety distances for blow-off lines for H2 / O2 and other gases**

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