

## Hydraulic systems

Design, project work and delivery of hydraulic systems, executed according to customer specifications for all areas of application including assembly/installation, commissioning and maintenance.

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### **Hydraulic system (complete) consisting of control valve with hydraulic cylinder and hydraulic unit**

Hydraulic cylinder type:

CD 250 C80/36 x 165 DBUW

Hydraulic unit type:

HA-250-8.25-8.25-190/3.0-3.0-400V/50Hz

Description:

Hydraulic unit for operating a LP (low pressure) Bypass Steam Reducing Valve with a on top mounted double-acting hydraulic cylinder for a power plant in Vietnam

The following functions are implemented:

- Continuous control (servo valves) with an operating time of 15 to 20 seconds for the complete stroke
- Quick closing with an operating time of < 3 seconds
- Quick opening with an operating time of < 3 seconds
- safety locking in the case of a power failure



### **Hydraulic unit**

Type: HA-250-8.25-8.25-190/3.0-3.0-400V/50Hz

Application:

Hydraulic actuation of two LP (low pressure) Bypass Steam Reducing Valves as well as in each case with the associated Water Injection Control Valve and Water Shut-off Valve

The following functions are implemented:

- Continuous control (servo valves) of the control valves with an operating time of 15 to 20 seconds for the complete stroke
- Quick closing of the control valves with an operating time of < 3 seconds
- Quick opening of the control valves with an operating time of < 3 seconds
- OPEN/Quick-CLOSE of the shut-off valves with an operating time of < 3 seconds for the complete stroke
- safety locking of all valves in the case of a power failure



### Hydraulic unit

Type: HA-160-5.7-5.7-230/3.0-3.0-400V/50Hz

#### Application:

Hydraulic actuation of one HP (high pressure) Bypass Steam Reducing Valve as well as with the associated Water Injection Control Valve

#### The following functions are implemented:

- Continuous control (servo valves) of the control valves with an operating time of  $\leq 10$  seconds for the complete stroke
- Quick closing of the control valves with an operating time of  $\leq 2$  seconds
- Quick opening of the control valves with an operating time of  $\leq 2$  seconds
- safety locking of both valves in the case of a power failure

#### Special features:

- Oil tank material is stainless steel
- designed for fire resistant hydraulic oil HFD-U 46



### Hydraulic units

Type: HA-160-6.0-6.0-190/2.2-2.2-400V/Ex

#### Application:

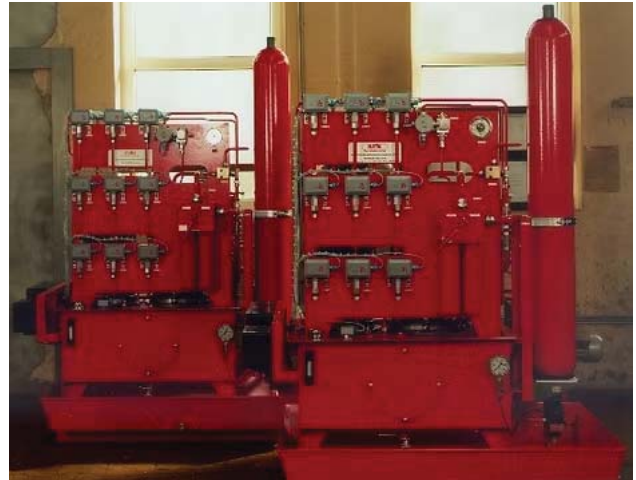
Hydraulic actuation of two control valves (medium: gas) in each case

#### The following functions are implemented:

- Continuous control (servo valves) with an operating time of  $\leq 0.3$  seconds for the complete stroke
- Quick opening (with disc spring package in the hydraulic cylinder) with an operating time of  $\leq 0.1$  seconds

#### Execution:

The complete hydraulic units are designed with explosion protection and for intermittent operation.



### Hydraulic unit

Type: HA-400-16.5-16.5-230/11.0-11.0-415V/50Hz

#### Application:

Hydraulic actuation of two HP (high pressure) Steam Shut-off Valves, two HP Bypass Steam Reducing Valves with in each case the associated Water Injection Control Valve and Water Shut-off Valve

#### The following functions are implemented:

- Continuous control (servo valves) of the control valves with an operating time of  $\leq 2$  seconds for the complete stroke
- Quick closing of the control valves with an operating time of  $\leq 1$  second
- Quick opening of the control valves with an operating time of  $\leq 1$  second
- OPEN/Quick-CLOSE of the shut-off valves with an operating time of  $\leq 1$  second for the complete stroke



#### Special features:

- redundant PLC (type SIMATIC S7), e.g. to control the hydraulic unit
- designed for fire resistant hydraulic oil HFD-U 46

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### Hydraulic systems according to the DIN EN ISO 4126-5 (formerly TRD 421)

These hydraulic units, together with the hydraulic cylinders built on the steam valves and the steam testing units, are the components of the electro-hydraulically safety valve control system for the controlling of hydraulically operated main valves in accordance with DIN EN ISO 4126-5 (formerly TRD 421), for which the asfa-Antriebssysteme has a component sample test from the TÜV-Verband (Germany) with the type test approval mark TÜV.SV.21-862.

### Hydraulic unit

Type: HA-400-24.0-24.0-230/11.0-11.0-400V/50Hz-TRD421

#### Application:

Hydraulic actuation of four Turbine Bypass Valves and one LP (low pressure) Bypass Steam Reducing Valve with the associated Water Injection Control Valve

#### The following functions are implemented:

- Continuous control (servo valves) of all valves with an operating time of  $\leq 2$  seconds for the complete stroke
- Safety quick-closing function according to the safety regulations DIN EN ISO 4126-5 (formerly TRD 421) of the four Turbine Bypass Valves and the LP Steam Reducing Valve with an operating time of  $\leq 1$  second



#### Special features:

- Triggering of the safety quick-closing function according to DIN EN ISO 4126-5 of the four Turbine Bypass Valves by using just only one common steam testing unit and only two triple safety blocks

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### Hydraulic units

Type: HA-160-3.0-3.0-190/1.1-1.1-400V/50Hz-TRD421

#### Application:

Hydraulic actuation of in each case one Reducing Valve (Start-up and Live Steam valves) with in each case the associated Water Injection Control Valve

#### The following functions are implemented:

- Continuous control (servo valves) of all valves with an operating time of ~ 30 seconds for the complete stroke
- Safety quick-closing function according to the safety regulations DIN EN ISO 4126-5 (formerly TRD 421) of the Reducing Valves with an operating time of ~ 2 seconds
- Safety quick-closing function of the Water Injection Control Valves with an operating time of ~ 2 seconds



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### Hydraulic units

Type: HA-160-1.88-1.88-210/1.1-1.1-400V/50Hz-TRD421

#### Application:

Hydraulic actuation of one MP (medium pressure) Bypass Steam Reducing Valve with the associated Water Injection Control Valve

#### The following functions are implemented:

- Continuous control (servo valves) with an operating time of  $\leq 2$  seconds for the complete stroke
- Safety quick-closing function according to the safety regulations DIN EN ISO 4126-5 (formerly TRD 421) of the MP (medium pressure) Bypass Steam Reducing Valve with an operating time of  $\leq 1$  second
- Safety quick-closing function of the Water Injection Control Valve with an operating time of  $\leq 1$  second



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### Triple safety blocks for hydraulic units

Nominal size: 2 x NG25 and 1 x NG 16

#### Application:

Carrying out of a safety quick closing or quick opening function according to the safety regulations DIN EN ISO 4126-5 (formerly TRD 421) and according to the component sample test for the asfa-Antriebssysteme from the TÜV-Verband (Germany) for an electrohydraulically safety valve control for controlling of hydraulically operated main valves with the type test approval mark TÜV.SV.21-



The following functions are implemented:

- Safety quick-closing function according to the safety regulations DIN EN ISO 4126-5 (formerly TRD 421) of the four Turbine Bypass Valves and the LP Steam Reducing Valve with an operating time of  $\leq 1$  second
  - Triggering of the safety quick-closing function according to DIN EN ISO 4126-5 of four Turbine Bypass Valves by using only one common steam testing unit and only two triple safety blocks
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