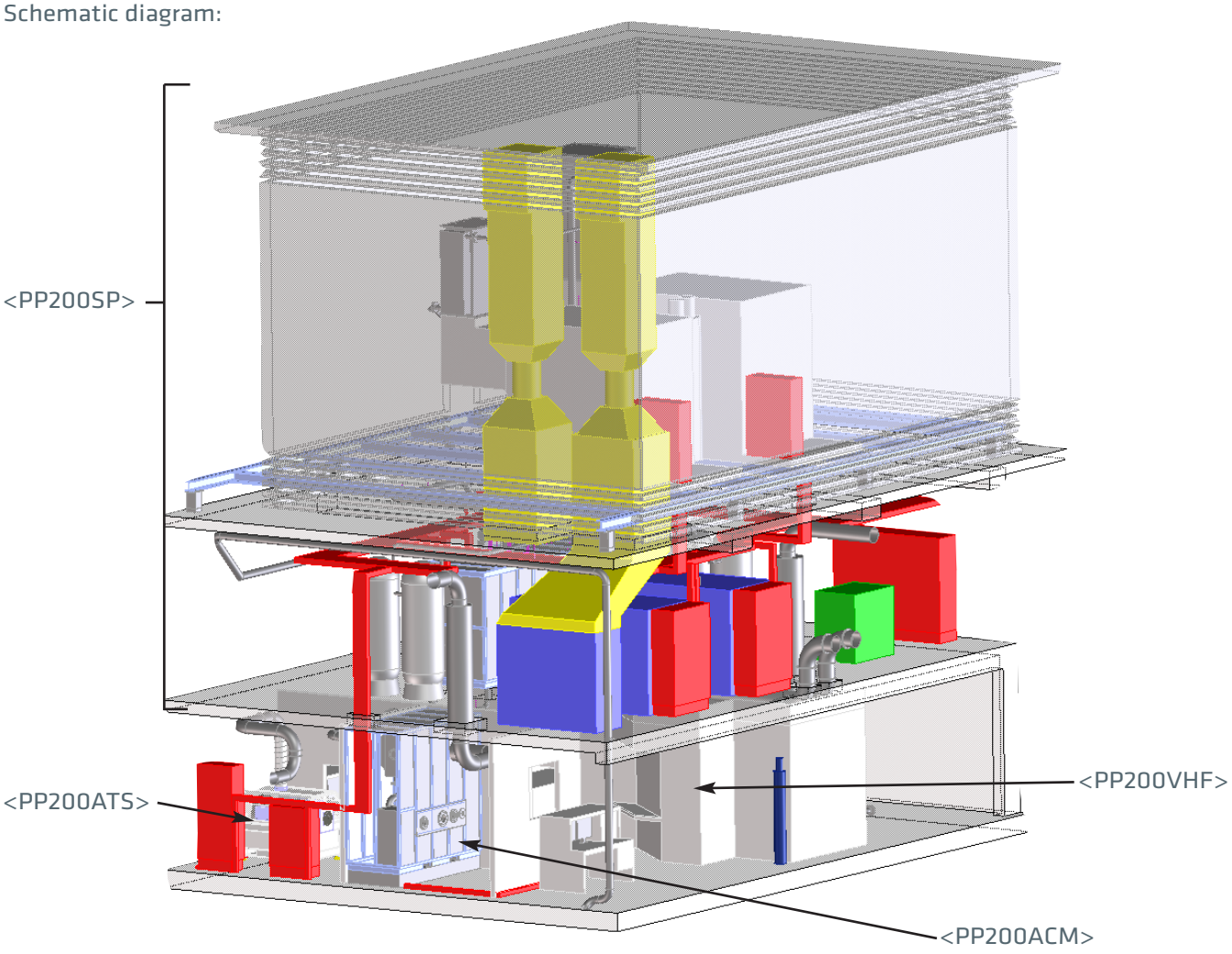
Universal test stand for pneumatic components

>PP200STA<

Schematic diagram:



This shown construction has been designed and realised for SR Technics

Developed to test aircraft pneumatic components up to these performance data:

Air flow:	max. 3kg/s
Compressed air:	max. 30bar
Temperature:	max. 650°C

- Automatic report generation
- Modular construction with one central pneumatic/hydraulic supply <PP200SP> and three independent test stands
- Fully automatic test runs based on component maintenance manuals (CMMs) test procedures
- 3 self-sufficient test stands:
  - Test stand for Valves and High Flow Components <PP200VHF>
  - Test stand for Air Cycle Machines <PP200ACM>
  - Test stand for Air Turbine Starters <PP200ATS>

PNEUMATIC TEST STAND FOR VALVES AND HIGH FLOW COMPONENTS <PP200VHF>

- Dynamic flow tests under hot air- and cold air conditions to 3.0kg/s, 30bar, max. 650°C
- Quick clamping device for high dynamic flow tests with time-saving adaption of the unit under test (UUT)
- Working area with free switchable supplies and measurements for static and dynamic tests
- Vacuum chamber for cabin pressure components
- Closed test chamber with inspection window
- Port- and case-leakage measurements
- Split vacuum chamber for leakage measurement, Volume: approx. 160 litres / 97 litres
- Vacuum reservoir for leakage measurement, Volume: approx. 25 litres
- High accuracy of pressure- and flow measurements possible due to graduation
- Diving basin (capacity: 840 litres) for leakage tests

Quick clamping device

Working area with free switchable supplies and measurements

Vacuum chamber

Test cell

TECHNICAL DATA

> Input data pneumatic circuits:

3.0kg/s, max. 7bar, cold air
0.67kg/s, max. 30bar, cold air
3.0kg/s, max. 7bar, hot air 700°C
0.67kg/s, max. 30bar, hot air 700°C

> Quick clamping device:

0 - 3kg/s, 0 - 30bar, 20 - 650°C
0 - 0.15kg/s, 0 - 42bar, 20 - 450°C

> High pressure circuit for static test with air or nitrogen:

5 - 350bar

> Vacuum supply:

0.1 - 1bar absolute
Nominal suction capacity: 570m³/h and 11m³/h

> Measurements:

Flow:
0.004 - 25000Nl/min, ± 1% o.m.r.

Pressure:
0 - 400mbar to 0 - 400bar, ± 0.25% o.m.r.
18 free sensors

Temperature:
0 - 100°C to 0 - 1000°C, ± 0.5 - 4°C

> Electrical connections:

Test stand:
3/N/PE AC 50Hz 400V max. 32A

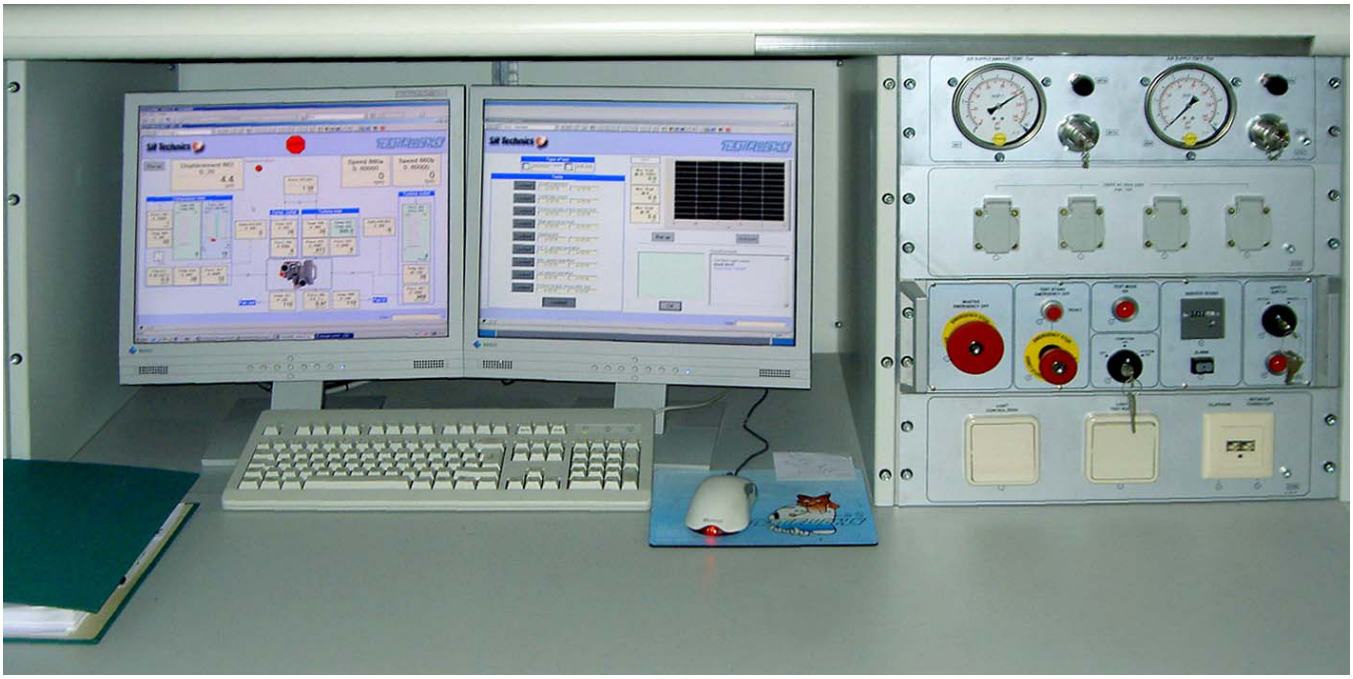
UUT supply:
2 DC 28V
1/N/PE AC 400Hz 115V

> Dimensions:

Length:	7300mm
Width:	3650mm
Height:	2600mm

PNEUMATIC TEST STAND FOR AIR CYCLE MACHINES <PP200ACM>

- Hundred percent inspection of Air Cycle Machines
- Acquisition of pressure, flow, temperatures, leakage, speed, vibration
- Universal controlled heat exchanger to test several ACM-types on one test stand
- Closed test chamber with inspection window
- 2-fold redundant speed measurement with safety monitoring
- Elevating truck for easy adapting of the units under test



TECHNICAL DATA

> Input data pneumatic circuits:

1.32kg/s, max. 7bar, cold air
1.32kg/s, max. 7bar, hot air 700°C

> Supply Air Cycle Machine:

0 - 6bar, 20 - 250°C

> Heat exchanger:

0 - 6bar, max. 250°C
max. 160kW cooling capacity

> Measurements:

Flow:
0 - 1.32kg/s, ± 2% o.m.r., 2 steps

Pressure:
0 - 10bar, ± 0.25% to ± 1% o.m.r.
0 - 100mbar diff, ± 0.25% o.m.r.

Temperature:
-40 - 800°C, ± 0.5°C to ± 4°C

Humidity:
0 - 100% r.H., ± 5% o.m.r.

> Electrical connections:

Test stand:
3/N/PE AC 50Hz 400V max. 32A

UUT supply:
2 DC 28V
1/N/PE AC 400Hz 115V

> Dimensions:

Test frame:

Length:	2745mm
Width:	1200mm
Height:	2940mm

Operating desk:

Length:	1600mm
Width:	1000mm
Height:	1360mm

PNEUMATIC TEST STAND FOR AIR TURBINE STARTERS <PP200ATS>

- To test Air Turbine Starters
- Measured variables: vibration, speed, torque, pressure, flow, temperature, electric resistance, run up period
- Mass simulation unit with 2 flywheel masses (6.78kgm² resp. 22.10kgm²)
- Drive of the UUT via electric motor for overrunning test
- Check of the mechanical centrifugal clutch
- All tests in one clamping can be performed manually, semi- and fully automatic
- Video monitoring of the UUT
- Closed test chamber with inspection window

Test frame

Measuring cabinet

Operating desk

TECHNICAL DATA

> Input data pneumatic circuits:

3.5kg/s, max. 7bar, cold air
2.0kg/s, max. 7bar, hot air 700°C

> Supply Air Turbine Starter:

3.5kg/s, 0 - 6bar, max. 250°C

> Measurements:

Flow:
0 - 3.5kg/s, ± 2% o.m.r.

Speed:
0 - 18000rpm, ± 2rpm

Temperature:
0 - 800°C, ± 2°C

> Mass simulation:

Flywheel mass 1:	6.78kgm², max. 6000rpm
Flywheel mass 2:	22.1kgm², max. 6000rpm

> Electrical connections:

Test stand:
3/N/PE AC 50Hz 400V max. 32A

UUT supply:
2 DC 28V
1/N/PE AC 400Hz 115V

> Dimensions:

Test frame:

Length:	1800mm
Width:	1160mm
Height:	1310mm

Operating desk:

Length:	1600mm
Width:	1000mm
Height:	1360mm

Test chamber:

Length:	3300mm
Width:	2775mm
Height:	3000mm

PNEUMATIC / HYDRAULIC SUPPLY <PP200SP>

- Pneumatic and hydraulic supply of the test stands <PP200VHF>, <PP200ACM> and <PP200ATS>
- Hot air generation:
  - Propane heater: 1300kW
  - Propange heater: 650kW
  - Electric heater: 75kW
  - Heat exchanger
- Compressed-air generation:
  - Compressor max. 30bar
  - Compressor max. 42bar
  - Cooling unit for compressed air
  - 4 x 1000 litres compressed air reservoir
- Hydraulic supply:
  - Hydraulic supply unit max. 150bar
- Mixer for temperature controlled commixture of cold and hot air
- Control via the test stands <PP200VHF>, <PP200ACM> und <PP200ATS>

Propane heater (7bar)

Electric heater

Cooling unit

Compressed air reservoir
Mixer + Hydraulic supply unit

Compressor (42bar)

Compressor (30bar)

TECHNICAL DATA

> **Compressed-air supply for the unit:**

3.5kg/s, 6.6 - 7.2bar, ambient temperature

> **Propane heater:**

650kW, 0.67kg/s, 700°C, 30bar
1300kW, 1.5kg/s, 700°C, 7bar

> **Electric heater:**

75kW, 0.15kg/s, 550°C, 42bar

> **Compressed air compressors:**

0.67kg/s, 30bar, 160kW
0.15kg/s, 42bar, 75kW

> **Hydraulic supply unit:**

25l/min, 150bar

> **Compressed air reservoir:**

42bar, 4 x 1000 litres capacity

> **Cooling unit:**

Air rate 21300m³/h
92kW refigerating capacity
36kW connected load

> **Measurements:**

Temperature:
-20 - 800°C, ± 4°C

Pressure:
0 - 60bar, ± 0.25% o.m.r.

> **Electrical connections:**

Main current:	3/N/PE AC 50Hz 400V, max. 160A
Emergency current:	1/N/PE AC 50Hz 230V, max. 25A
Compressor (30bar):	3/PE AC 50Hz 400V, max. 350A
Compressor (42bar):	3/PE AC 50Hz 400V, max. 200A
Electric heater:	3/PE AC 50Hz 400V, max. 125A
Propane heater (7bar):	3/PE AC 50Hz 400V, max. 50A
Propane heater (30bar):	3/PE AC 50Hz 400V, max. 50A

> **Outputs:**

Supply <PP200VHF>:
3.0kg/s, max. 7bar, cold air
0.67kg/s, max. 30bar, cold air
3.0kg/s, max. 7bar, hot air 700°C
0.67kg/s, max. 30bar, hot air 700°C
0,15kg/s, max. 92bar, hot air 20 - 550°C

Supply <PP200ACM>:
1.32kg/s, max. 7bar, cold air
1.32kg/s, max. 7bar, hot air 700°C

Supply <PP200ATS>:
3.5kg/s, max. 7bar, cold air
2.0kg/s, max. 7bar, hot air 700°C

Technical data are subject to change!

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