POWERMAXX MODULE TECHNOLOGY

PD Tech Power Engineering AG designs, engineers and manufactures high voltage test systems for rotating machines. Flexible and modular design allows adapting the test system to the specific needs of a customer. Designs include:

- shipping container design
- stationary laboratory systems
- mobile trailer solutions with office and workshop space
- thermally insulated design with air condition

High voltage test systems include:

- oil insulated (biodegradable fluids) and cast resin design
- high voltage transformers and compensating reactors
- mobile designs up to 50kV
- power frequency testing
- universal power and control unit with low primary power requirements
  (e.g. 400V, 32A, 50 Hz)
- HV compensation reactor banks selectable by pneumatic relays (option).
- fully screened design for extra safety and shielding
- connection of test objects with flexible HV cables and tailor-designed connection assemblies

- integrated power factor and capacitance measurement, standard capacitors integrated into shielded design

- integrated partial discharge measurements, coupling capacitor integrated into shielded design.

- optional computer control, with pneumatic switching units

Mobile Testing & Workshop Trailers

Example: three axle trailer, pulled by 4WD vehicle

Control Room Examples

Control Room Custom Design

DC High Voltage Control Module (option)

HV-Coaxial Connectors

Isolated High-Voltage Connectors

Pneumatic Switching Units (PSU)

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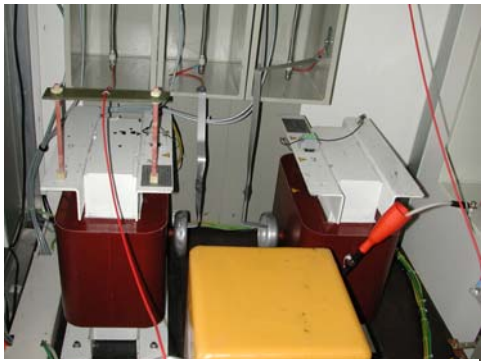
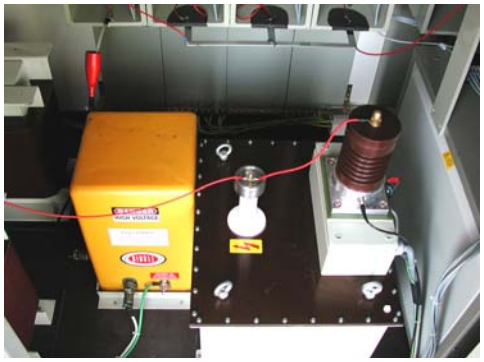
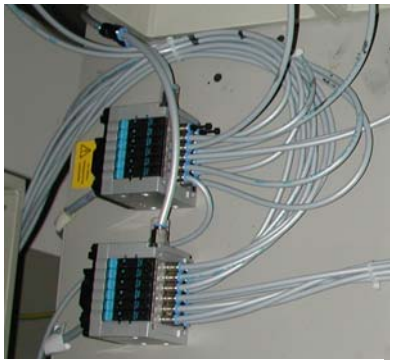


Compensating Reactors



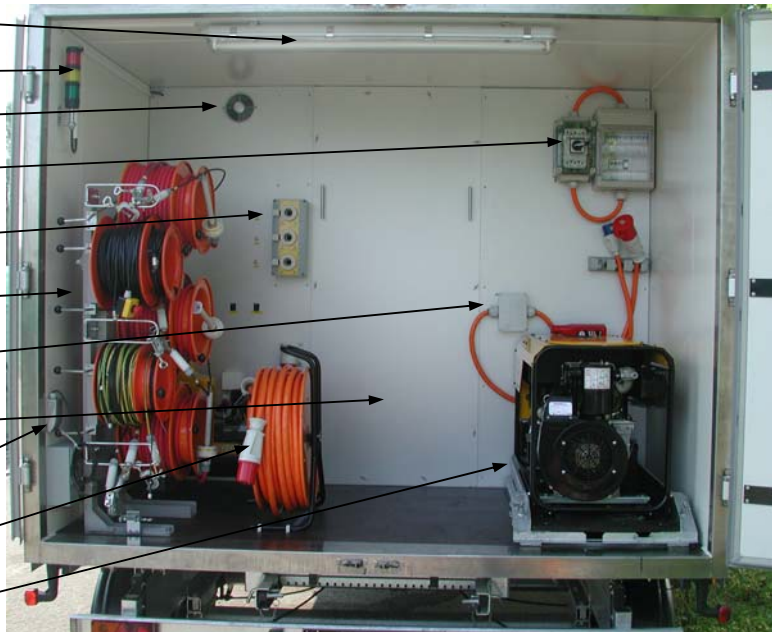
AC & DC High Voltage Unit (18kV &70kV)



Pneumatic Controls (PSU)

Back-View of HV-Room

Neon tube
warning lamp
Ventilator
Power switch & fuse Unit
connection box (70kV)
Motorised HV and grounding Assembly
Switchbox (PS-Generator)
Access to the HV room
foot pedal for cable assembly
Power supply cable PS-cable
Generator

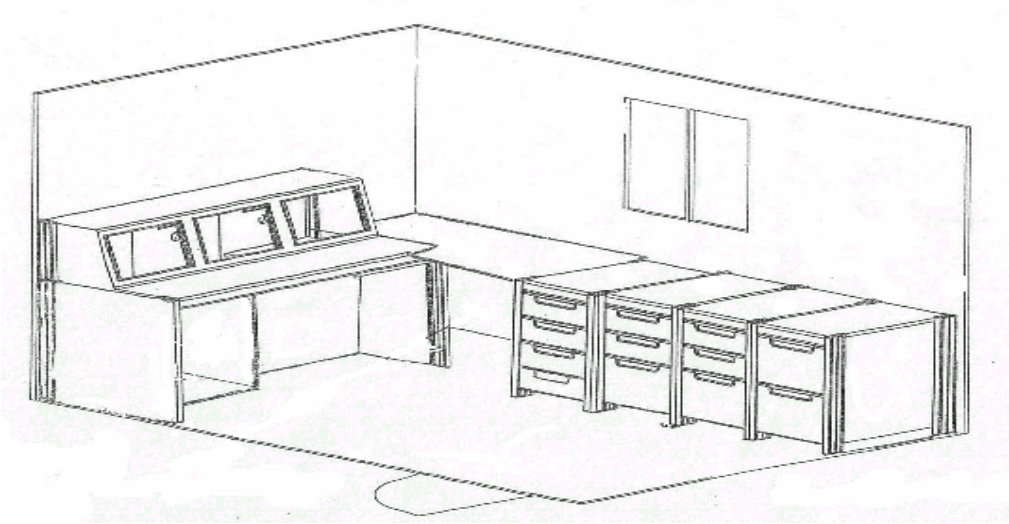


Stairs

Back View of Trailer

Equipment Description

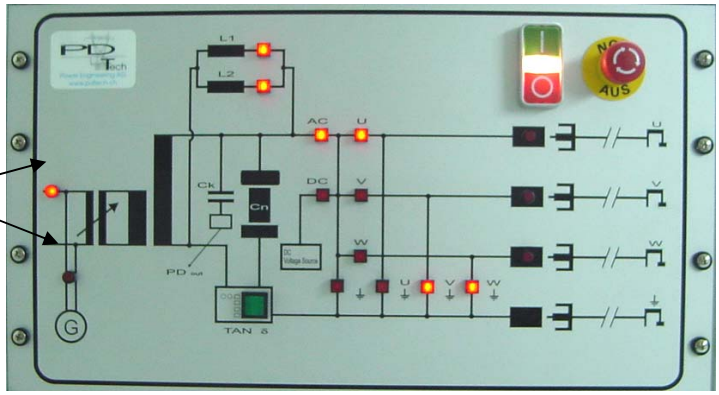
Tailor-Designed Control Rooms



Pneumatic Switching Unit Control

This front panel shows all possibilities of connections for tests with trailer.
AC: for VAC test
DC: for VDC test

The two LED's indicate if the trailer are connected by the external power supply or by a generator



High voltage Control Frontpanel

- Interlock key
- 0-position
- Over current power off
- Clear
- Voltage 0-18kV
- Display Input/Output

Interface Panel

- LAN connection to computer
- DC HV control
- Serial to computer
- PD out

Universal Capacitance and tan δ Measuring Bridge

- Fully Automatic
- Very easy to operate
- Capacitance measuring range up to 10'000* C_n
- Tan delta uncertainty $1*10^{-4}$
- Lightweight unit of only 9kg
- Fully automatic C and tan δ measurement
- RS232 Interface for remote control and data transfer
- Storage of up to 10files with up to 50 measurements records each

PC-Equipment

- 19" rack 300W ATX
- Protection door

- Motherboard ASUS
- Pentium 4 2.0 GHz
- DD-Ram 256MB
- FD TEAC 31/2" 1.44MB
- CD-Rewriter Plextor
- HHD IBM 80GB
- Microsoft Windows 2000

19” drawer for storage a cordless keyboard and a cordless mouse.

Picture 24:

TFT Monitor

- Philips 170B2T
- TFT 17”
- Size TCO 99

- Satellite Pro 6100/1.6GHz P4
- 256MB, 20GB; 14.1”, V.90
- Win 2k/XP engl.,Keyboard CH
- Special: keycaps for Toshiba UK
- storage of mobile test equipment

Powersocket Systems

Example:

2 British standart Power sockets

Power Socket
International Standart Schuko
(German standard)

Main switch

Main switch for the controlroom without powersockets and the HV-control panel.

High Voltage DC Equipment

Example:

Integration of 3rd party products

The Biddle High Voltage DC Dielectric Test Sets provide the most dependable, portable dc high-voltage sources for checking the quality of electrical power cables, motors, switchgear, insulators, transformers and capacitors.

External Security Lamp and Security Systems

Example:

Three colors
Yellow: (Flikker): High voltage is on

Red: High voltage is on

Green: High voltage is off

One Set Capacitive Couplers

Example:

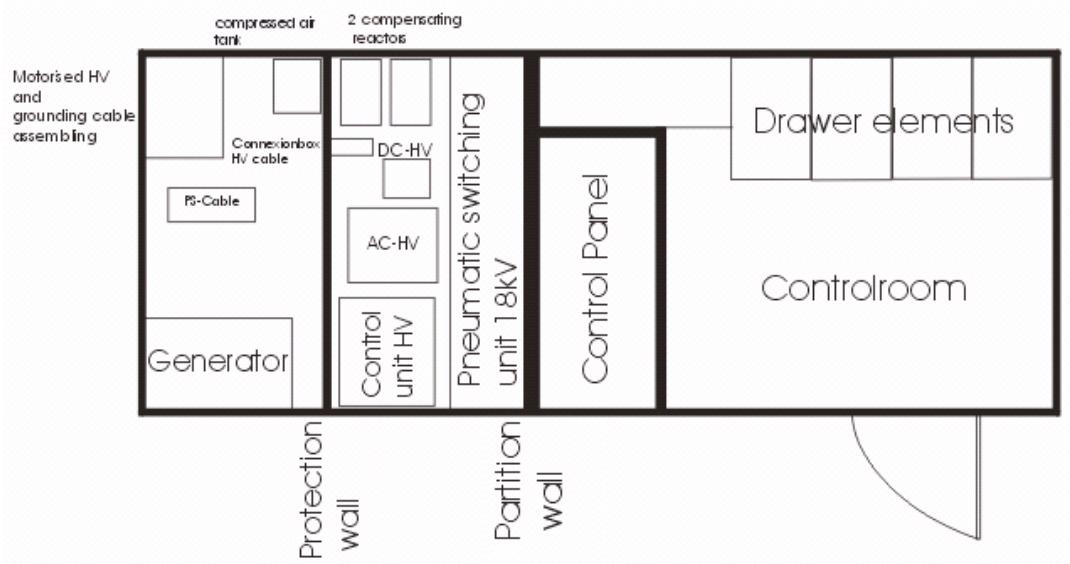
1 set capacitive copplers CC20.
Can be used for temporary connections for on-line measurements, or special applications in off-line testing

Ultrasonic Partial Discharge Localisation UE Systems

Example:

The ULTRAPROBE provides data acquisition through three modes: through auditory channels (via a headset that has been specifically selected for heavy duty industrial use), through a uniquely designed bi-modal analog meter, and through the ability to switch to auxiliary interfacing for chart recorders (optional), vibration data collectors, spectrum analyzers, DAT & standard audio recorder.

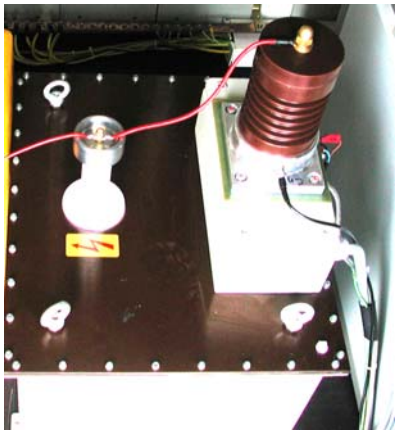
HV-Room Design Examples



Oil Filled High Voltage Transformer and Standard Capacitor

Example

- Output voltage 18kVAC
- C_N =1000pF



Compensating Reactors

Example:
Two high voltage compensating reactors

- 18kV
- 2A @ 50Hz

Pneumatic Switches

Example:

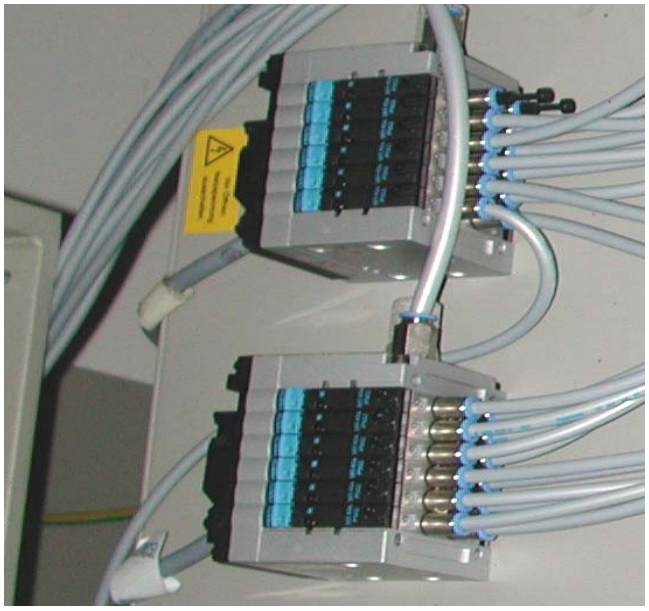
The cylinders are equipped with springs to assure the connections in case of an air pressure breakdown.

This picture shows the grounding switches.

Pneumatic Switching Unit

Example:

This Unit controls 11 pneumatic cylinders. They are connected by a 24pole cable to the microcontroller.



Motorised HV and Grounding Assembly and Power Supply Cable

Example:

Admission for

- 3 x HV-cable
- 3 x coaxial cable for Signal transmission
- Interlock
- Security lamp
- Ground cable

Air Compressor

Example:

Air compressor

- 8bar pressure
- Volume: 25litre tank
- Presure control sytems
- Finely Presure regulation

Power Switch and Fuse Units

Example

- Powerswitch 3*63Amps.

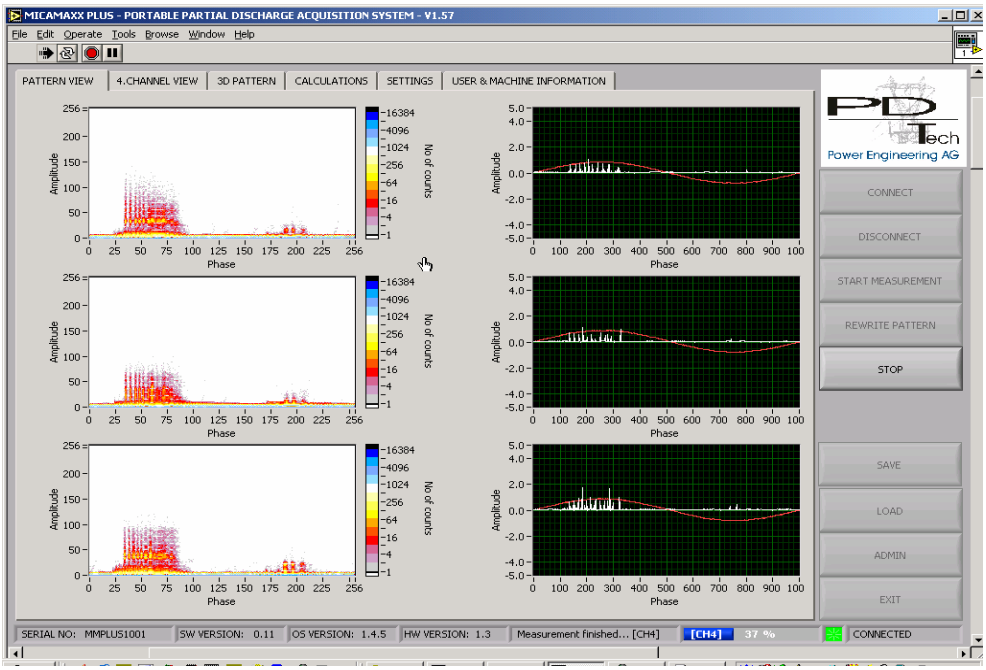
Generator

Example:

- Synchronous Geno
- 230V
- 11.5kVA
- 9.2kW
- 50A
- 50Hz
- Diesel
- Power 20 Hp
- Tank 20litre

Partial Discharge Measuring Instrument

For Partial Discharge Acquisition we supply the MICAMAXXplus Portable Partial Discharge Detector which van be used for on- and off-line Testing due to variable filtering inputs. System comes with LAN Interface for Computer Connection, 4 PD Inputs, analog and digital pattern display software.



General Specifications:

The High Power Output HV Test Systems (HPO Systems) typically consist of:

- AC Primary Control Unit (PCU)
- Power Transformer (up to 50 kV, 1A standard)
- Compensating Reactors (up to 50kV, 2A standard)
- optional pneumatic switching unit or manual connection of compensating reactors
- built in coupling capacitor and standard capacitor for loss and pd measurements
- HV Connection Cable (fixed mounting or coaxial connector), Grounding Cable, Power Supply Cable, cable drums.
- optional safety equipment, warning lights and barriers
- optional generator (3rd party product)
- optional trailer (custom design)
- optional instrumentation (separate leaflets)

A. AC Primary Control Unit PCU (two modules)
   a. Power Unit
      motorized variac (ring core), 400V/0-400V, 32A, 12.8 kVA
      additional primary compensation, switch-selectable in 3 steps (e.g. compensation choke with 3 taps 5-10-15 kVAr, adjusts power unit to transformers with higher power rating, while keeping the maximum required power as low as 12.8 kVA), current transformer for protection and current measurement, main and transformer breaker, max. current relay, isolation transformer for 230V and 24V, connectors for in- and output, control and measureing cable. (built in steel case 600x400x840mm)
   b. Measuring and Control Module
      contains all necessary buttons and indicators, emergency switch, digital volt- and amperemeters for low and high voltage circuit, built in 19”(3hu) case.

B. High Voltage Transformers and Reactors
   (Max. output current of test system: transformer current plus n x rated current of compensating reactor, at rated voltage of system)

   Transformer (standard cast resin test transformer, oil optional)
      Ratios: 400V to 15kV, 18kV, 25kV, 30kV, 40kV, 50kV
      Rated Frequency 50/60 Hz
      Rated Secondary Current: 1A continuous
   Compensating Reactors (standard cast resin)
      Rated Current 2 A standard
      Rated Voltages 15kV, 18kV, 25kV, 30kV, 40kV, 50kV

   Complete Systems are offered individually, according to customer needs