



Update 2016

News from the Manufacturer of Electrical Test Equipment

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*XVI. Szigetelésdiagnosztikai Konferencia
(19. - 20.10.2016, Sümeg)*

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SebaKMT - Company Structure



Location: Baunach

1951 Establishment Seba Dynatronic

1995 Acquisition of Hagenuk – Hagenuk KMT

2003 Acquisition of K.I.V. Grevenbroich

2000 SebaKMT
Sales Organisation

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2012 Acquisition of SebaKMT by
Megger (Dover – UK)



Location: Radeburg

1946 Establishment HDW Elektronik

1991 Consolidation to Hagenuk – Hagenuk KMT

1995 Acquisition through Seba Dynatronic

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SebaKMT - Company Structure

- Megger & SebaKMT
 - ➔ The Puzzle is complete
- „*Energy*“ only *Megger* as Family Brand
- BUT: Brand „*SebaKMT*“ still existing in „*Water*“ Business





The Centrix 2.0

- The *new Standard* for central operated Test Van Systems regarding *User Friendliness & Performance*



CENTRIX 2.0

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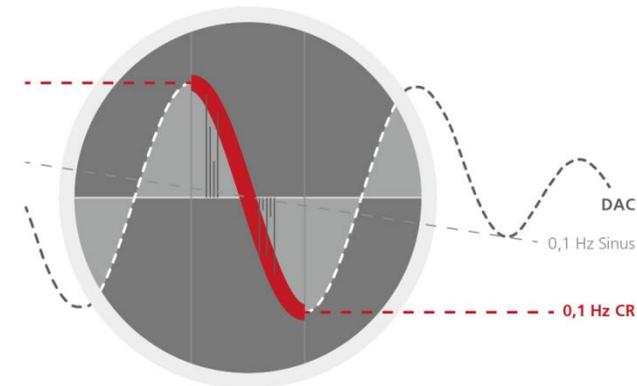
New **T**est & Diagnostic Module

- **Revolutionary Milestone** for Testing & Diagnosis on MV Power Cables
- Central operated Control Unit
- **4 Voltage Wave Shapes**
- **8 different Configurations**
- **Built-in** PD Coupling Unit



New **T**est & Diagnostic Module

- **Cable Testing, Cable Diagnosis & Sheath Testing** in one Device
- Norm conformable, **powerful VLF Testing** up to 5,5 μF at 36 kV_{eff}
- **Internal TanDelta** Measurement with automatic Interpretation of Results acc. IEEE 400.2
- **Partial Discharge** Measurement using:
 - ➔ 0.1 Hz VLF Sinus,
 - ➔ DAC
 - ➔ 50 Hz Slope Technology
- **Monitored Withstand Test**

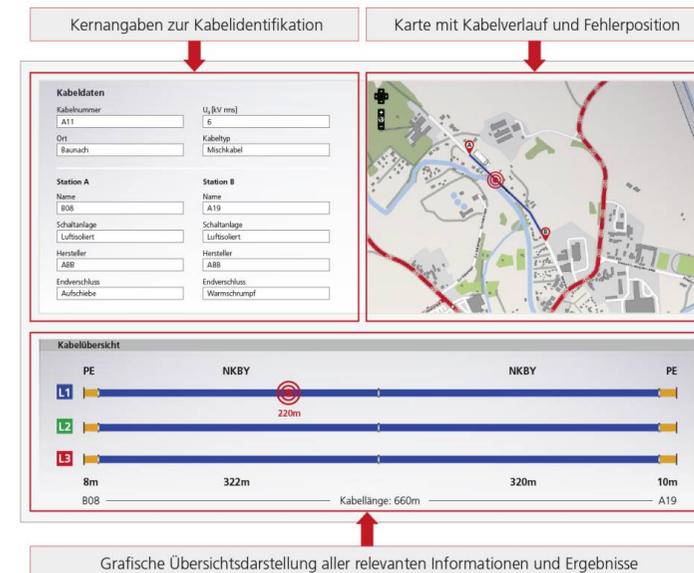


New **T**est & Diagnostic Module

Select your systems based on your needs! All systems can be upgraded in a later time span without the need of shipping the unit back!								
	TDM 45-P	TDM 45-P-TD	TDM 45-P-PD *	TDM 45-P-TD-PD *	TDM 4540-P	TDM 4540-P-TD	TDM 4540-P-PD	TDM 4540-P-TD-PD
VLF Testing of short cable lengths	✓	✓	✓	✓	✓	✓	✓	✓
VLF Testing of long cable lengths	⊘	⊘	⊘	⊘	✓	✓	✓	✓
TanDelta diagnosis	⊘	✓	⊘	✓	⊘	✓	⊘	✓
Partial discharge diagnosis	⊘	⊘	✓	✓	⊘	⊘	✓	✓
	Set 1	Set 1	Set 2	Set 2	Set 3	Set 3	Set 4	Set 4

GPS Mapping

- New Innovation for *Simplification* of:
- Cable Fault Pin-Pointing
- Freely definable Input Mask
- Position Fixing



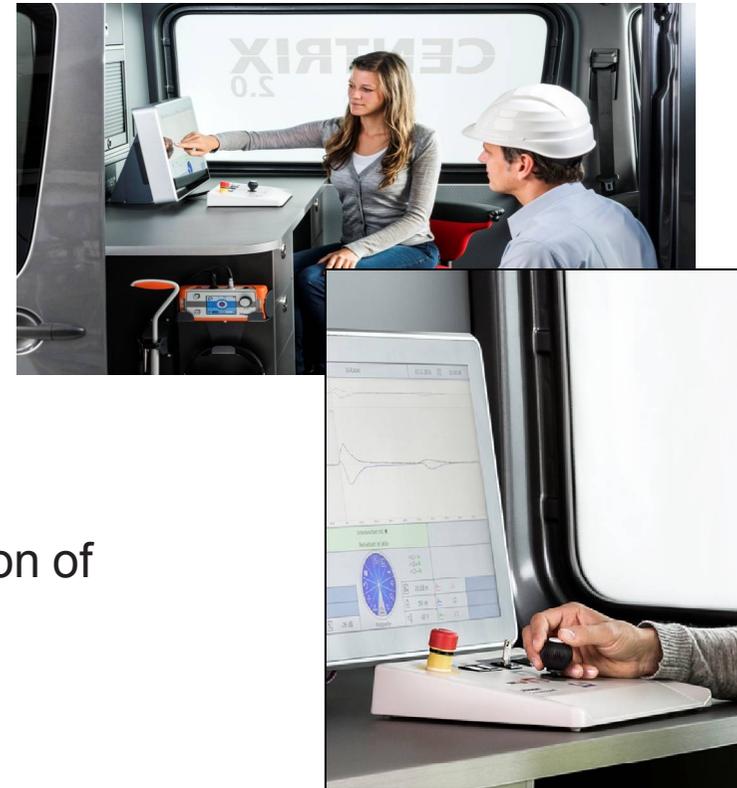
CableBook – Report System

- Centralised & *fully new designed Protocol System* for all Measurement Methods:
- *Cable Fault Location*
- *Testing*
- *Diagnosis*



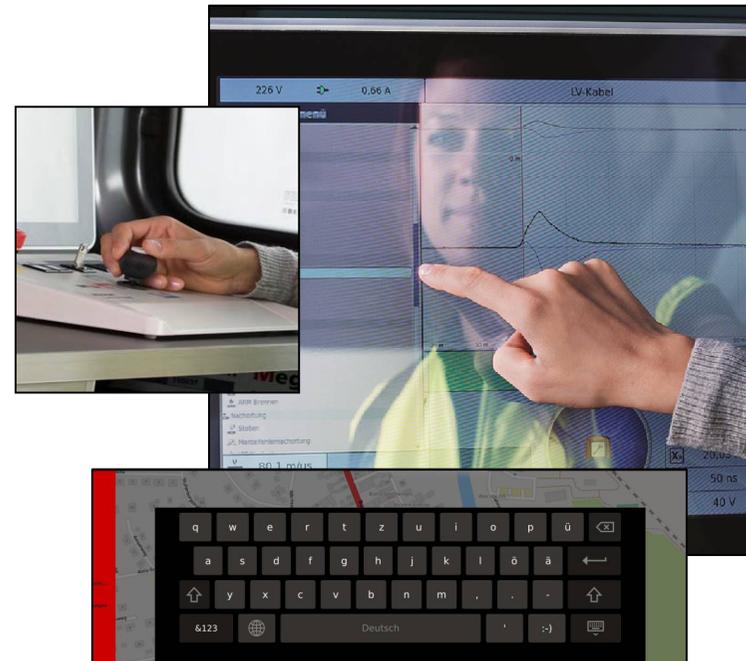
21,5“ Control Unit

- “*Heart*” (Centrepiece) of Centrix 2.0
- Contains all Processor Elements & Interfaces
- Linux OS
- Intel i5 Processor with 8 GB Ram
- At least 320 GB SSD Memory
- USB 3.0, Ethernet, DVI
- *No additional PC* for operation & evaluation of PD Diagnostic Tests necessary



21,5" Control Unit

- *JogDial* & *Multi-Touch* Operation
- Intuitive Control
- Direct Data Entry
- Easier Handling
- Operator decides:
 - ➔ Jogdial
 - ➔ On-screen- or external Keyboard
 - ➔ Moused for data input
- Second Display optional available



Centrix City



Future Project - Centrix Village ?



MV DAC-30

- *First fully metallically enclosed PD Detector* with *integrated Power Source* in entire World
- Most *sophisticated PD Software* amongst all others
- *DAC Voltage* for a direct Comparison with *Operating Frequency*
- Two Part Design, *easy to handle/* carry



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Technical Overview

- Offline PD Measurements safely made
 - ➔ Fully metallically enclosed Housing
 - ➔ No Parts under HV Potential
- Internal Support Capacitor
 - ➔ Short Cable Lengths are no Problem
- High testable Capacity
 - ➔ Cable Lengths of 20 km at 30 kV_{peak} Test Voltage are no Problem
- For offline PD Diagnosis up to 25 kV Rated Cables



Technical Overview

- PD-free HV Connection Cables available in several Lengths
- Optional available rugged Hard Case Housing for safe Transportation

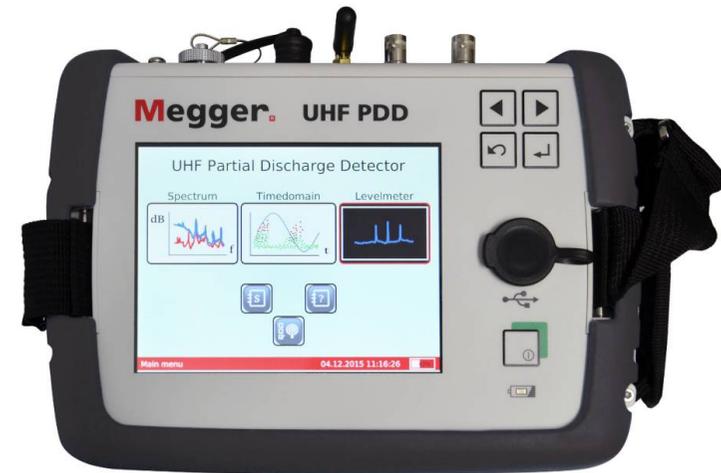


Target Applications

Application Area	Why needed?	Influencers
MV Cables Commissioning	Quality Control of newly installed Cables	Industry, Asset Managers, Construction Department
MV Cables Condition Monitoring	Condition Monitoring to prevent Outages during Service Life	Industry, Asset Managers, Maintenance Department

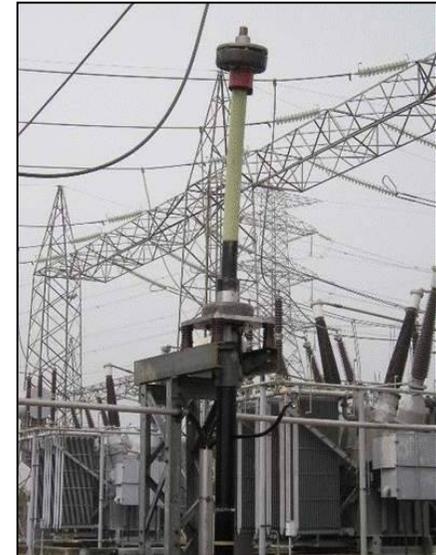
Online Handheld UHF PD Detector

- Quick Surveying Tool for MV & HV Plants
- Touch Screen for easiest Operation
- Longest Battery Power amongst others
 - ➔ Up to 12 Hours Operating Time
- Inbuilt Calibrator ensuring highest Measurement Reliability
- 50/ 60 Hz Mains Synchronization
- Dual Channel



Why UHF PD?

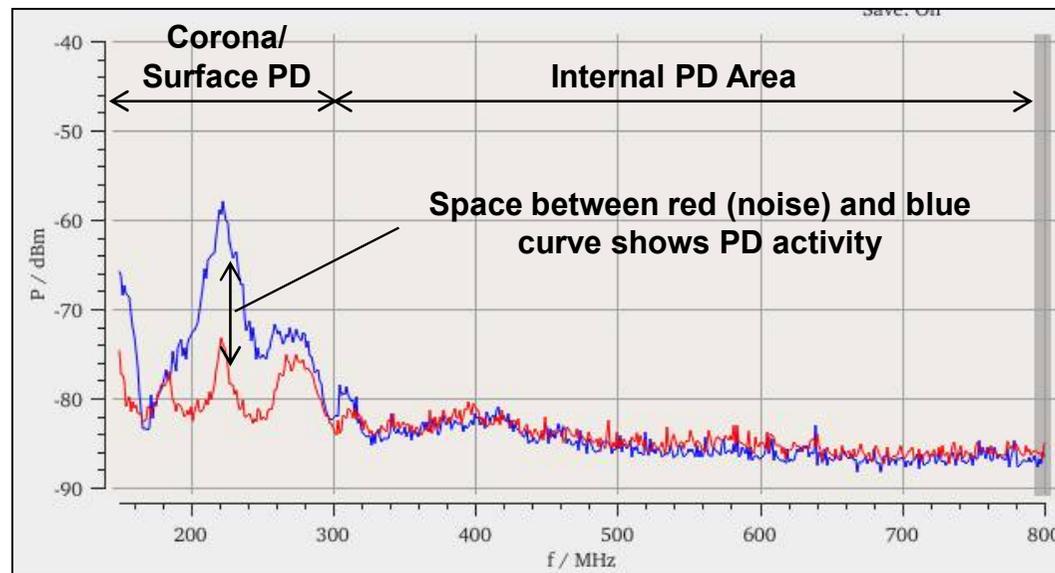
- Termination Failures are expensive & lead to long Outage Times!



- 380 kV Cable (installed 2009)
- Phase to Ground Fault in Termination at GIS
- Outage Time 10 Months

Why UHF PD?

- Dangerous internal PD can easily be distinguished from Corona & Surface Discharges



Technical Overview

- **UHF Sensor**
- For permanent Installation
- UV resistant
- Maintenance free
- Applicable up to 500 kV Rated Cables
- Operating Temperature:
- 40° C ... 85° C



Technical Overview

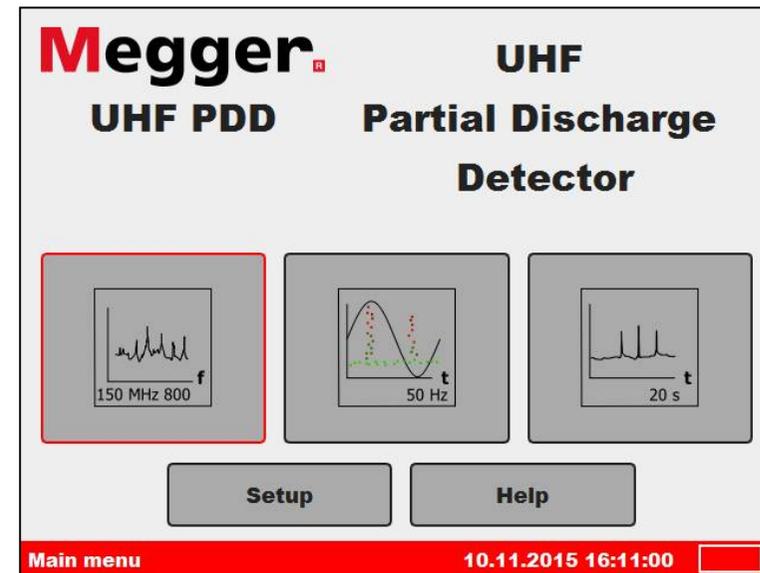
- Online PD Measurements simply made!
- Suitable for a variety of Sensors
 - ➔ UHF Antenna
 - ➔ UHF Termination Sensor
 - ➔ TEV Sensor
 - ➔ HFCT Sensor
- One Device for multiple Applications



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Technical Overview

- User Interface
- Three Measurement Modes:
 - ➔ Spectrum
 - ➔ Time
 - ➔ Level



Technical Overview

■ Spectrum Analysis

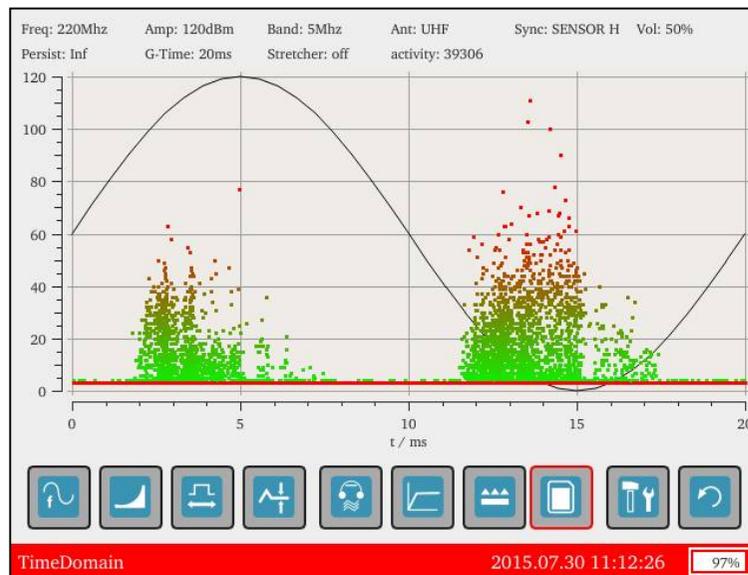
➡ Detecting Noise Level & Partial Discharges



— Background Noise Level
— PD Measurement Curve

Technical Overview

- Time Domain Analysis
 - ➔ Partial Discharges synchronous?

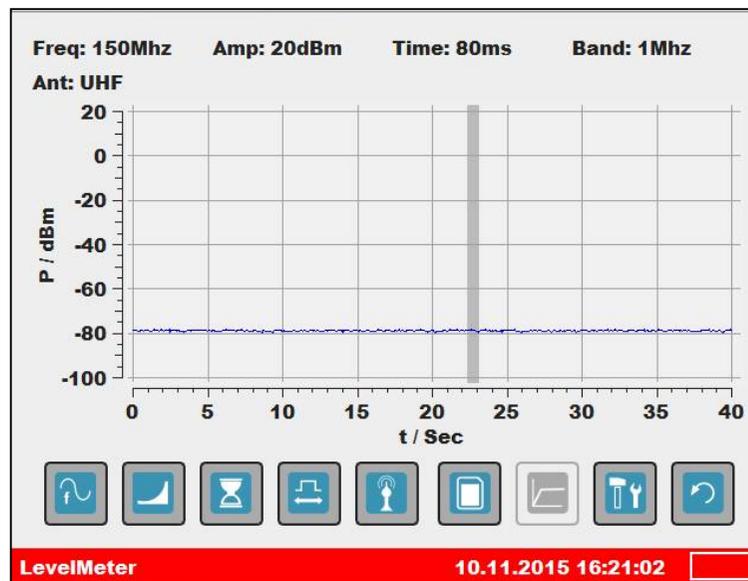


- 2D Pattern
- 3D PRPD Pattern

Technical Overview

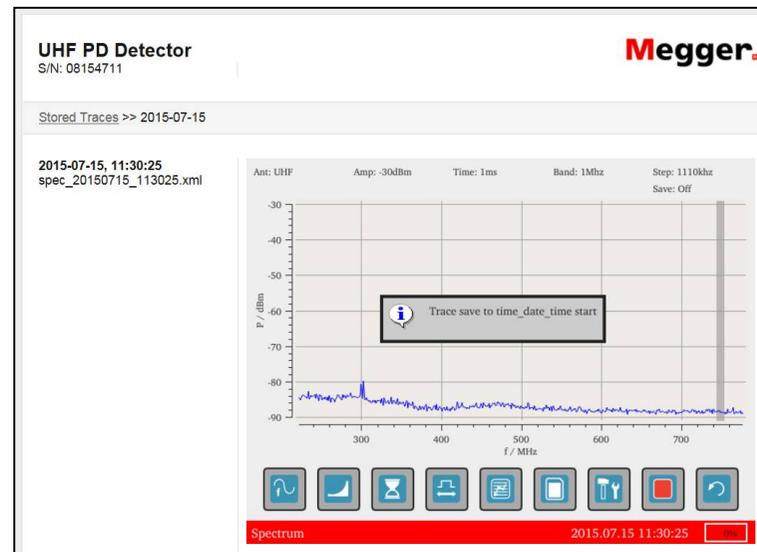
■ Level Measurement

➔ Partial Discharge Level over Time, how stable



Technical Overview

- Reporting Software via WebView or upcoming new CableBook



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Köszönöm a figyelmet!