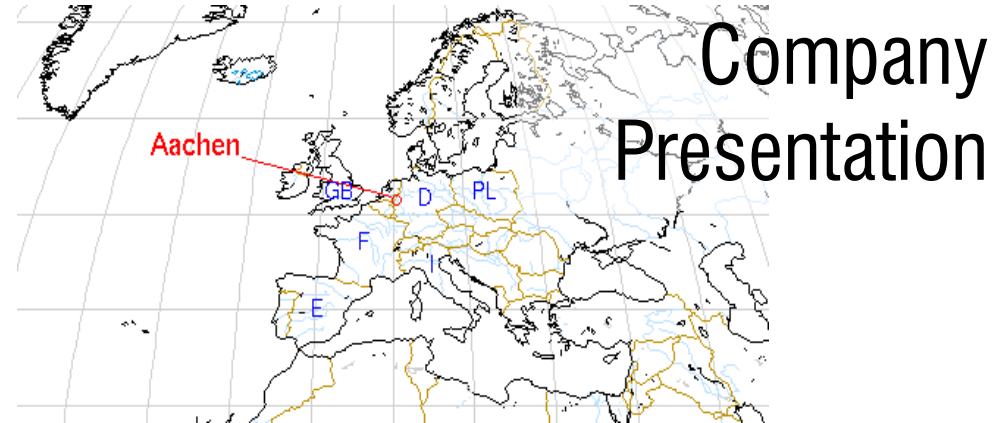


Power Diagnostix Systems GmbH
 Vaalser Strasse 250,
 52074 Aachen, Germany
 E-Mail: support@pdix.com
 Web: www.pdix.com

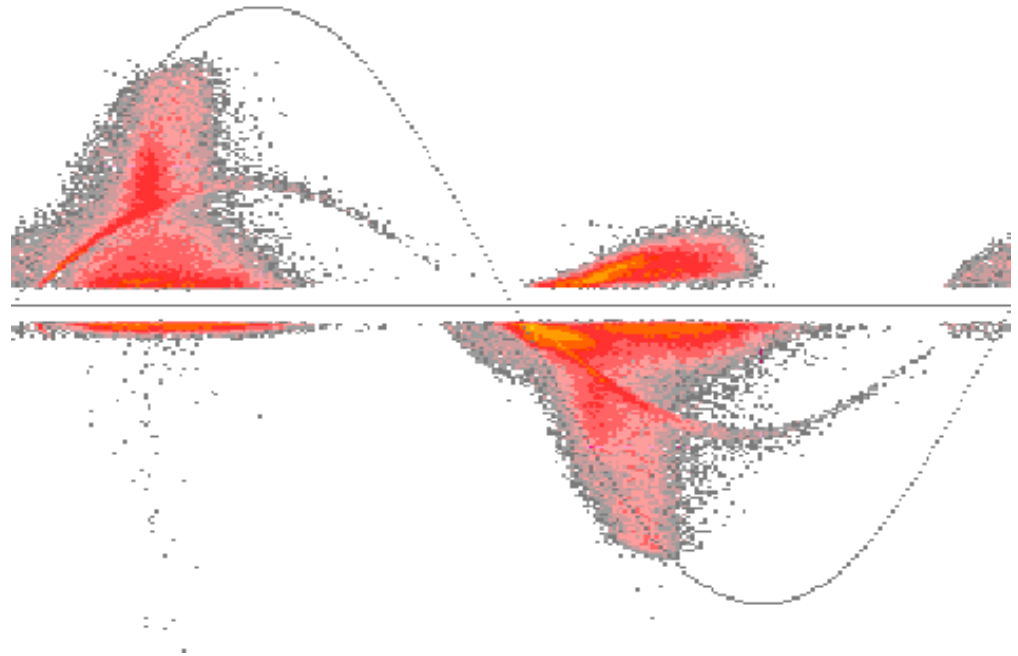


Company Presentation



公司介绍

- 概述
- 产品
- 服务
- 应用
- 总结



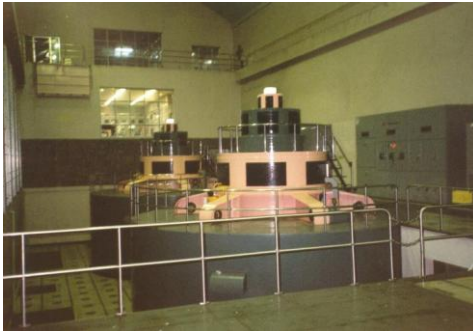
- 用于局部放电测量和介质损失测量的仪器
- 用于高压试验的测量系统
- 局部放电监测系统
- DAkkS 校准实验室
- 咨询, 服务, 研讨会和培训



- 宽范围的应用
- 用于产品整个生命周期的测量工具
- 应用从1kV 到 EHV ($>1\text{MV}$)
- 为苛刻的行业条件定制的仪器



Generators and Motors

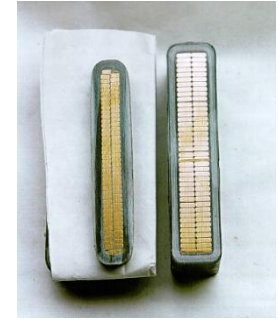


GIS/GIL



- 试验室内的PD/TD 验收试验
- 在AC 和 DC 电压下试验
- 用于现场测试的非常规方法
- 绝缘材料的研究

Research



Transformers, Bushings

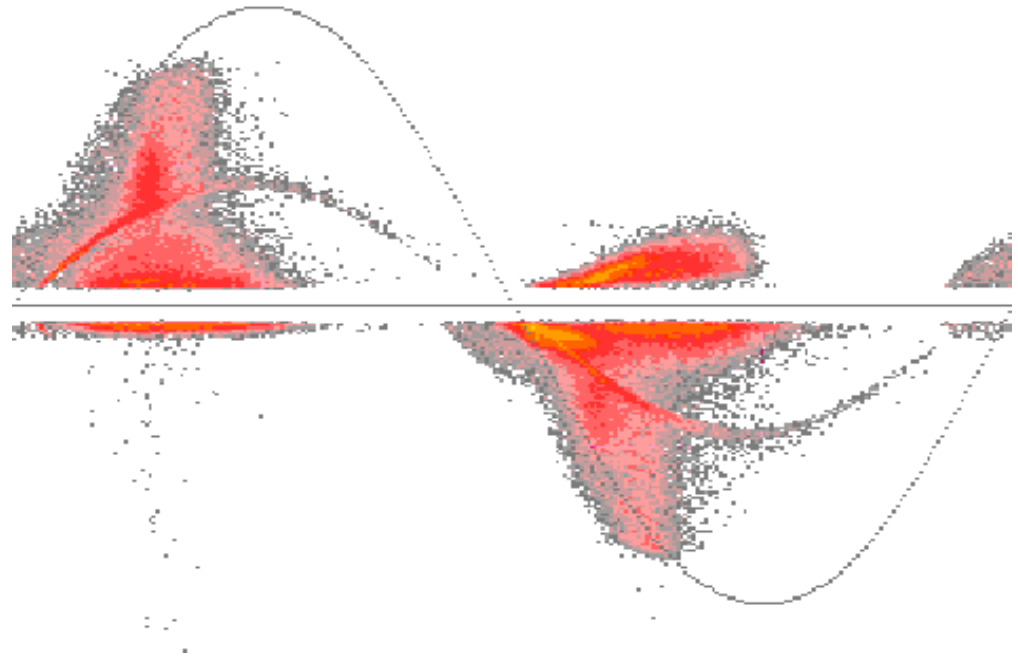


Power Cables, Joints, Terminations



公司介绍

- 概述
- 产品
- 服务
- 应用
- 总结



PD Measurement → ICMseries

- 仪器采用模块化设计理念
- 权威的校准(DAKkS)
- 符合IEC 或 IEEE 标准
(e.g. IEC60270, CISPR 18-2)
- 最高精度和多功能性

产品



PD Measurement → ICMseries → ICMsystem

- 计算机完全控制，通过 USB, LAN, 或 GPIB接口
- 实时测量
- HF 滤波器和Gating功能
- 时域信号分析
- 频谱分析
- RIV 和 超声波测量
- 单通道或8通道多工器

先进的 PD 设备



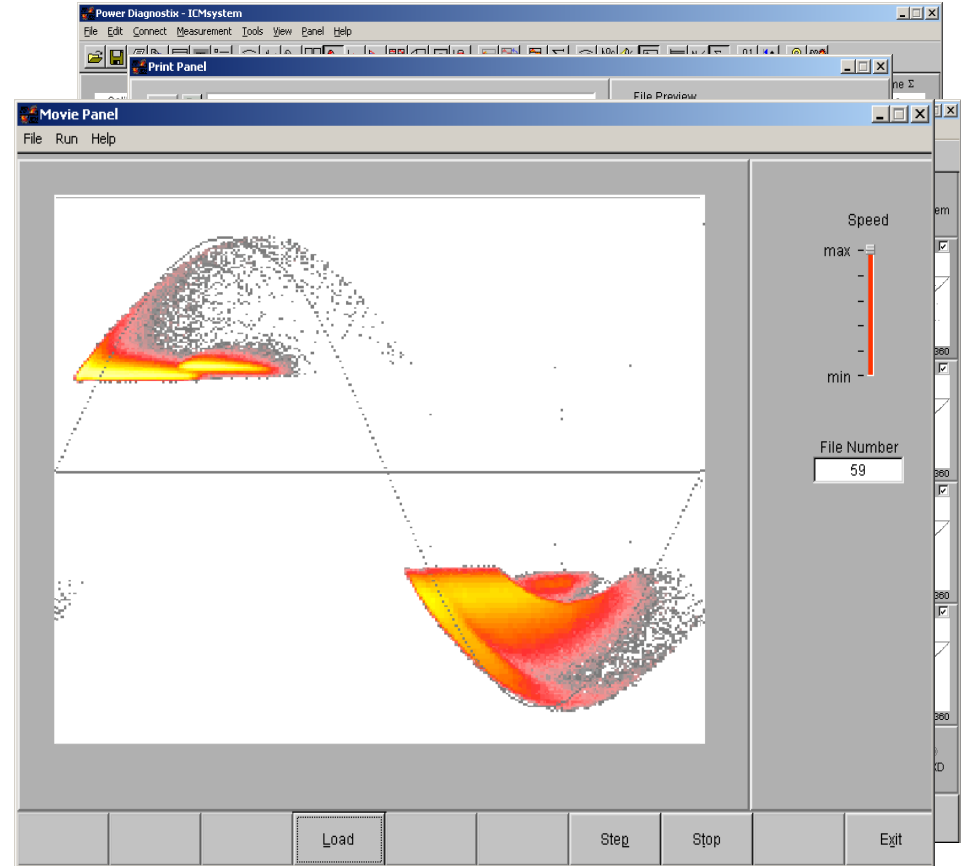
- 实时并行采集多达10个通道
- PD 和 RIV 并行测量
- 电压测量，多达9个同步信号输入
- 可分别设置 / 校准
- AC & DC 试验模式
- 符合所有变压器PD试验标准，
e.g. IEC60076-3

同时多通道测试



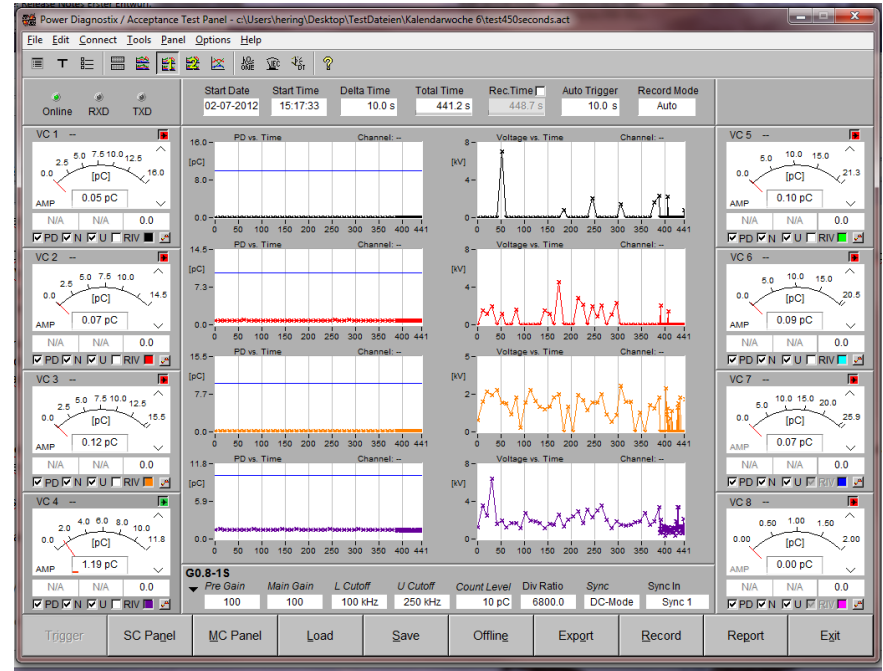
PD Measurement → ICMseries → ICMsystem SW

- ICMsystem 控制软件
用于 单通道和多通道仪
器版本
- 整合打印功能
- 多通道采集界面
- 统计功能
- Movie-回放功能



PD Measurement → ICMseries → ICMsystem SW

- 并行读取PD, RIV, Voltage, 和 Frequency 多达10通道
- 操作简单
- 校准矩阵功能
- 连续数据记录
- 多种输出格式
- 多通道图谱采集

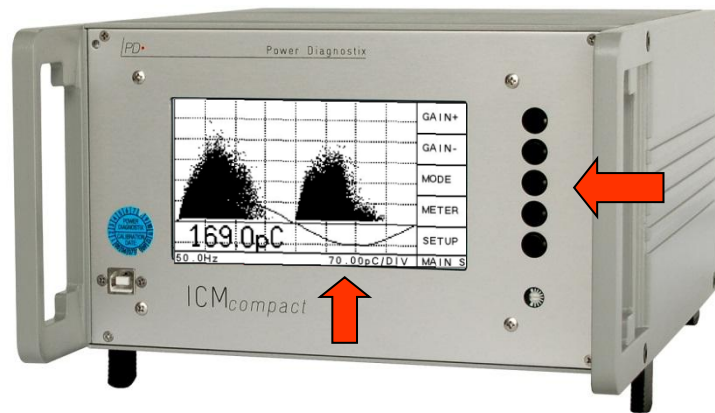


PD Measurement → ICMseries → ICMcompact

- 整合LCD 显示屏
- 通过按钮简单操作
- 多种显示模式
- USB, LAN接口
- 电压测量功能
- 噪声Gating, TTL Gating
- 电缆 PD 定位 (时域反射法)
- 4- 或 12-通道多工器
- 户外手提箱型或桌上型

独立的局放检测仪

用于质量控制



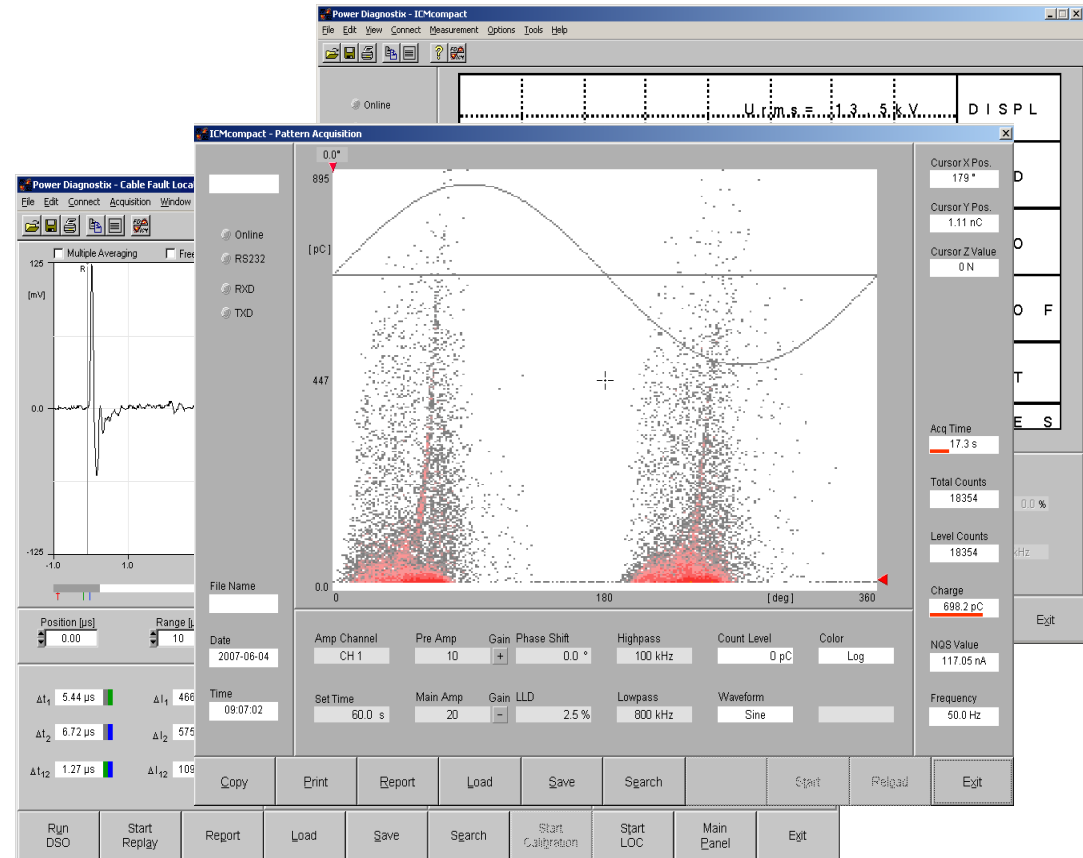
- 在特殊的频率进行局放检测
- 带通滤波器(9 kHz/300 kHz)
- 频谱分析
- RIV 测量
- 3 或 11 通道多工器
- 多种显示模式
- 远程控制软件

独立的局放检测仪 用于噪声环境



PD Measurement → ICMseries → ICMcompact SW

- 远程控制软件
- 屏幕截图
- 打印, 导出
- 存储
- 试验报告
- 高分辨率TDR
- 彩色局放图谱



PD Measurement → ICMseries → Accessories

- 耦合电容器
- HV 局放滤波器
- 测量阻抗
- 前置放大器
- PD & RIV 校准器



PD Measurement → ICMseries → ICMflex

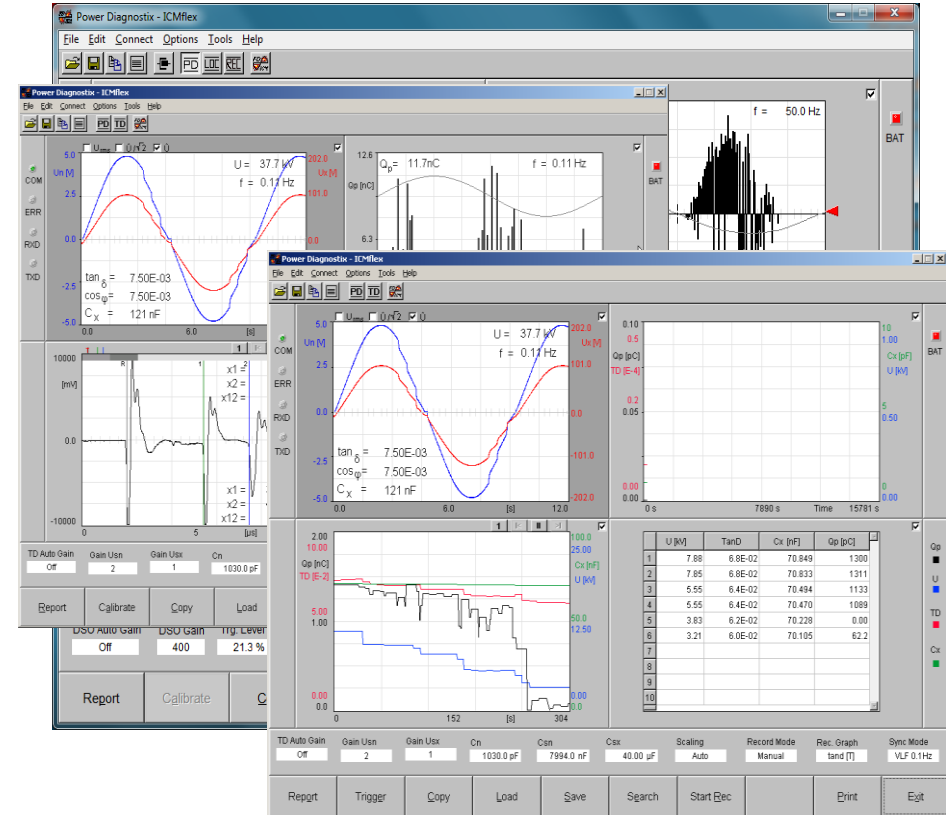
离线 PD & TD 测量

- 同时测量 $\tan\delta$, 功率因数, 电容量, 局部放电, 电压和频率
- 采集单元位于高压侧
- 通过光纤或蓝牙远程控制
- 电池操作多达12小时 (标准模式)
- PD 故障定位(DS0/TDR)



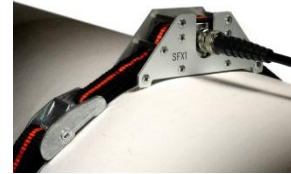
PD Measurement → ICMseries → ICMflex

- 一体化的操作界面
- 直接读取仪器所有相关设置
- 多个图表同时更新
- 多种输出格式
- 按照预先定义的步骤进行测试
- 固件自动升级



PD Measurement → AIAcompact

- 超声波局部放电检测
- UHF 测量模式
- 自动检测传感器类型
- 时间飞行模式和脉冲对应相位显示
- 软件可选



GIS/GIL现场测试



Special Instruments → ATTanalyzer

- 16 光纤输入通道
- 光纤传输
- 独立的声学传感器
- $1\mu\text{s}$ 采样率
- 可设置触发动作



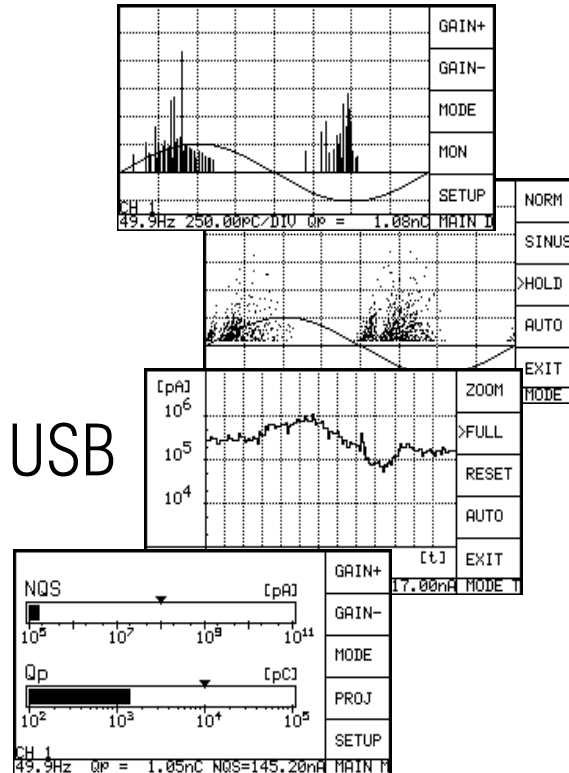
GIS/GIL闪络定位



PD Measurement → Monitoring → ICMmonitor

旋转电机局部放电监测

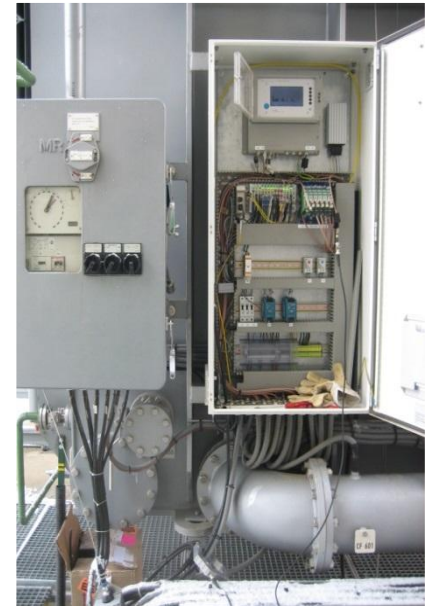
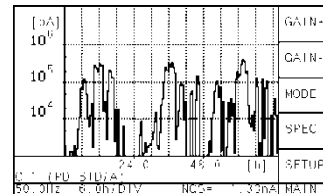
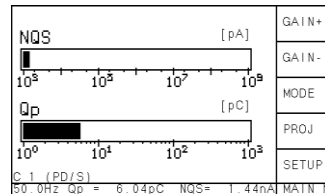
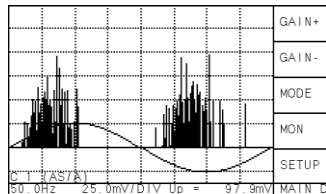
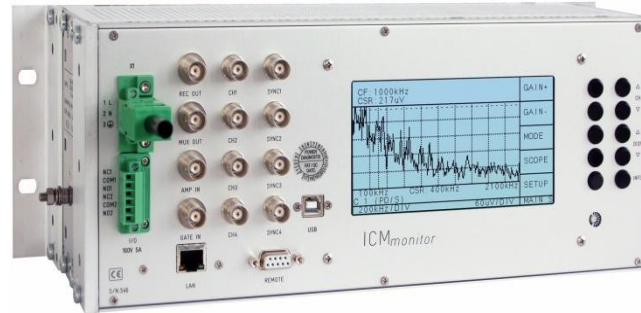
- 4-, 8-,或12-通道
- 多种显示模式
- Gating 功能 (可选)
- 可调整报警水平
- 硬件I/O接口
- 通过Modem, LAN, 或 USB 远程控制
- 模拟 4-20mA输入



PD Measurement → Monitoring → ICMmonitor

噪声环境中的局部放电监测

- 电气和超声波检测
- 选频测量
- 宽带和窄带滤波器
- 频谱分析
- UHF 测量
- IEC61850, 其他



PD Measurement → Monitoring → ICMmonitor / SPECmonitor

- Remote Access to Multiple Monitoring Instruments
- Long Term Trending, History Structure
- Alarm Handling
- Colored PD Pattern Acquisition
- Automated Data Acquisition (Scanning)
- IEC61850 interface



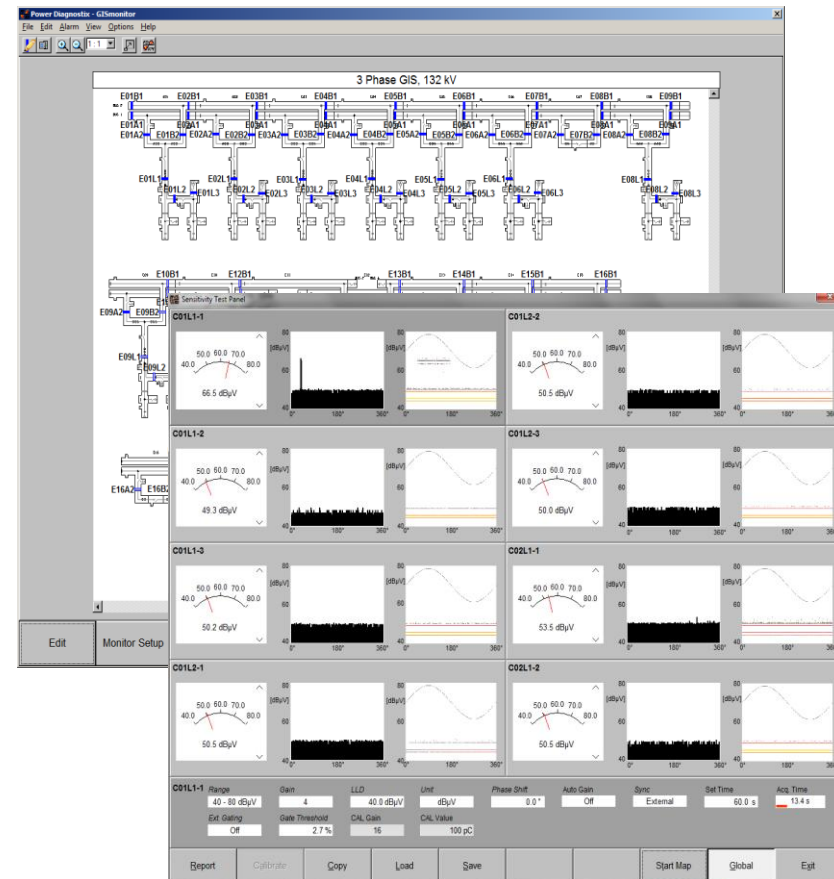
GIS系统的局部放电在线监测

- 适合所有内置式和外置式UHF传感器
- 独特的频率转换
- 并行UHF 局部放电测量多达500 通道
- 系统配置可扩展
- 报警检测
- 自动噪声抑制模式
- 基于网络



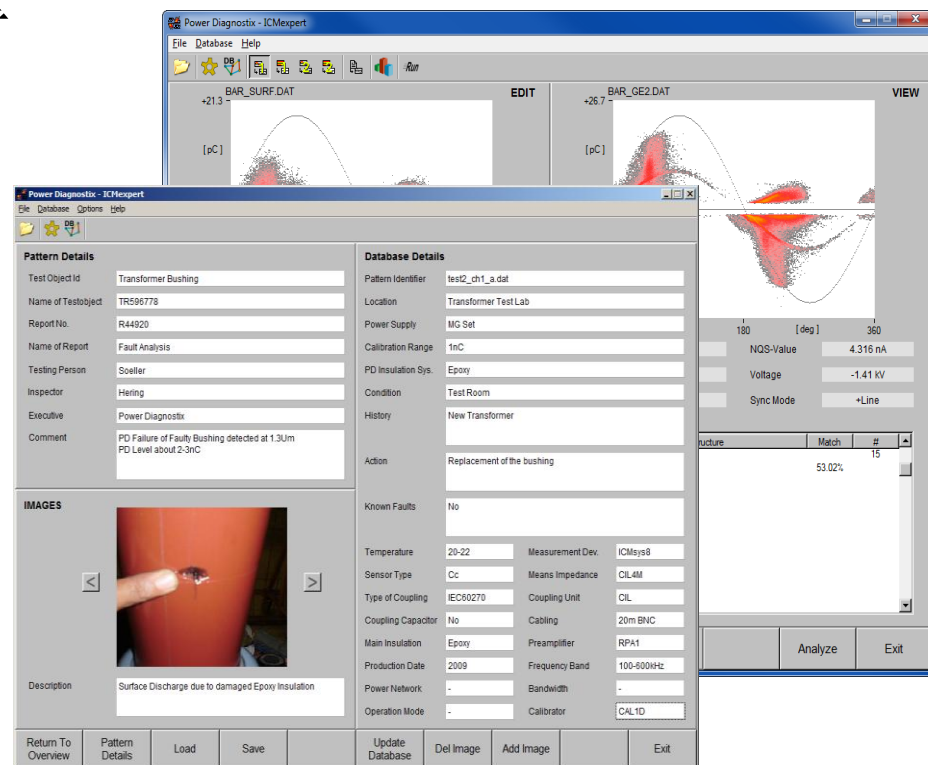
PD Measurement → ICMseries → GISmonitor

- 通过IEC61850接口连接第三方控制系统
- 趋势数据达月、年
- PD活动和所有事件一目了然
- 数据自动存储
- 报警处理
- 特殊的调试模式
包括CIGRE灵敏度检查



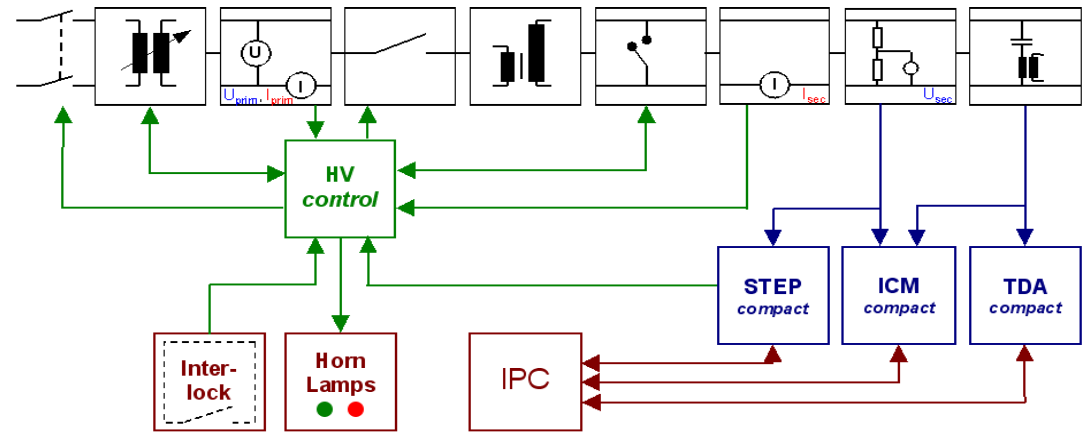
高级数据管理

- 数据库-支持处理所有测量文件和附加信息
- PD 图谱比对
- PD 图谱分类
- 存储每个数据的照片、注释和仪器所有设置
- 为所有产品添加工具



- 质量控制和常规试验
- 不同等级的HV 源耦合器, 测量阻抗, 仪器, 计算机
- 并行控制&测量
- PD & TD vs. Voltage and vs. Time
- 客制化的解决方案

HV Test Cabinets and HV Test Bays



- HV Cabinets of various dimensions
- Regulator, Transformer and PD Coupler with HV Divider built-in
- Manual or Automatic HV Control
- Security Control System
- Recording of PD, Voltage, and $\tan\delta$ via USB interface of *HVcontrol*, *ICMcompact* or *TDACompact*
- Industrial PC and *HVpilot* Software

HV Test Cabinets



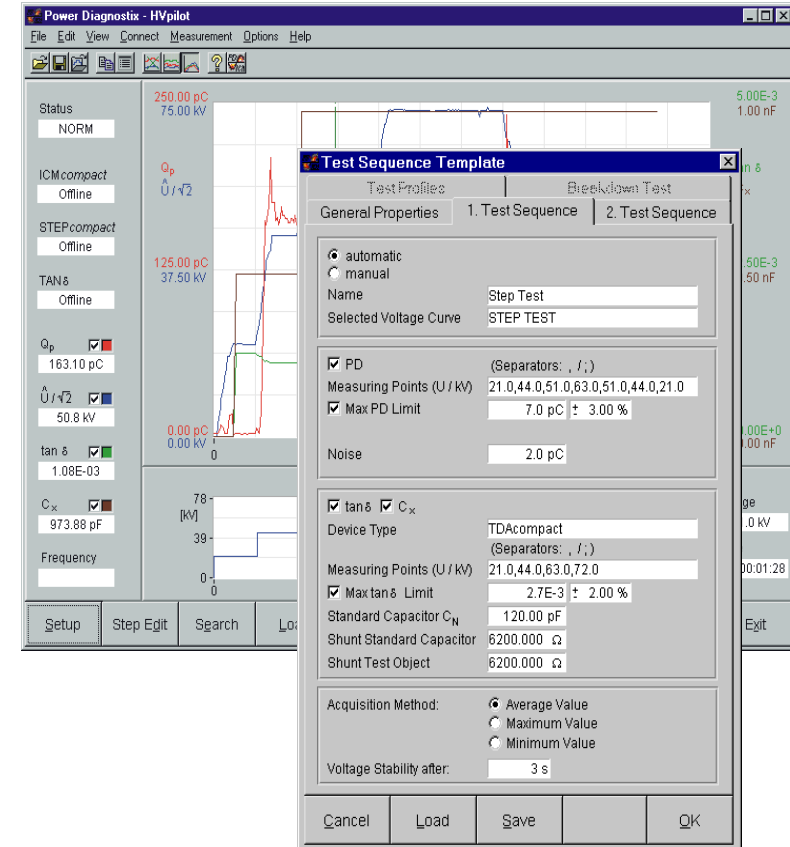
- Voltage Control via Illuminated Piezo Buttons on the Front Panel
- Adjustable Limits for High Voltage, Primary and Secondary Current
- Security Circuit (Interlock)
- Emergency Stop
- Display of U_{prim} , I_{prim} , I_{sec}
- Automatic Control of Predefined Voltage Ramps or Steps

Controlling of HV Test Bays



Test and Automation → HVpilot

- Computer Controlled Test Setups
- Remote Control of HVcontrol, ICMcompact, STEPcompact, and TDAcompact
- Multiple Pre-Defined Test Procedures
- Data Export and Reporting (.doc, .xls, .xml)



- 高压波形的12bit A/D 转换
- USB 接口
- 显示 $\hat{U}$, $\hat{U}/\sqrt{2}$,
 U_{rms} , 频率和峰值系数
- 可设计继电器输出 (Limit, Failure)
- 电压趋势
- 校准的分压器

DAkkS (DKD) calibrated High Voltage Scope



Signal Transmission in HV Labs

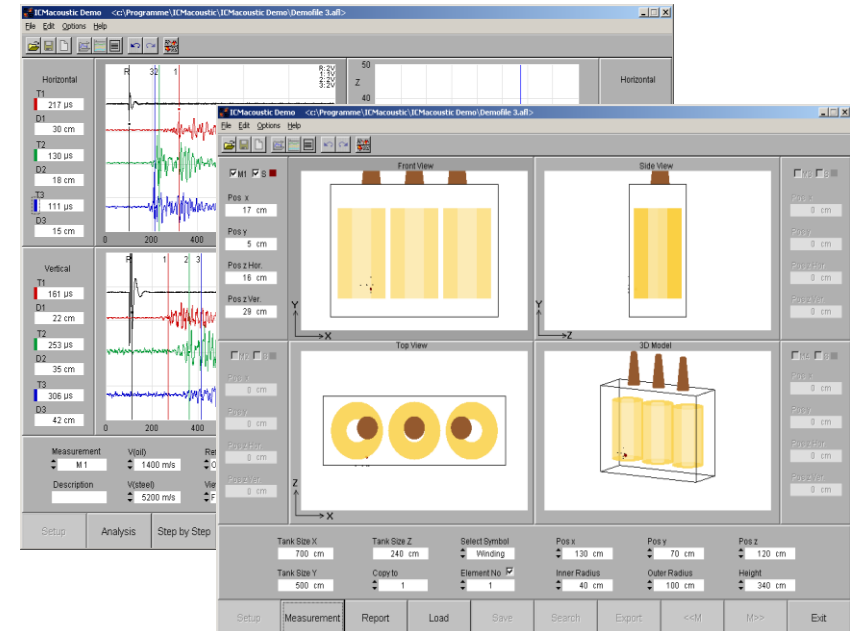
- Analog or Digital Signal Transmission via Fibre Optic Cable
- Bandwidth DC up to 10 MHz
- FOS1: Analog Transmission of Analog Signals from DC up to 10 MHz
- FOS2: Digital Transmission of Analog Signals from DC up to 20 kHz
- FOS3: Pulsed Digital Transmission of Slow Changing Signals



PD Measurement → Special Instruments → FOsystem → FOS4

- 采样率: 65 MS/s
- Up to 8 Receiver Units with Independent Optical Channels
- 通过USB接口远程控制

Acoustic Location of Transformer PD under AC and Impulse



- 符合所有相关标准
(NEMA 107-1987, IEC CISPR 18-2)
- 仪表显示($\mu\text{V}/\text{dB}\mu\text{V}$)
- 参考通道用于NEMA 校准
- MUX3/MUX11
- 适配的校准器: CAL3A,
CAL3B, CAL3D
- 特殊的测量阻抗和带阻
滤波器

RIV测量 ‘Radio Influence Voltage’



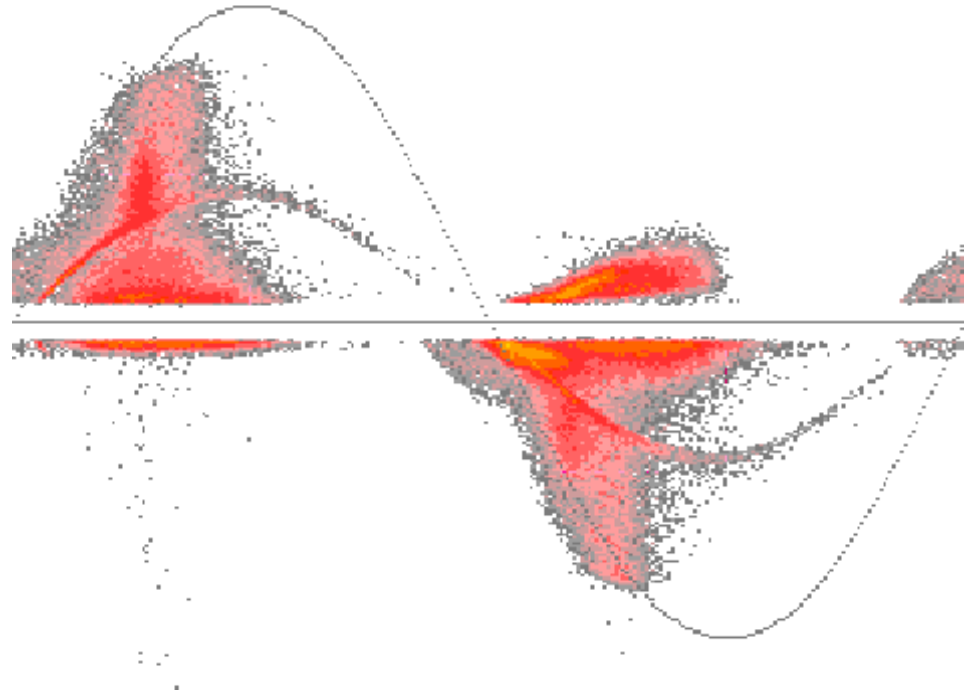
- 光纤信号传输
- Shunt Capacitors of various Ranges
- Stand Alone Device
- Display of $\tan\delta$, $\cos\phi$, Voltage and Frequency
- Optional SW for Trending and Reporting
- Calibrated Divider

Loss Factor Measurement on Rot. Machines and Mass Cables



公司介绍

- 概述
- 产品
- 服务
- 应用
- 总结

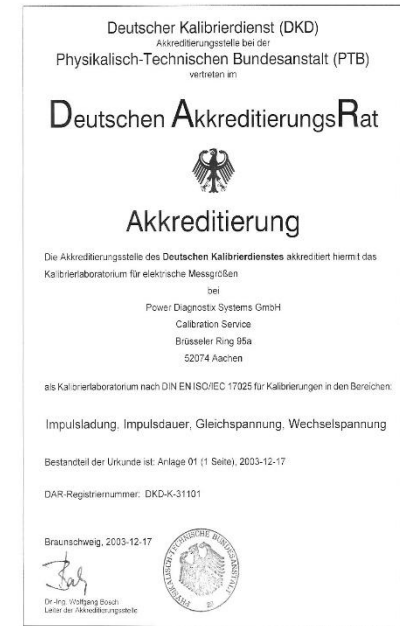


Services → Calibration

- DAkkS, 之前的 DKD 'Deutscher Kalibrierdienst' (德国校准服务)
- PTB 和 DAkkS 认证
- 校准:
 - 脉冲电荷(pC),
 - 脉冲时间,
 - 电压 (AC & DC),
 - 电流(AC)



校准服务



Services → Onsite

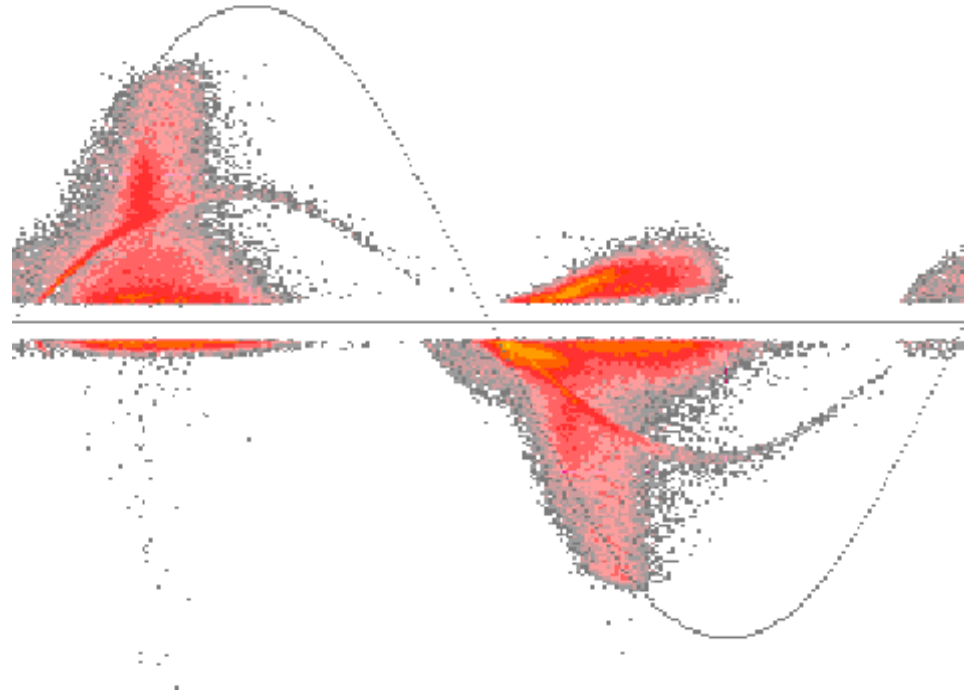
现场服务

- Mobile AC Sources of different Ratings
Truck, Van, Van + Trailor
- Power: 10kVA, 500kVA, 2MVA
- 3-phase Induced (up to 90kV)
- Single Phase Applied (up to 500kV)
- PD Analysis and Fault Investigations
- Complementary Dielectric Tests
such as transformer ratio, winding
resistance, insulation resistance,
polarization index, phase displacement



公司介绍

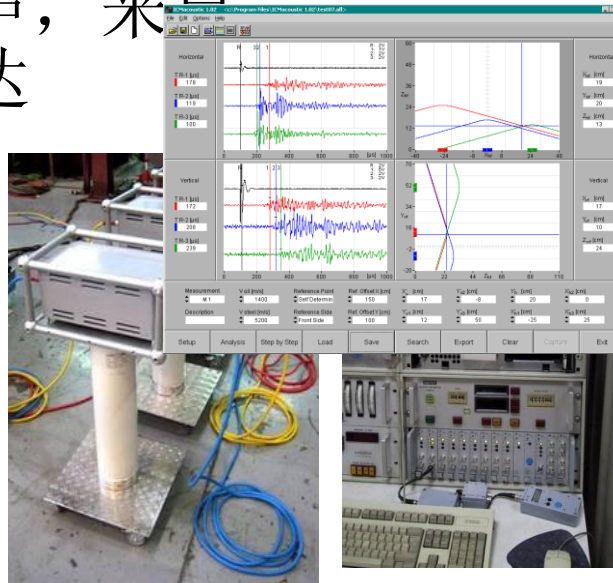
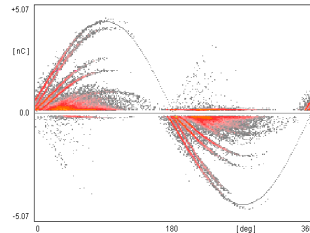
- 概述
- 产品
- 服务
- 应用
- 总结



Applications → Transformer → Diagnosis

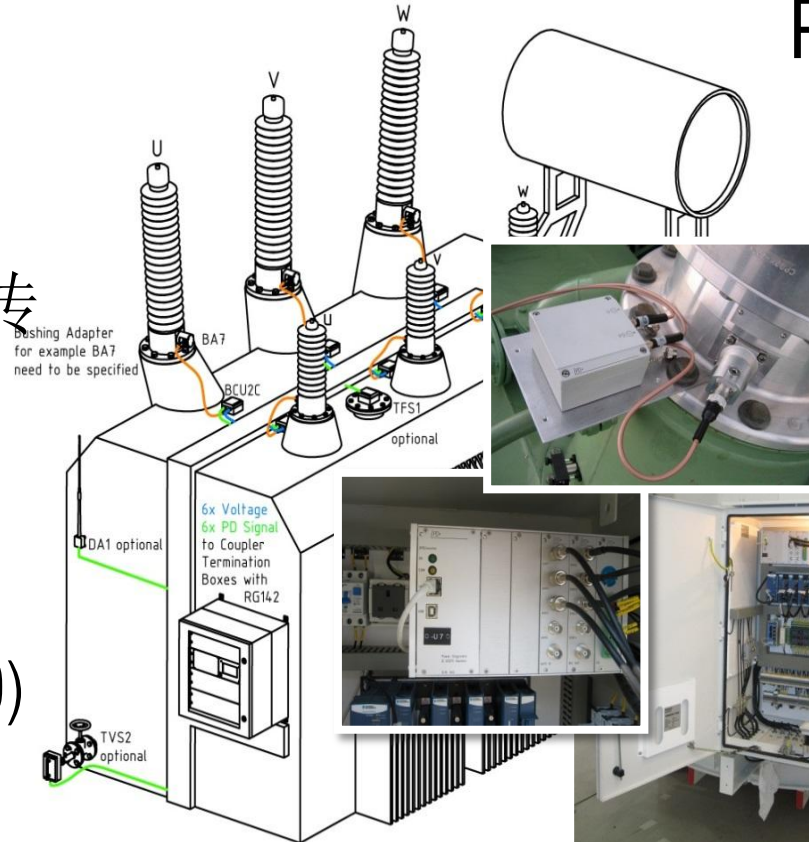
- IEC60076-3 和 IEC60270
- 测量阻抗连接套管试验抽头或耦合电容器
- 高压滤波器抑制噪声，来自
马达发电机组或雷达
- PD 系统适用于
AC, DC 或 脉冲测试
- 超声波定位

验收试验和局部放电定位

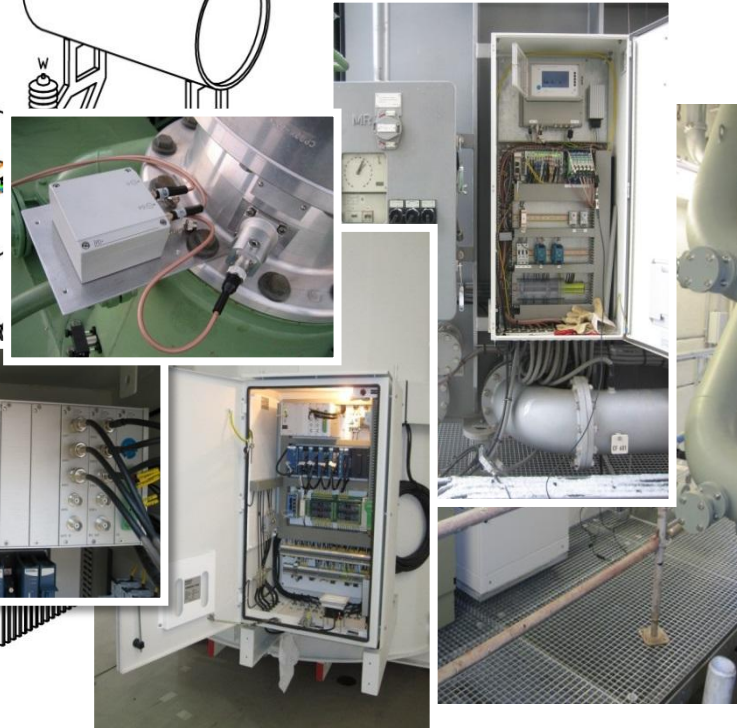


Applications → Transformers → Monitoring

- PD 和 同步输入
多工器
- Noise Gating
- UHF, HF, 超声波传
感器
- 频谱扫描
- OEM 产品用于
Koncar (TMS),
ALSTOM (MS3000)



PD 在线监测



Applications → Rotating Machines → Monitoring

现场离线测试

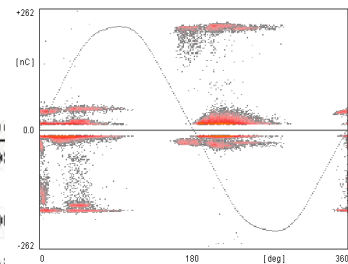
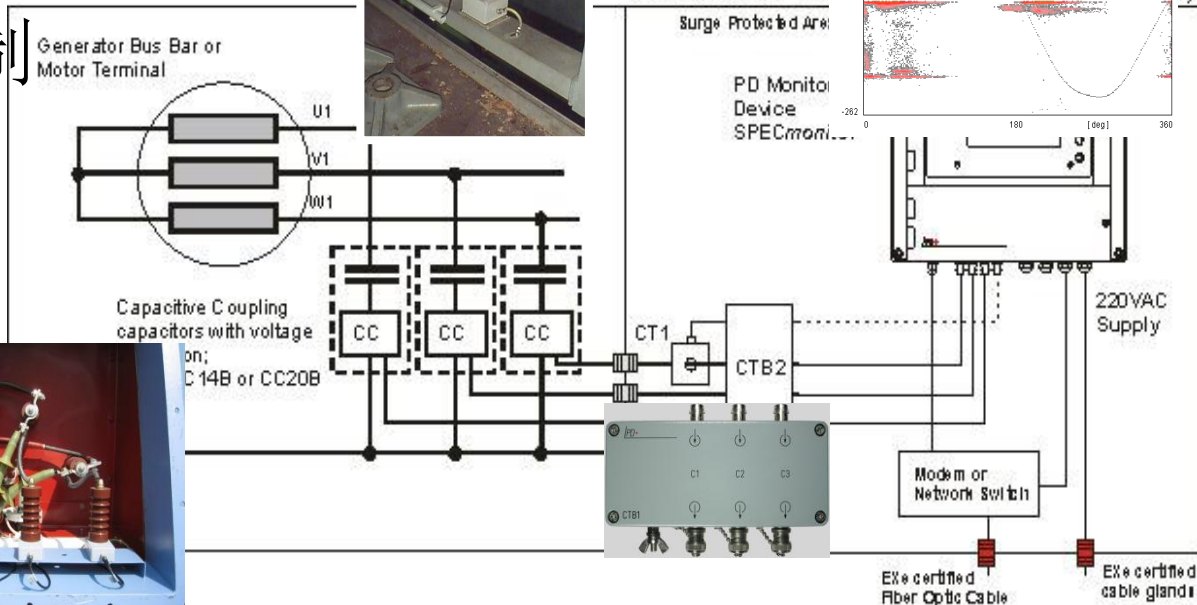
- IEC TS 60034-27
“对于旋转电机定子绕组绝缘的离线局部放电测量”
- PD 和介质损失测量
- 进行状态维修



Applications → Rotating Machines → Monitoring

- 电容式耦合器安装于马达终端或发电机母线
- 远程控制
- 趋势和报警控制

PD 在线监测



Applications → GIS → Diagnosis

- 根据IEC60270
- SF6 耦合电容器
- 自动试验和报告

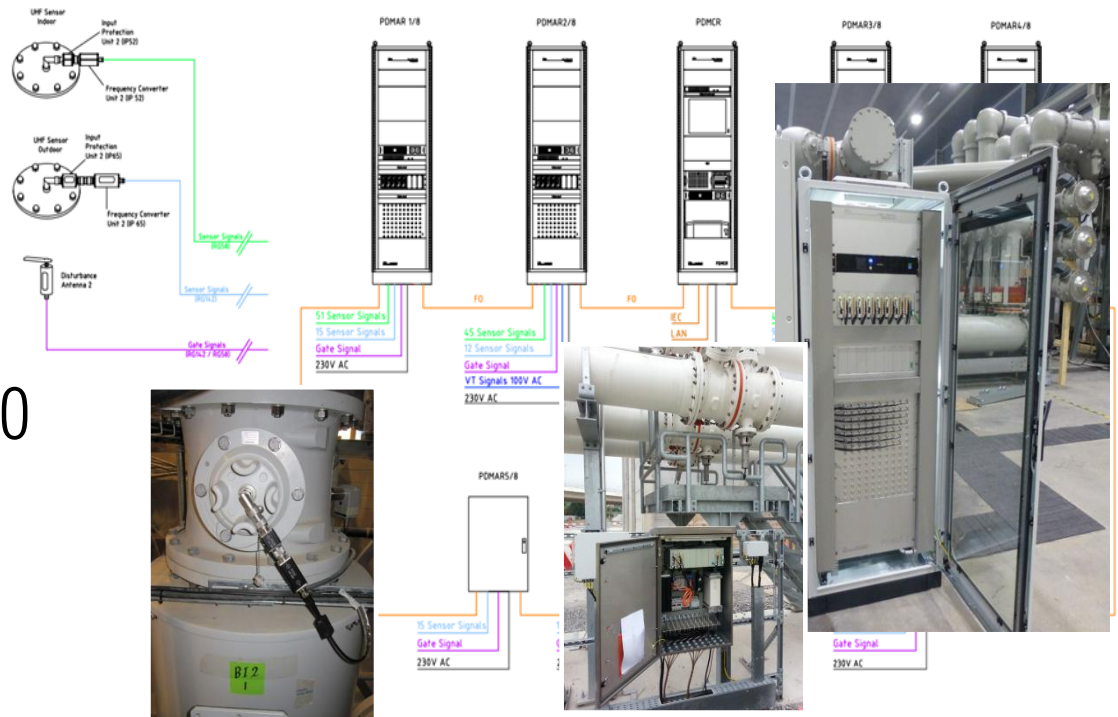
开关设备生产车间测试



Applications → GIS → Monitoring

PD 在线监测

- 多达500 通道并行
- 适用于各种 UHF 传感器
- IEC61850 接口
- PD 记录使用 HV Test
- 已安装运行多于40 系统和5000通道



Applications → Cables → Diagnosis

电缆工厂测试

- 1-2pC灵敏度
完全符合试验标准
- CIT 测量阻抗提供
高脉冲频宽
- 通过整合的TDR进
行局部放电定位
- Automation with
ICMcompact,
HVcontrol,
and HVPilot Software



The image is a composite of three parts. On the left is a table titled 'The Manufacturers' Standards' with logos for IEEE Standards Association and IEC. The table lists various cable components and their testing standards. In the center is a photograph of a green and grey electronic device, likely a partial discharge (PD) measurement unit, with a screen showing a waveform. On the right is a photograph of a cable testing setup, featuring a large, flexible, braided metal hose connected to a mechanical arm and a sensor head.

Component Standard	Testing Frequency	Thresholds*	
		Sensitivity	Voltage
Terminations IEEE 48	50/60 Hz	5pC	≤ 1.5 U ₀
Joints IEEE 404	50/60 Hz		
Separable Connectors IEEE 386	50/60 Hz		
MV Extruded Cable ANSI/IEC S-97/94-682/649	50/60 Hz		
HV / EHV Extruded Cable ANSI/IEC S-108-720	50/60 Hz		

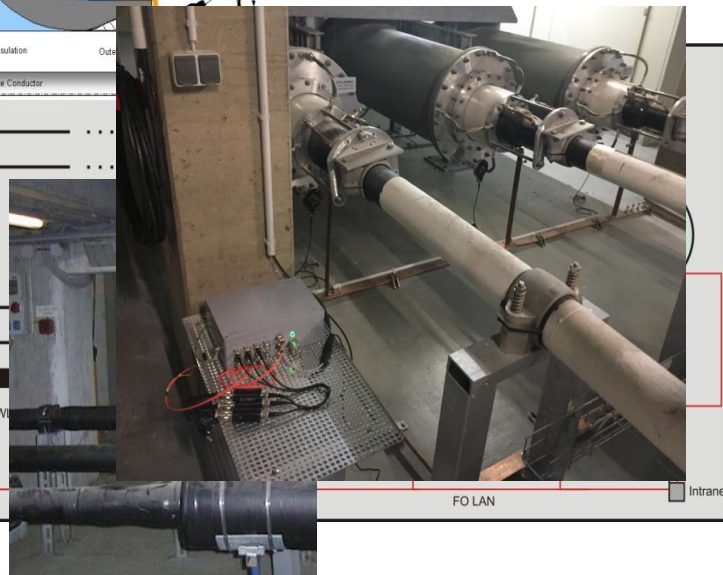
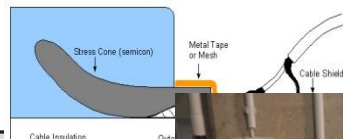
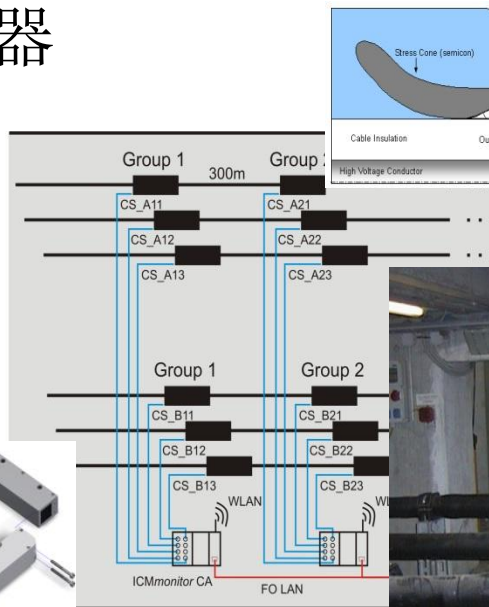
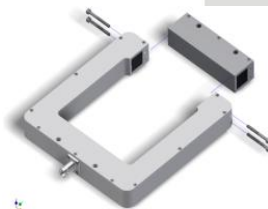
* No partial discharge should be observable above the sensitivity threshold up to the voltage threshold
^200 V/mil

Applications → Cables → Monitoring

- 监测电缆接头和终端
- 实时并行采集
- HFCTs或内置式传感器
- 分布式仪器
- FO 或 WLAN Network

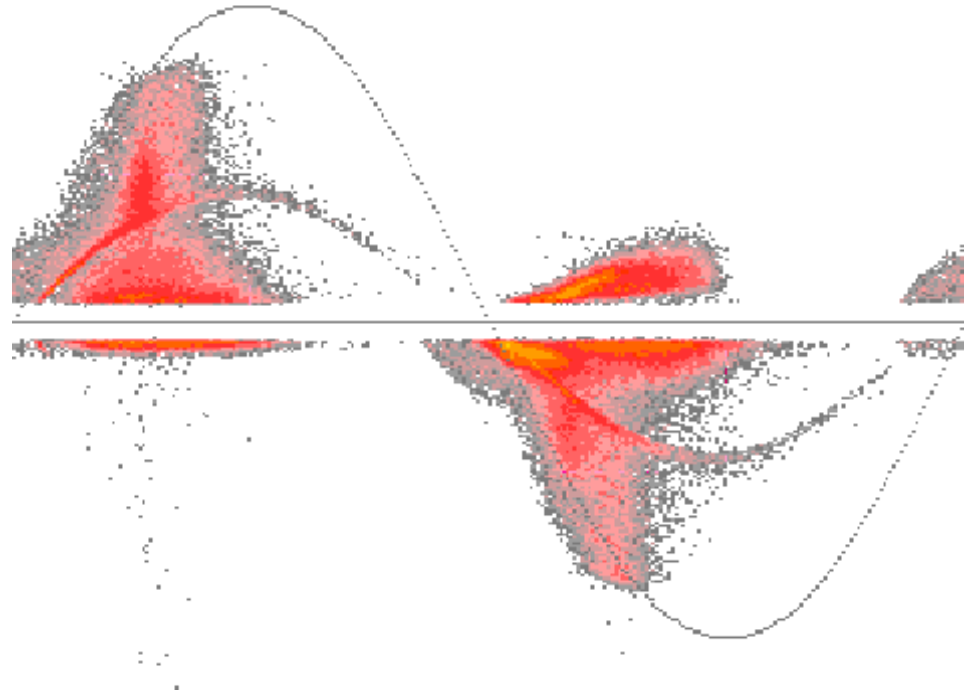
PD 在线监测

HV 电缆附件



公司介绍

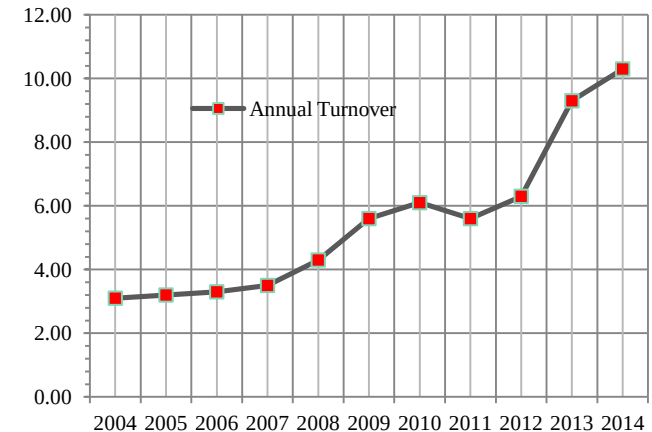
- 概述
- 产品
- 服务
- 应用
- 总结



Summary

- 成立于1992
- 董事会: Detlev Gross, Markus Söller
- 38 全日制员工, 16 工程师
- 有~25 国家的代理商
- 3000 仪器卖到>50 多个国家
- ISO9001:2015 和 ISO17025 认证
- 年营业额稳步增长

3.1 MEUR 2004 up to 11MEUR in 2015



Customer ¹	Location	Country	Application	Device ²
Technical University	Trieste	Italy	Research	sys
Technical University	Trondheim	Norway	Research	sys
Technical University	Vienna	Austria	Research	sys
Technical University	Zürich	Switzerland	Research	sys
Tenaga Switchgear	Sungai Buloh	Malaysia	GIS Testing	sys
Toshiba	Paramatta, NSW	Australia	Rotating Machines	sys
Ultra Power	Minneapolis, MN	USA	Cable Field Testing	sys
VEW	Dortmund	Germany	Testing, Transformers	cmp
VA Tech Elin	Weiz	Austria	Rotating Machines	sys, mon
VA Tech Peebles	Edinburgh	UK	Power Transformers	mon
Vattenfall	Stockholm	Sweden	Rotating Machines	sys
Western Power	Perth, WA	Australia	Substations, Testing	sys
Western Recources	St. Marys, KS	USA	Rotating Machines	sys
Yantan HPP	Yantan, Guangxi	PR China	Generator, Transf.	mon

¹ List is incomplete, numerous instruments partly, about 500 digital detectors sold by summer 2002

² ICMsystem : sys, ICMcompact : cmp, ICMmonitor : mon