



UNIPOWER

Managing Power Quality for Business Success:

Mitigating the Hidden Costs and Improving Operational Efficiency

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Outline of the presentation

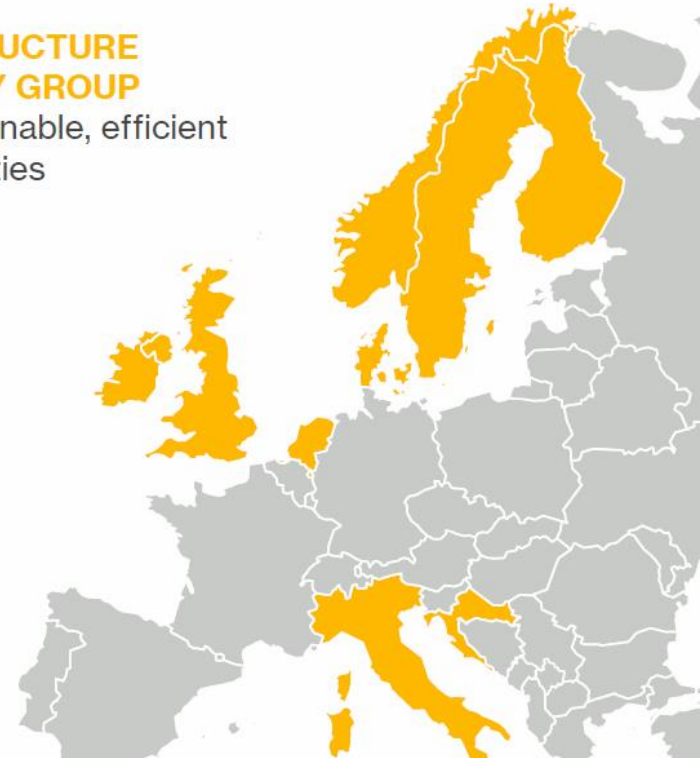
- **Presentation of Unipower**
- **What is Power Quality compliance**
- **Why to measure Power Quality**
- **Cost of bad PQ**
- **Unipower can help to cut these costs**
- **Knowledge Transfer/Exchange**

Unipower part of Sdiptech Group



**AN INFRASTRUCTURE
TECHNOLOGY GROUP**

Creating sustainable, efficient
and safe societies



36	10+	2,000+	8	8	NASDAQ
Business Units	Add-on acquisitions	Employees	Countries	Verticals	Publicly listed on large cap

Sdiptech listed on Nasdaq March 2017



Niched technical Products and Services to critical needs in infrastructure sector



Biocides by WTP

Oxidising and non-oxidising biocides to help attack microorganisms, such as legionella species, TVC or algae



WallPod by Rolec

EV charging unit available in up to 22kW fast charging speeds



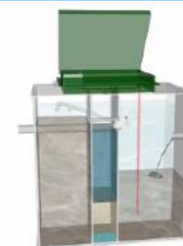
Erica by IDE Systems

On-site power management tool enabling reductions in power usage and therefore carbon emissions



UP-2210 PQ by Unipower

Meter for power quality measurement



Mini Sewage Plant by Topas Vatten

Mini sewage plant capable of servicing up to six households



Alerter by Alerter Group

Small, robust, and portable receiver used by the deaf or hard of hearing person



Medium Panel Van Unit by GAH

Refrigeration system during the delivery of chilled or frozen goods in medium to large vans



Double Mask by Medicvent

Guarantees that excess or leaking gas do not leak into the working environment



Software by CERTUS Automation

Software that automatically identifies containers, people and trucks for transaction optimization



RedSpeed 2.0 by RedSpeed

Speed camera, red light camera, average speed camera all in the same box

Gothenburg March, 2023



Unipower – Power Quality Experts



Market leading technology
World class instrument design and
database architecture



**Smart Grid Cloud
server solutions**



PQ Secure System
Automated solutions from
20 years historical overview
to real-time



**Member of WG
IEC 61000-4-30
Class A**



Strong financials
AAA



ISO 9000 and IEC 62586



METAS
Federal Office
of Metrology



**Products in over 80
countries
30 years in market**

Unipower staff representing Sweden in IEC 61000-4-30 Class A, Working Group



Jonny Carlsson

Our sales and distributors worldwide...



Unipower

Some of our references



What is Power Quality compliance?

It is the electrical network's ability to supply a clean and stable power flow:

- The power supply that is always available,
- Has noise/distortion-free sinusoidal wave shaped voltage
- And it is always within prescribed voltage and frequency tolerances

PQ status

Power factor

Harmonics

Voltage dips

Interruptions

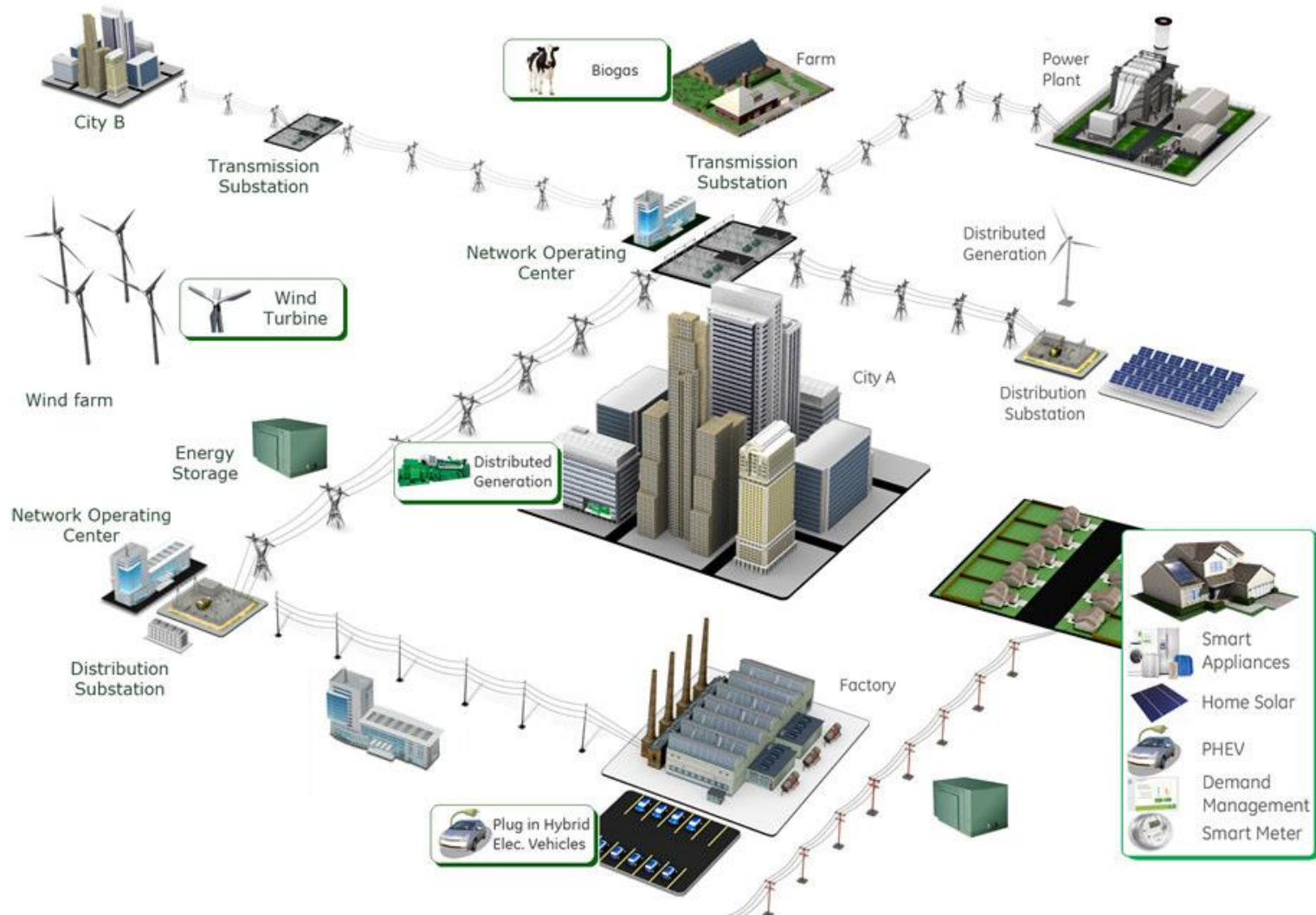
Transients

Flicker

Unbalance



Towards the SmartGrid concept



Why to measure Power Quality

- As Every product quality need to be measured and quantified, power should ...
- During new generator installations in the network, the network owner should produce a background power quality level report for the point of connection or nearest to the point of connection.
- Regulatory requirements
- Customer relationship
- Save Money

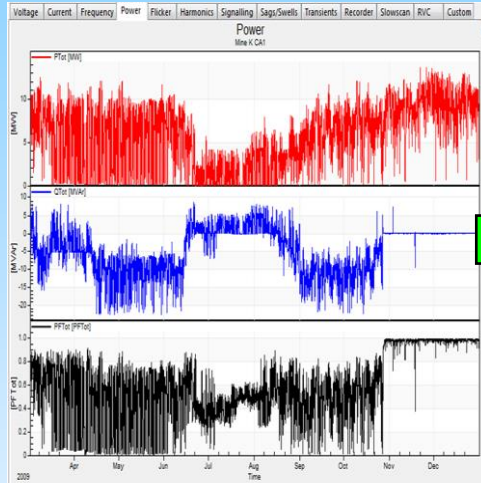


Installation at karpowership

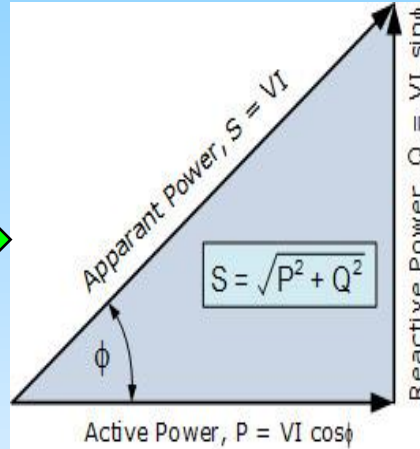
Strategy Value for the region

- **Good Power Quality will lead Africa and Namibia as a country to**
 - ✓ **Attract new investors**
 - ✓ **More energy users thereby more income**
 - ✓ **Create more jobs**
 - ✓ **Reduce poverty**
- **Reduce energy losses**
 - ✓ **Save environment**
 - ✓ **Increase lifetime of the components**
 - ✓ **Increase profit**
- **Improve energy efficiencies**
 - ✓ **Reduce generation of electricity**
 - ✓ **Give more people to get access to electricity**

Value to Customer/Country



Unipower measure data and convert the measurement data to information



The information must be analyzed PQ mitigation Should provide



Happy customer

Reduction of energy losses



The event was recognized by national Newspapers and also by Zambian TV who made an interview with Johan Adolfsson. For more information about the topics of this 3-day seminar contact Russom Kebedom or Johan Adolfsson at Unipower. The full interview is available on Youtube.



Consequences and financial modelling of PQ problems

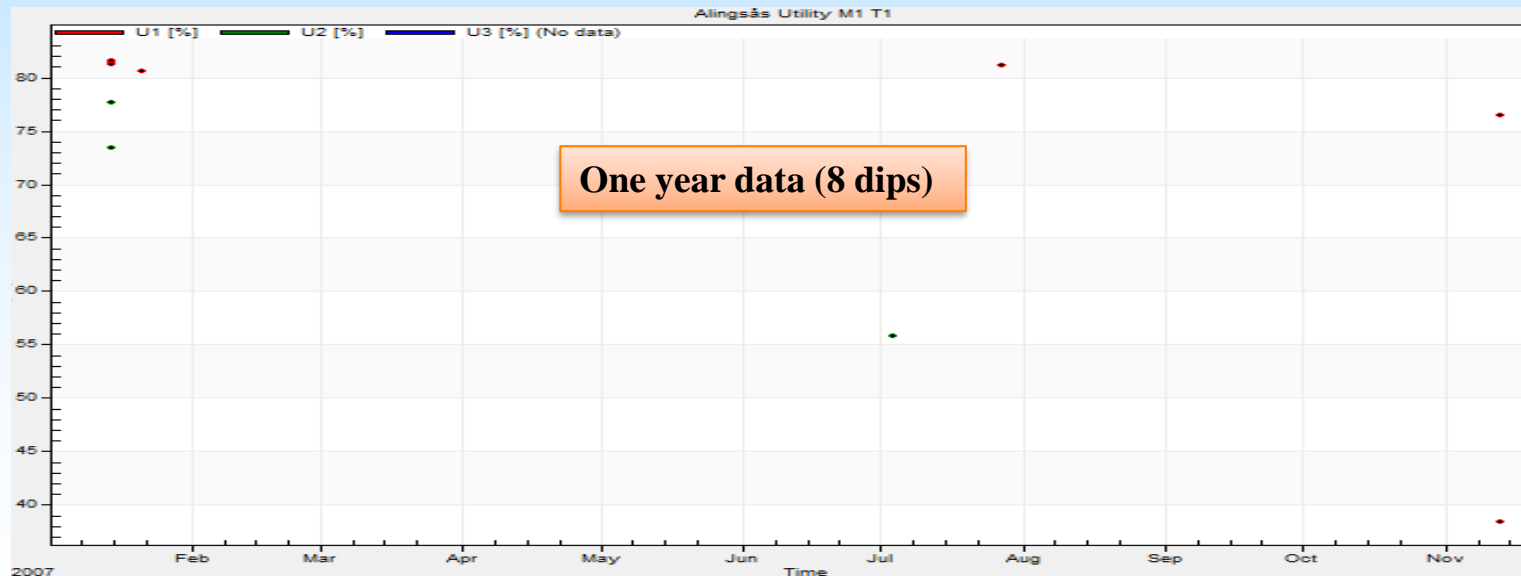
- **Berkeley Lab Study Estimates \$80 Billion Annual Cost of Power Interruptions ... *Research News, Berkeley Lab, February 2, 2005***
- **\$50 billion per year in the USA is lost as a results of power quality breakdowns *Bank of America Report***
- **A manufacturing company lost more than \$3 million one day in Silicon Valley when the “lights went out.” ... *New York Times January 2000***
- **“A voltage sag in a paper mill can waste a whole day of production - \$250,000 loss” ... *Business Week, June 17,, 1996***
- **Half of all computer problems and one-third of all data loss can be traced back to the power line ... *Contingency Planning Research, LAN Times***

EU poor power quality

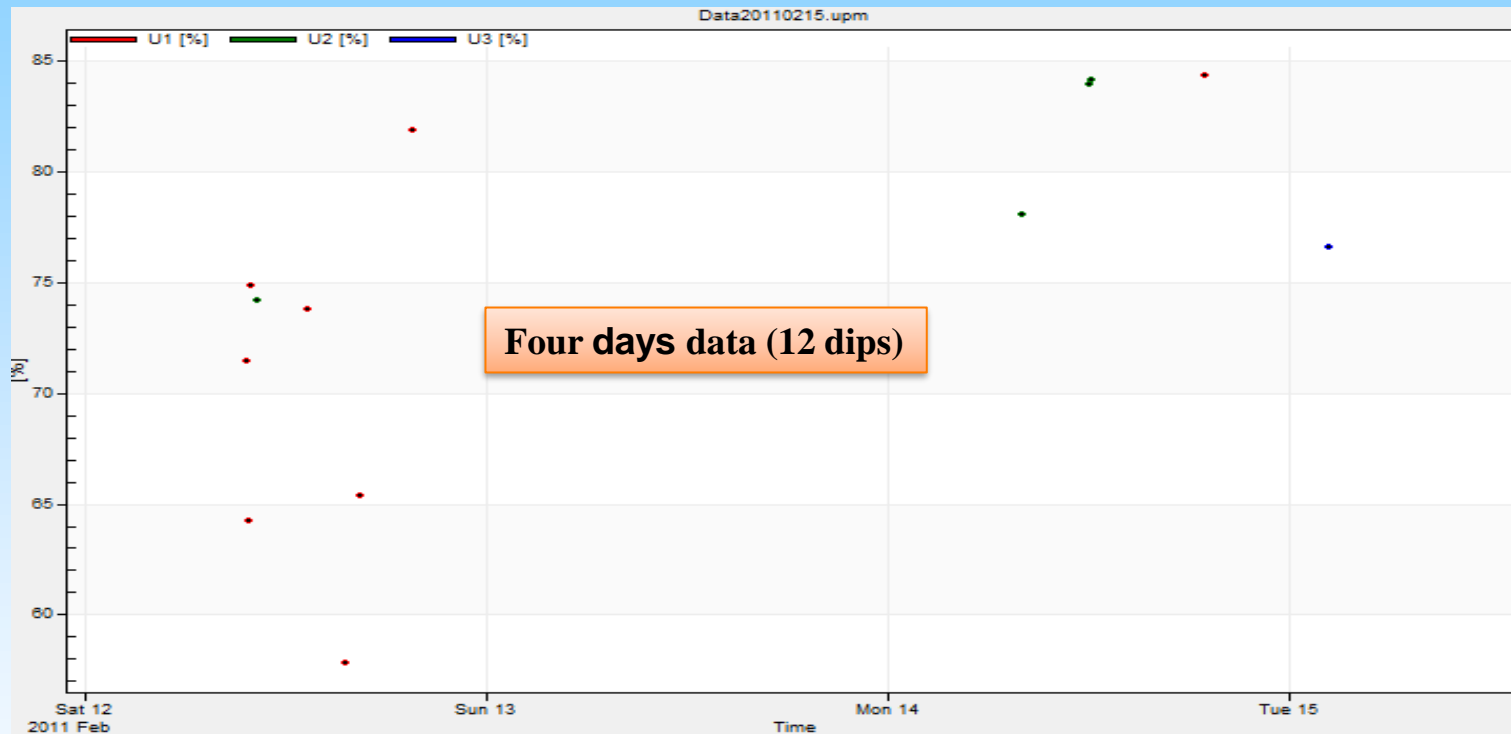
An economic impact > 150bn Euro

... Jonathan Manson presents the results of a survey conducted by the European Copper Institute (ECI) into the consequences of poor power quality for EU industry. These add up to > 150bn Euro annually, are mainly experienced by industry and caused by power interruptions (dips, surges, transients and short duration interruptions) ...

Source: http://ezine.leonardo-energy.org/e_article001023690.cfm



The poor power quality in Africa in comparison with that the EU



What are the costs?

Unipower can help to cut these costs

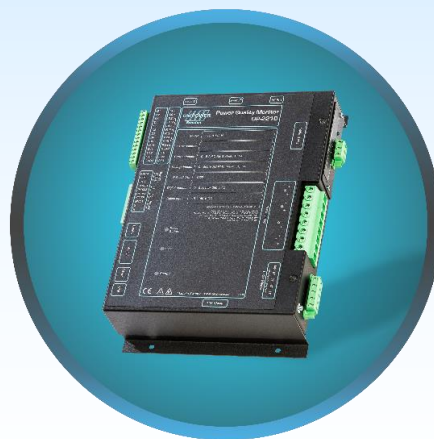
- ✓ Unipower has got 30 years of experience in PQ and Smart Grid solutions
- ✓ We help transmission and distribution companies to maximize the performance of their infra structure
- ✓ We help industry customers to find problems and avoid production losses
- ✓ Power Quality is today of outmost concern for all countries competing about global investments





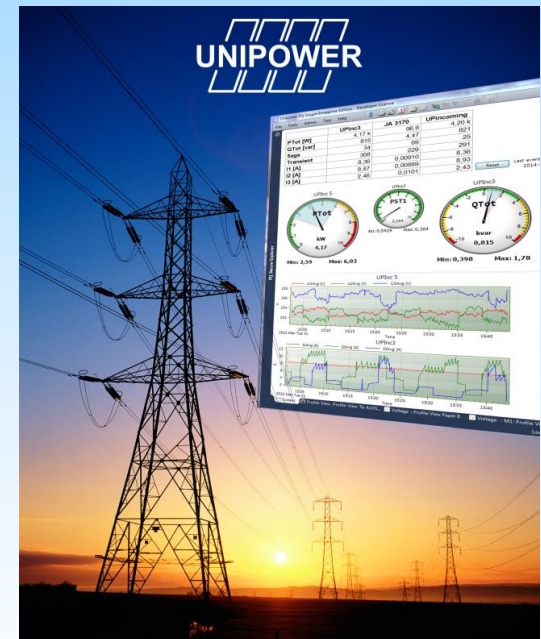
Unipower Power Quality meters

- ✓ High accuracy - Meets the requirements in PQ norm IEC 61000-4-30 Class A. Samples 5000 s/c @ 50Hz
- ✓ Advanced data compression – data available up to 20 yrs
- ✓ Available in different formats: Wall-mount, 19" rack, IP65 portables
- ✓ Strong communication solutions: Ethernet, GPRS, RS232, RS485



Unipower PQ Secure System

- ✓ World class Power Quality Management system, scalable from few instruments up to +50.000 measure points
- ✓ Cloud solution – data can be accessed from anywhere
- ✓ Powerful graphical analysis
- ✓ Built-in alarms for early-warnings – find problems before they occur
- ✓ Automated analysis and reporting tools



Unipower provides detailed and reliable info about network status

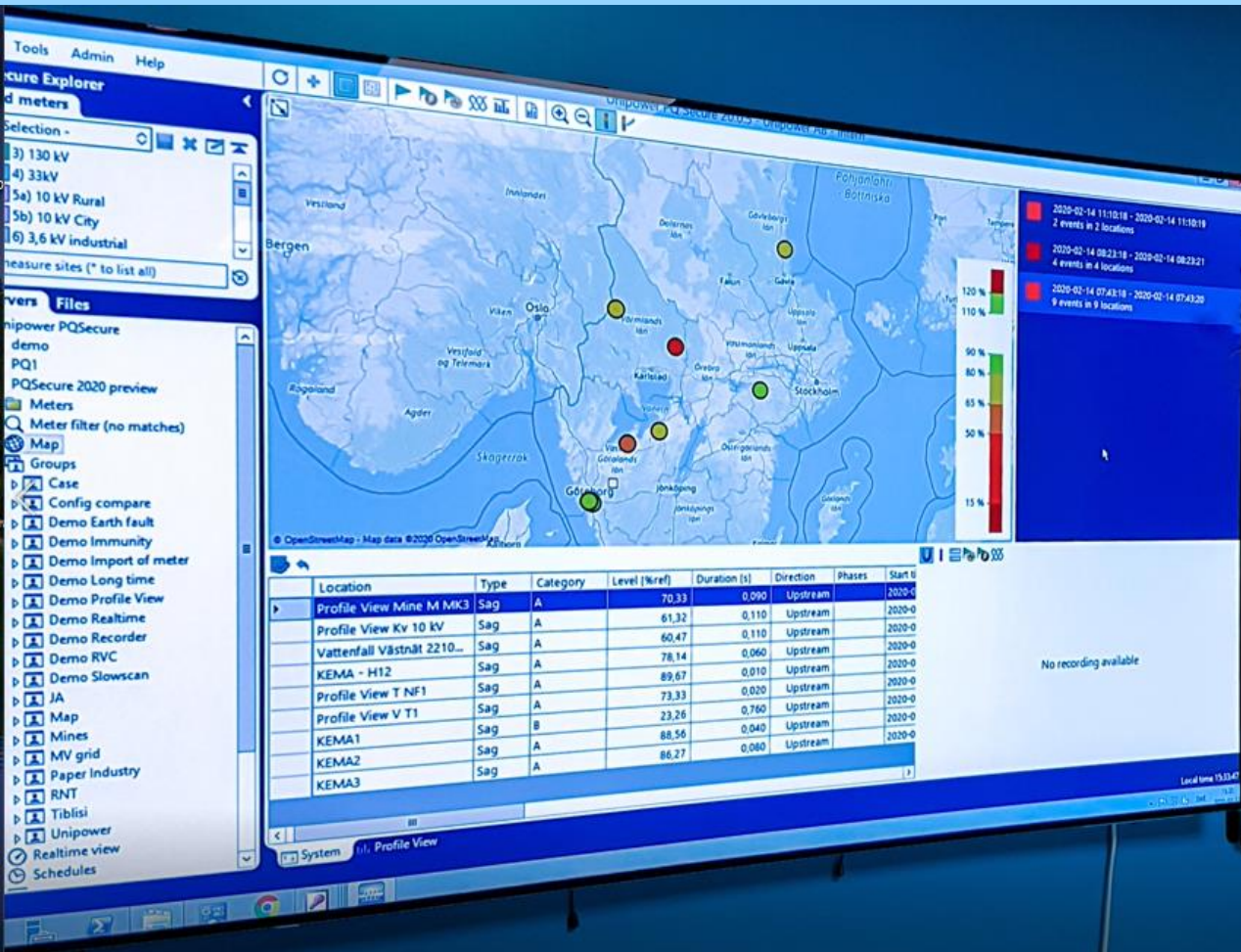
Summary			
Power frequency		Passed	
Unbalance		Failed	
Flicker severity		Failed	
THD		Passed	
Individual harmonics		Failed	

Norm: Max: 2%, during 100 % of time.			
Phase	Time within limit	Max value	Min value
Ub	0%	3,68%	3,23%

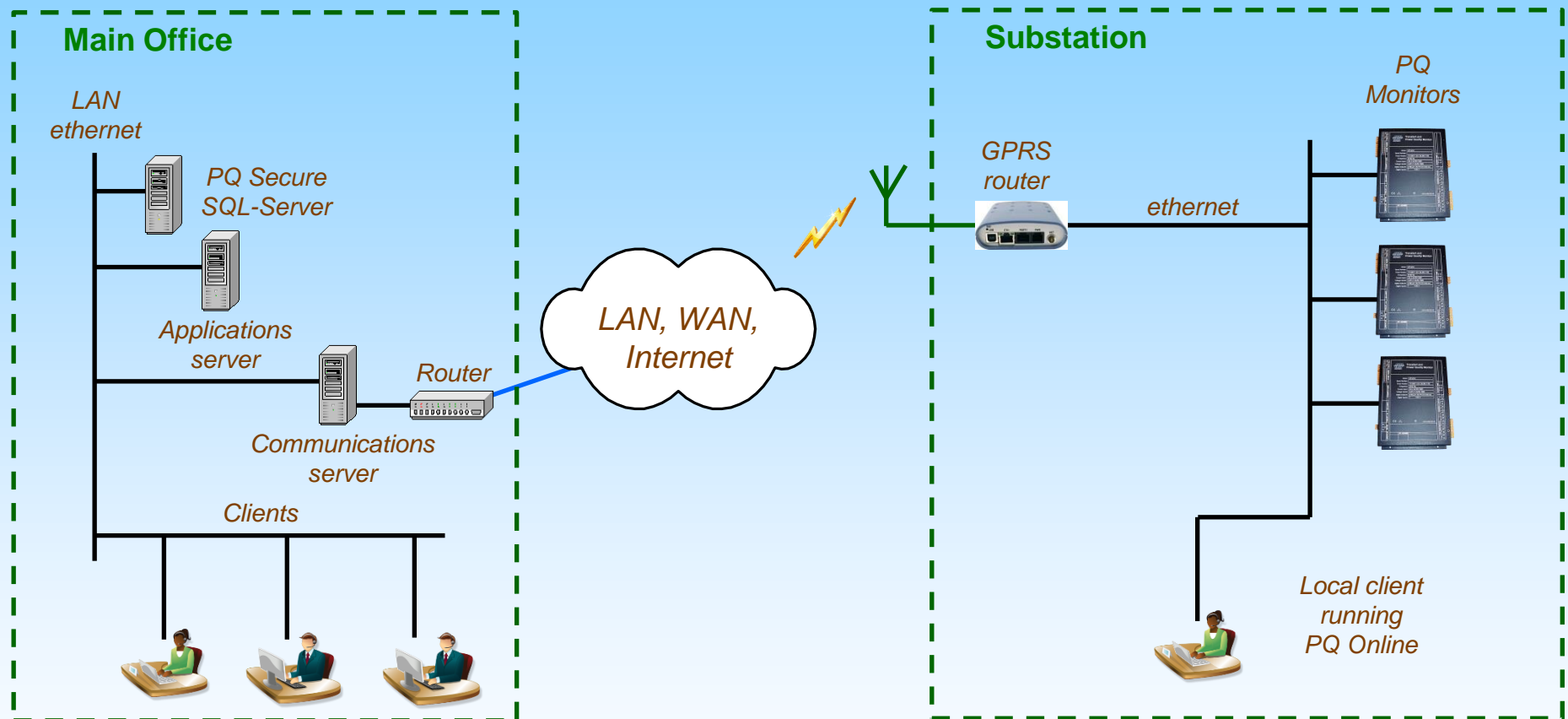
- ✓ Measuring Power Quality gives knowledge of the **grid health** and **compliance to Grid Code**
- ✓ Monitoring Power Quality helps **minimizing losses**, increasing network efficiency
- ✓ A modern Smart Grid PQ system is not only for post evaluation – it also acts as an **early warning system**
- ✓ Data is **easily accessible** and support decision processes

PQ Secure

Power Quality Management System



PQ Secure



Knowledge Transfer/Exchange



**Training session at KGTC
October, 2022**

Summary

- To measure **correct** is to Know
- Continue scan
- PQ monitoring – PQ controlling
- User friendly system
- Service and support
- Knowledge exchange
- Fast tracking our customer input and implement