

Power Quality research at TU Eindhoven

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EMC Kennismarkt Zuid
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TU / **e**

Technische Universiteit
Eindhoven
University of Technology

Where innovation starts

Electrical Energy Systems group

- **Mission:**
 - **Generation of knowledge to support the supply and efficient use of electrical energy**
- **Organisation:**
 - **Intelligent networks (Smart Grids, Power Quality)**
 - **Pulsed Power technology (e.g. efficient recycling)**
 - **Disturbance free design (EMC)**

PQ - Main research topics

- **PQ monitoring (metrology, surveys, locations)**
- **Assessment techniques (impact analysis, simulations)**
- **Equipment immunity and emission (lab experiments)**
- **Standardisation (supply limits, immunity, emission, responsibility sharing)**

Systems of interest

- **Transmission systems**
- **Distribution system**
- **Industrial installations**
- **Grid connected / island networks**
- **Device level**

People

- **Prof.dr.ir. J.F.G. (Sjef) Cobben (2 days/week TU/e, Alliander), head of the PQ sub-group**
- **Dr V. Ćuk, postdoctoral researcher**
- **+1 postdoctoral researcher from January**
- **Yu Xiang, PhD student**
Project for Alliander, state-estimation in distribution networks, probabilistic methods
- **Leake Weldemariam, PhD student**
Project for the national regulator, regulation of PQ focused on voltage dips
- **Gu Ye, PhD student**
Internal project, metrology of PQ and propagation
- **Eloy Maxam Martinez, PQ Lab manager**
- **Yearly ~ 10 MSc students**

Power Quality / Smart Grids laboratory



Cooperation with the industry

- **Research projects with the industry**
e.g. project of Yu Xiang for Alliander, Leake Weldemariam for the regulator, joint research projects with VSL – propagation of PQ phenomena, impact of special projects of Tennet, etc.
- **Master/traineeship projects with the industry**
(Alliander, Enexis, Tennet, Hyteps, KWx, Metrum, Fluke, ...)

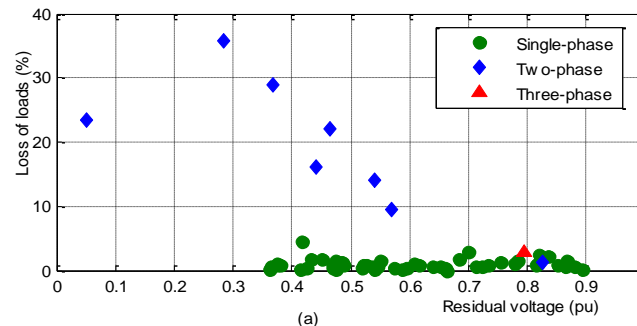
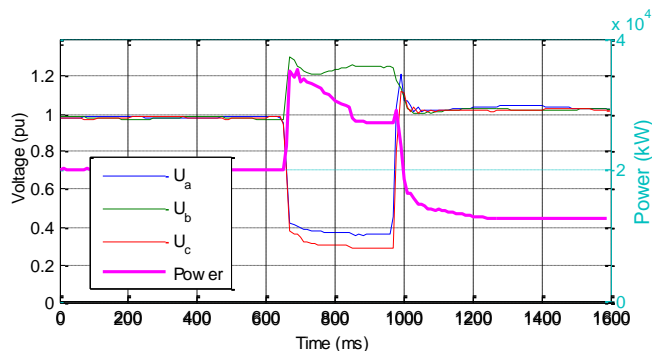
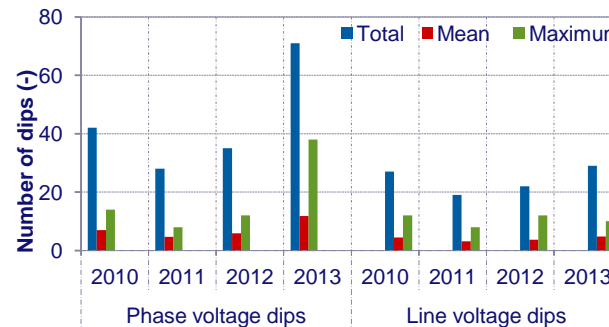
Propagation of PQ phenomena

- In cooperation with VSL, Alliander
- Using simulations and many monitoring points
- MV and LV levels, network of Zaltbommel



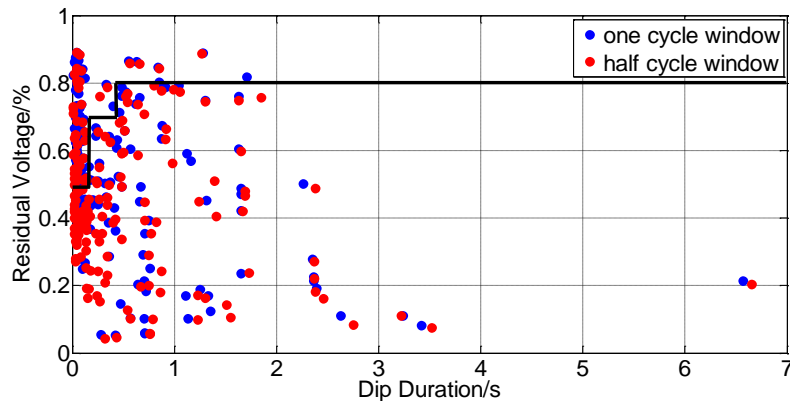
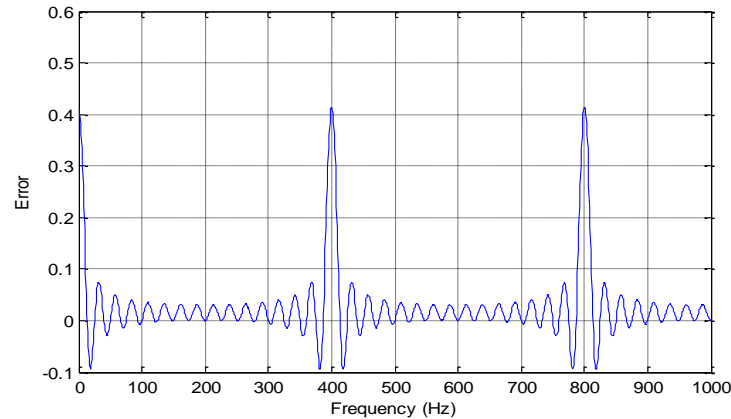
Regulation of voltage dips

- PhD project of Leake Weldemariam, l.e.weldemariam@tue.nl
- Limits for suppliers/equipment?
- Analysing: monitoring approach, network performance, impact on equipment and mitigation



Metrology of PQ

- PhD project of Gu Ye, g.ye@tue.nl
- Analysing: methods to quantify PQ (up to 150 kHz) and propagation through the network



Thank you for your attention!

Questions?