



GLASGOW, SCOTLAND | 12-15 JUNE 2017



Proven Reliability Beyond the Standards

- ” Who are Ormazabal?
 - ” What does that title mean?
 - ” Can you give us a practical example?
 - ” What is the message?
 - ” Where can I find out more?
-
- ” Why is this person still talking?



GLASGOW, SCOTLAND | 12-15 JUNE 2017



” Ormazabal is ò .





GLASGOW, SCOTLAND | 12-15 JUNE 2017



” Ormazabal Corporate Technology isõ



Research & Technology
Centre

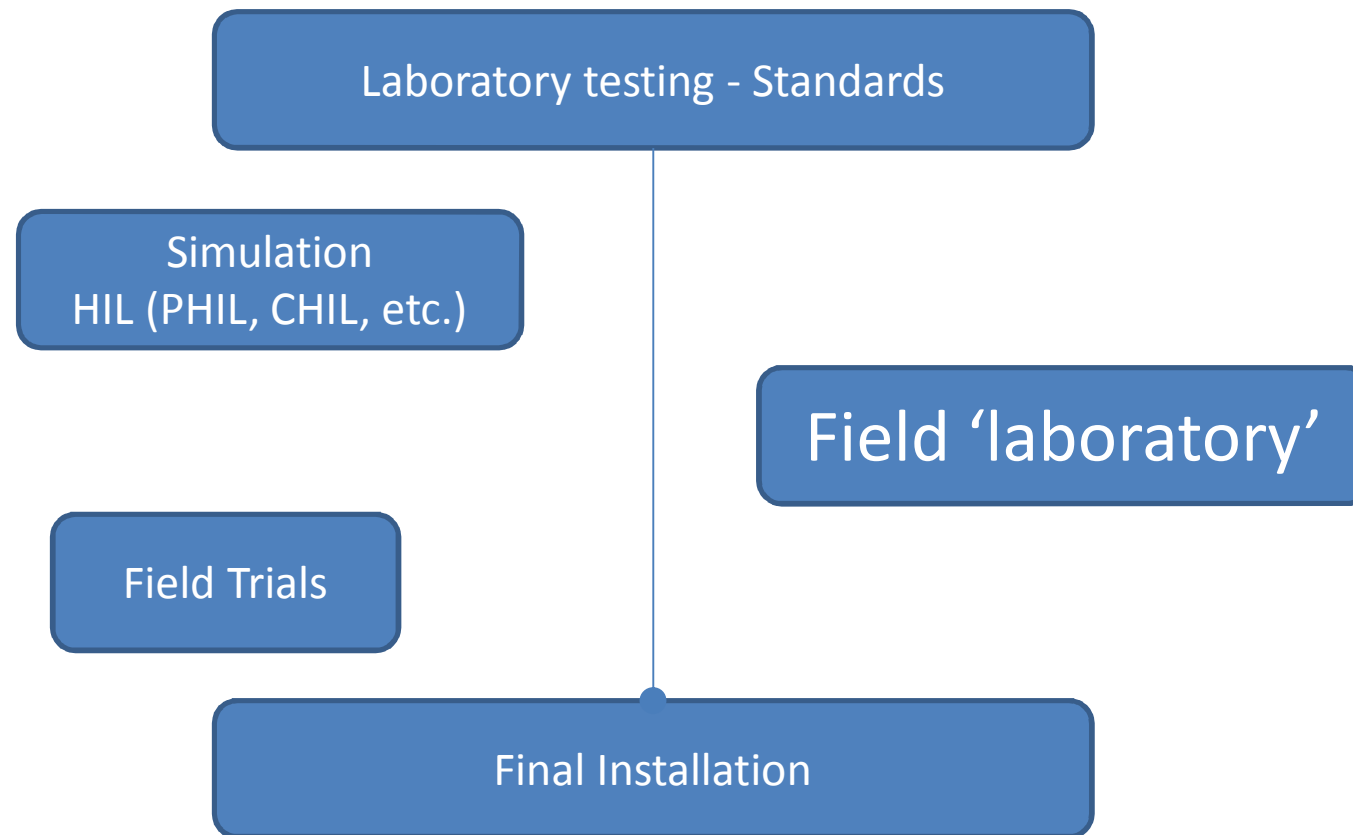
Research Projects
Technology Transfer Projects
Simulations
IP Management
Knowledge Management
R&D&I Financing

Accredited Laboratory
Test Services





GLASGOW, SCOTLAND | 12-15 JUNE 2017

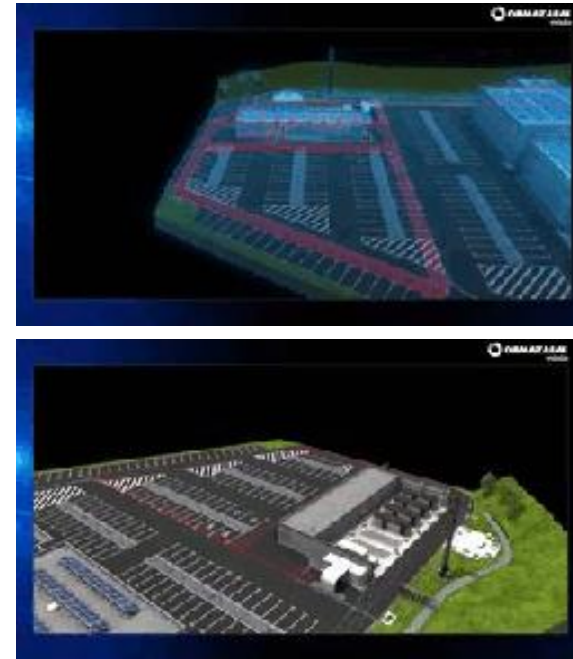




GLASGOW, SCOTLAND | 12-15 JUNE 2017



UDEX is a demonstration and experimentation distribution network . our SG testbed (playground)





GLASGOW, SCOTLAND | 12-15 JUNE 2017



Use Case Examples:

- “ Voltage regulation with OLATC (paper 0832)
- “ Network Diagnostics (Partial discharge)
- “ Powerline Communications
- “ FLISR
- “ ò more to come



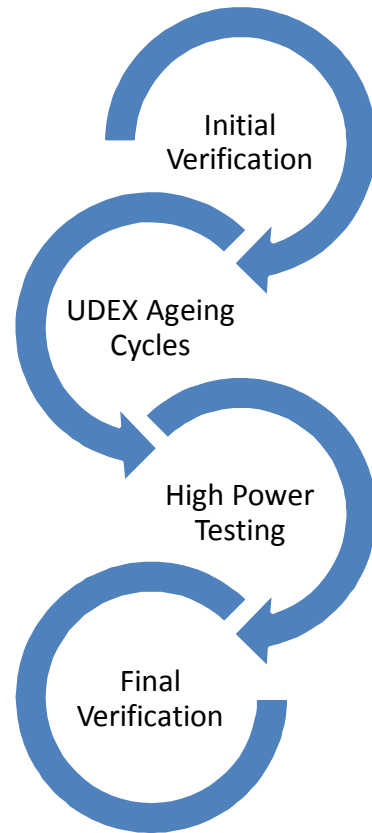
“ Joint ELECTRA / ERIGrid booth H11







Test Sequence



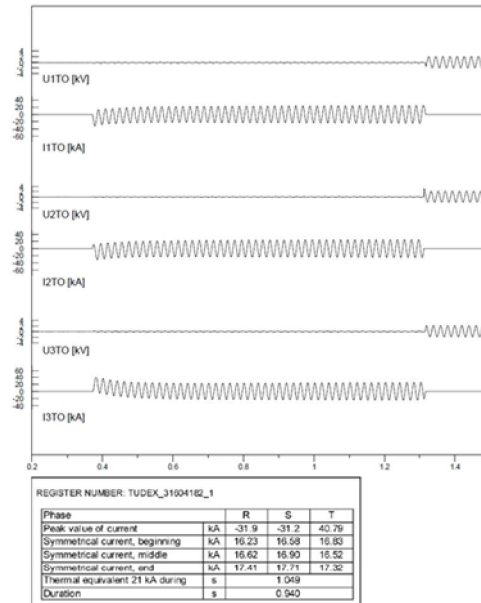
	Sample			
	S1	S2	S3	S4
Initial Verification				
Contact Resistance	✓	✓	✓	✓
No Load Operations	✓	✓	✓	✓
UDEX Ageing Cycles (x10)				
Applied Current (8h on/16h off)	X	X	630A	630A
Remote Operations	70 Op	70 Op.	30 Op	X
Manual Operations	X	30 Op	X	X
Switching Tests	30CO	X	X	30CO
High Power Testing				
Short Time Current	16kA	16kA	16kA	16kA
Making & Breaking	T60	X	X	T60
Final Verification				
Condition check	✓	✓	✓	✓
Contact Resistance	✓	✓	✓	✓
No Load Operations	✓	✓	✓	✓
Power Frequency	40kV	40kV	40kV	40kV



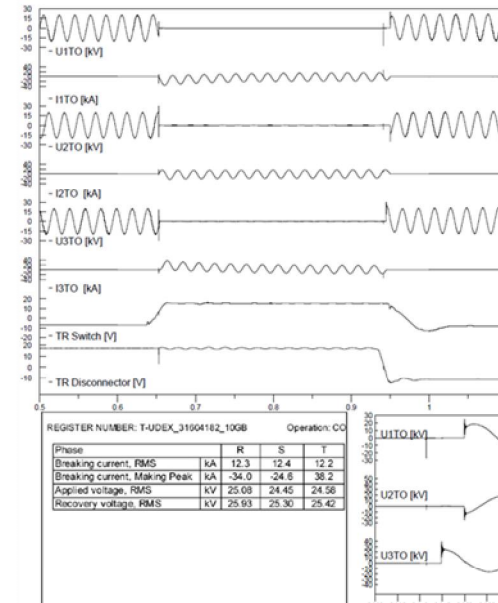
Results

” Short-Circuit and T60 Tests

SC Oscillogram



T60 Oscillogram



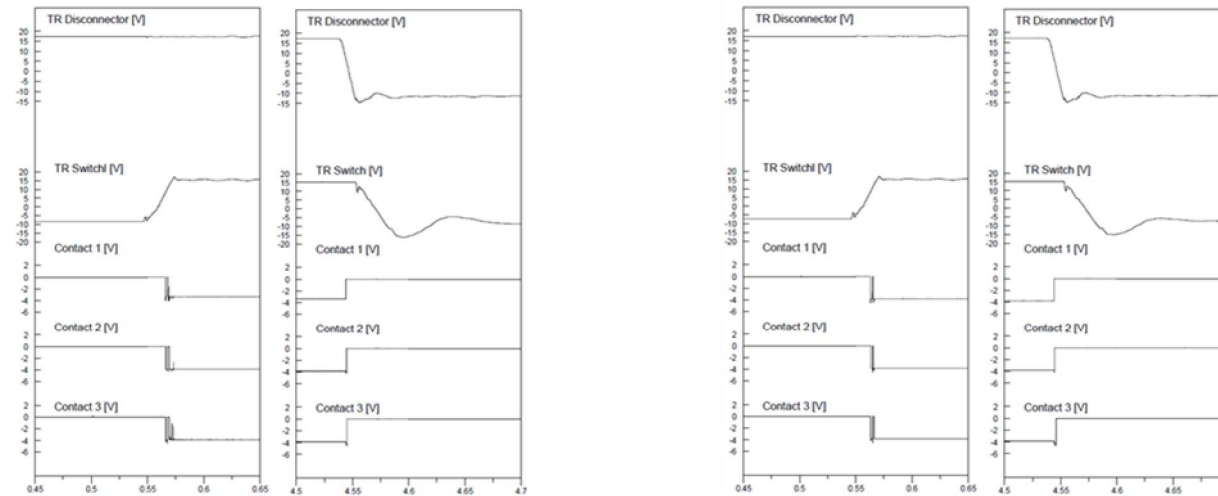


Results

Before

After

No-load Operations



Resistance Measurements

Phase	R	1,53 mΩ	1,52 mΩ
	S	1,74 mΩ	1,72 mΩ
	T	1,54 mΩ	1,54 mΩ



GLASGOW, SCOTLAND | 12-15 JUNE 2017

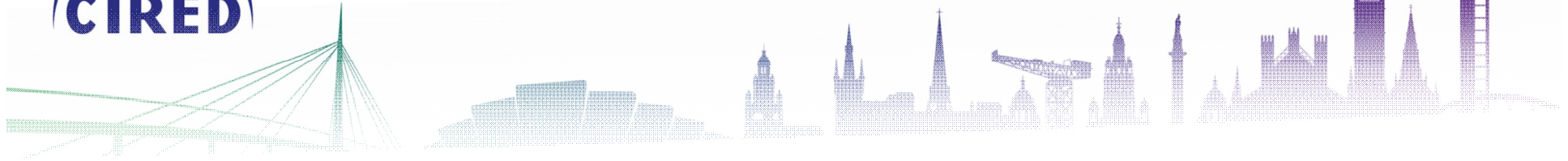


Comments

” Standard Laboratory testing procedures are focused on evaluation of the equipment with respect to a single feature, so the combined effects between them are not taken into account.



GLASGOW, SCOTLAND | 12-15 JUNE 2017



Comments

- “ Standard type-testing would have stayed within limits of those stipulated in standard (e.g. IEC62271-100).
- “ Able to push beyond limits and create a new test program, but within a real network.



GLASGOW, SCOTLAND | 12-15 JUNE 2017



Comments

- “ Manufacturer takes on some of the risk previously only experienced by network operators.
- “ Testing in this environment could give insight into possible areas of improvement that otherwise may only be seen after some time in the field.



Conclusions

- “ For this Test Case, demonstrated reliability of new switchgear under conditions **beyond** that of traditional laboratory environment.
- “ Advantages of testing in a real controllable network environment for exceptional confidence in **reliability** for distribution network stakeholders.



GLASGOW, SCOTLAND | 12-15 JUNE 2017



Further Information

“ Please visit our stand C02

