

NIA ENWL004

Combined Online Transformer Monitoring

Progress Report

30 July 2022



VERSION HISTORY

Version	Date	Author	Status	Comments
V1.0	25/07/22	Ben Ingham		

REVIEW

Name	Role	Date
Lucy Eyquem	Innovation PMO Manager	28/07/22
Victoria Turnham	Head of Innovation	28/07/22

APPROVAL

Name	Role	Date
Steve Cox	DSO Director	30/07/22

CONTENTS

1	PROJECT FUNDAMENTALS	5
2	PROJECT SCOPE	5
3	OBJECTIVES	5
4	SUCCESS CRITERIA	5
5	PERFORMANCE COMPARED TO THE ORIGINAL PROJECT AIMS, OBJECTIVES AND SUCCESS CRITERIA	6
6	REQUIRED MODIFICATIONS TO THE PLANNED APPROACH DURING THE COURSE OF THE PROJECT	6
7	LESSONS LEARNED FOR FUTURE PROJECTS	6
8	THE OUTCOME OF THE PROJECT	6
9	DATA ACCESS	6
10	FOREGROUND IPR	6
11	PLANNED IMPLEMENTATION	6
12	OTHER COMMENTS	6

GLOSSARY

Term	Description
DGA	Dissolved gas analysis
DNO	Distribution network operator
IFI	Innovation Funding Incentive
IPR	Intellectual property rights
LCN Fund	Low Carbon Networks Fund
NIA	Network Innovation Allowance
PD	Partial discharge
RIIO-EDI	First electricity distribution price control to reflect the new RIIO model (Revenue = Incentives + Innovation + Outputs)

1 PROJECT FUNDAMENTALS

Title	Combined Online Transformer Monitoring
Project reference	NIA_ENWL004
Funding licensee(s)	Electricity North West Limited
Project start date	September 2014
Project duration	8 years
Nominated project contact(s)	Ben Ingham (innovation@enwl.co.uk)

2 PROJECT SCOPE

Previous research carried out under an Innovation Funding Incentive (IFI) project defined an oil regeneration window for transformers at or near the end of their design life which would extend it by approximately ten years. The First Tier Low Carbon Networks Fund (LCN Fund) project deployed online monitoring equipment at six sites where the oil regeneration technique will be used.

This Network Innovation Allowance (NIA) version of the First Tier project will validate the data from the monitoring equipment and use it to calibrate the previous IFI research. These results will then be fed into data visualisation software that has been developed to allow consistent comparison.

Electricity North West will work closely with an academic resource to validate the data and calibrate the life extension results once sufficient online data has been recorded for a significant time period to allow the results to be reliable and consistent.

3 OBJECTIVES

This project is split into two distinct phases:

Phase 1: the development of a dashboard/decision tool to be used by Electricity North West. This phase was completed by April 2016.

Phase 2: the data validation of existing research into transformer life extension by oil regeneration. This phase was due to be completed by September 2017 but has been extended to allow for further chemical ageing and degradation processes to occur and to be validated against the research results.

4 SUCCESS CRITERIA

- Completion of a dashboard and decision tool utilising the online results
- Validation and calibration of the actual end of life oil regeneration results against predicted values derived from academic research.

5 PERFORMANCE COMPARED TO THE ORIGINAL PROJECT AIMS, OBJECTIVES AND SUCCESS CRITERIA

The project is currently on track compared to the original aims. The final analysis of the data collected is now in progress. This project is scheduled to close down in the next reporting period. The analysis work being carried out at present is expected to lead to insights into the methodology and modifications to Electricity North West's application of it going forward.

As reported previously the project is currently in the data gathering and analysis phase to confirm the benefits of applying this approach. To date the equipment continues to perform as expected. Over the last twelve months the equipment has detected no critical issues within the transformers involved in the trial.

6 REQUIRED MODIFICATIONS TO THE PLANNED APPROACH DURING THE COURSE OF THE PROJECT

There have been no changes

7 LESSONS LEARNED FOR FUTURE PROJECTS

No significant lessons to report

8 THE OUTCOME OF THE PROJECT

Not applicable.

9 DATA ACCESS

Electricity North West's [innovation data sharing policy](#) can be found on our website.

10 FOREGROUND IPR

Not applicable.

11 PLANNED IMPLEMENTATION

Not applicable.

12 OTHER COMMENTS