First Tier LCN Project Registration

DNO(s)
Electricity North West

Registration date

Project description	
Project title	The 'Bidoyng' Smart Fuse
Project background	In recognition of the number of Transient Faults being experienced on Low Voltage (LV) Distribution Networks and the constant drive to improve customer service, Electricity North West initiated the IFI funded Fuse Restorer Project in 2006 with Kelvatek. The aim of the project was to develop a device capable of carrying two LV fuses in a standard size fuse carrier that could automatically insert a secondary fuse into a circuit following a Transient Fault to restore supplies to our customers and could then send an alarm to a nominated contact. Kelvatek delivered the final device, now known as the 'Bidoyng Smart Fuse' and three were installed on Electricity North West's network in Wigan, Lancs, they successfully operated to restore supplies to over 100 connected customers following a transient fault at 11.30pm on 14th November. The Smart Fuse has been fully type tested (up to 50kA) and now provides a potential means to eliminate a significant proportion of Transient Faults based on developing a targeted installation strategy.
Scope and objectives	The primary aim of this project is to test the feasibility of installing a sufficient number of Smart Fuses to reduce the impact of Transient Faults on our network, if the Smart Fuse proves a reliable solution the project will provide enough data to develop a business case for the installation of a substantial number of units. During the development of The Smart Fuse the debate on smart grids has developed significantly with the recognition that the Low Voltage Network will become ever more important as domestic scale renewable energy generation is expected to play an ever greater part in the transition to a low carbon economy. The Smart Fuse has been designed to provide a high specification voltage and load profiling platform with full communications capability and a range of fault analysis applications under development and this project will provide the data needed to develop the network load modelling and profiling algorithms to support the optimisation of our low voltage network. The scope of the project is to install 200 Smart Fuse units and Gateways in identified LV circuits. The Smart Fuse units are retrofitted to the LV Fuse position in the LV Fuse pillar with 3 Smart Fuse units installed per feeder (one on each phase). 200 units will provide coverage for 66 feeders and one gateway is needed in each substation that Smart Fuses are installed. The objective is to demonstrate the advantages of being able to automatically restore supplies to LV connected customers and to gather data about the performance such a device will deliver to the network. It is envisaged that other smart grid opportunities will arise once data has been gathered and evaluated.
Success criteria	The project will be considered a success by achieving three milestones: Installation of 200 Smart Fuse units, demonstration of the advantages of the technology (Auto-reclosing, Load profiling) and Smart Grid support. Fault restoration and load profiling data will be gathered from the time of installation which will then be will then be collated and analysed and recommendations published from the data analysis.
TRL(s)	6
Predicted end date	2014
External Collaborators and external funding	Kelvatek - No direct external funding although Kelvatek are providing free access to their LV test network as required
Solutions	This is an innovative solution to the issue of transient interruptions and the inevitable inconvenience to our customers, it will also provide visibility of network loading to establish available headroom for new loads such as EV's
Potential for new learning	The information will be used to evaluate the effectiveness of the approach to Transient Fault Management. The ability to remotely inform dispatchers and fault restoration engineers of the operation of the Smart Fuse will provide a means to more appropriately target field staff to the fault locations to allow faster restoration of our customers supplies
Risks	The risks of using the Smart Fuse in terms of the integrity of the device have been managed in the same way as any other device connected to out network, by rigorous type testing (Type Testing Certificates from accredited testing laboratories are available). The Smart Fuse is a 'fail safe' device in that it is in a state of rest until a fault occurs and the secondary fuse is required
Scale of Project	The Smart Fuse design has been rigorously tested in laboratories and on live test networks and has been shown to operate as intended. The next step is to see the operation on a network fault but a problem comes from the fact that faults can never be reliably predicted even though we have a full log of previous faults and can predict likely locations. The reason for the size of the trial is to ensure we can target enough locations to ensure we experience enough faults to prove the reliability and robustness of the Smart Fuse
Geographic area	The devices will be target across the Electricity North West Network based on the current Transient Fault log
Does the Project involve customer engagement?	No

Funding	
Revenue allowed for within the DPCR5 settlement (£)	
Indication of the total Allowable First Tier Project Expenditure (£)	£442,666

Publication	
Does the DNO provide Ofgem with consent to publish its First Tier LCN Project Registration Pro-forma in full?	Yes
If not, please justify which parts the DNO considers to be confidential	n/a

Related Undertakings	
Payments to Related Undertakings (£)	None
If a payment is to be made to any Related Undertaking that is a Distribution System User, have the same terms been offered to similar Distribution System Users of the part of the network that is within the project boundary?	No
Has the DNO used reasonable endeavours to make the opportunity available to similar Distribution System Users of the part of the network that is within the project boundary?	No

IPR arrangements	
If IPRs are generated, will they conform to the default IPR arrangements set out in the LCN Fund Governance Document?	Yes

If no, then please provide a compelling justification for the project being approved	

First Tier LCN Project Changes

DNO(s)
Electricity North West

Change date

Project description	Registration details	Updated details	Reason for changes
Project title	The 'Bidoyng' Smart Fuse	The 'Bidoyng' Smart Fuse	N/A
Project background	In recognition of the number of Transient Faults being experienced on Low Voltage (LV) Distribution Networks and the constant drive to improve customer service, Electricity North West initiated the IFI funded Fuse Restorer Project in 2006 with Kelvatek. The aim of the project was to develop a device capable of carrying two LV fuses in a standard size fuse carrier that could automatically insert a secondary fuse into a circuit following a Transient Fault to restore supplies to our customers and could then send an alarm to a nominated contact. Kelvatek delivered the final device, now known as the 'Bidoyng Smart Fuse' and three were installed on Electricity North West's network in Wigan, Lancs, they successfully operated to restore supplies to over 100 connected customers following a transient fault at 11.30pm on 14th November. The Smart Fuse has been fully type tested (up to 50kA) and now provides a potential means to eliminate a significant proportion of Transient Faults based on developing a targeted installation strategy.	In recognition of the number of Transient Faults being experienced on Low Voltage (LV) Distribution Networks and the constant drive to improve customer service, Electricity North West initiated the IFI funded Fuse Restorer Project in 2006 with Kelvatek. The aim of the project was to develop a device capable of carrying two LV fuses in a standard size fuse carrier that could automatically insert a secondary fuse into a circuit following a Transient Fault to restore supplies to our customers and could then	N/A
Scope and objectives	The primary aim of this project is to test the feasibility of installing a sufficient number of Smart Fuses to reduce the impact of Transient Faults on our network, if the Smart Fuse proves a reliable solution the project will provide enough data to develop a business case for the installation of a substantial number of units. During the development of The Smart Fuse the debate on smart grids has developed significantly with the recognition that the Low Voltage Network will become ever more important as domestic scale renewable energy generation is expected to play an ever greater part in the transition to a low carbon economy. The Smart Fuse has been designed to provide a high specification voltage and load profiling platform with full communications capability and a range of fault analysis applications under development and this project will provide the data needed to develop the network load modelling and profiling algorithms to support the optimisation of our low voltage network. The scope of the project is to install 200 Smart Fuse units and Gateways in identified LV circuits. The Smart Fuse units are retrofitted to the LV Fuse position in the LV Fuse pillar with 3 Smart Fuse units installed per feeder (one on each phase). 200 units will provide coverage for 66 feeders and one gateway is needed in each substation that Smart Fuses are installed. The objective is to demonstrate the advantages of being able to automatically restore supplies to LV connected customers and to gather data about the performance such a device will deliver to the network. It is envisaged that other smart grid opportunities will arise once data has been gathered and evaluated.	The primary aim of this project is to test the feasibility of installing a sufficient number of Smart Fuses to reduce the impact of Transient Faults on our network, if the Smart Fuse proves a reliable solution the project will provide enough data to develop a business case for the installation of a substantial number of units. During the development of The Smart Fuse the debate on smart grids has developed significantly with the recognition that the Low Voltage Network will become ever	N/A
Success criteria	The project will be considered a success by achieving three milestones: Installation of 200 Smart Fuse units, demonstration of the advantages of the technology (Auto-reclosing, Load profiling) and Smart Grid support. Fault restoration and load profiling data will be gathered from the time of installation which will then be will then be collated and analysed and recommendations published from the data analysis.	The project will be considered a success by achieving three milestones: Installation of 200 Smart Fuse units, demonstration of the advantages of the technology (Auto-reclosing, Load profiling) and Smart Grid support. Fault restoration and load profiling data will be gathered from the time of installation which will then be will then be collated and analysed and recommendations published from the data analysis.	N/A
TRL(s)	6		
Predicted end date	2014		
External Collaborators and external funding	Kelvatek - No direct external funding although Kelvatek are providing free access to their LV test network as required		
Solutions	This is an innovative solution to the issue of transient interruptions and the inevitable inconvenience to our customers, it will also provide visibility of network loading to establish available headroom for new loads such as EV's		
Potential for new learning	The information will be used to evaluate the effectiveness of the approach to Transient Fault Management. The ability to remotely inform dispatchers and fault restoration engineers of the operation of the Smart Fuse will provide a means to more appropriately target field staff to the fault locations to allow faster restoration of our customers supplies		
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Scale of Project	The Smart Fuse design has been rigorously tested in laboratories and on live test networks and has been shown to operate as intended. The next step is to see the operation on a network fault but a problem comes from the fact that faults can never be reliably predicted even though we have a full log of previous faults and can predict likely locations. The reason for the size of the trial is to ensure we can target enough locations to ensure we experience enough faults to prove the reliability and robustness of the Smart Fuse		
Geographic area	The devices will be target across the Electricity North West Network based on the current Transient Fault log		
Does the Project involve customer engagement?	No		

Funding	**Registration details**	**Updated details**	**Reason for changes**
Revenue allowed for within the DPCR5 settlement (£)			N/A
Indication of the total Allowable First Tier Project Expenditure (£)	442666	442666	N/A

Publication	**Registration details**	**Updated details**	**Reason for changes**
Does the DNO provide Ofgem with consent to publish its First Tier LCN Project Changes Pro-forma in full?	Yes		
If not, please justify which parts the DNO considers to be confidential	n/a		

Related Undertakings	**Registration details**	**Updated details**	**Reason for changes**
Payments to Related Undertakings (£)	None		
If a payment is to be made to any Related Undertaking that is a Distribution System User, have the same terms been offered to similar Distribution System Users of the part of the network that is within the project boundary?	No		
Has the DNO used reasonable endeavours to make the opportunity available to similar Distribution System Users of the part of the network that is within the project boundary?	No		

IPR arrangements	**Registration details**	**Updated details**	**Reason for changes**
If IPRs are generated, will they conform to the default IPR arrangements set out in the LCN Fund Governance Document?	Yes	Yes	N/A
If no, then please provide a compelling justification for the project being approved			N/A