

ADINE

Active Distribution Network

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Project started 1. October 2007 - Duration 36 months.

Financing from the FP6, Priority 6.1 Sustainable Energy Systems.
Specific targeted research project, STREP.

Total cost 3,2 M€ and 379,5 person months.

Objective of ADINE

Over all objective is to develop, demonstrate and validate a new Active Network Management method of distribution network including distributed generation (DG) and other active devices.

Words characterizing Active Network Management

- Co-operation / co-ordination / system wide thinking
- Integration (individual components will help system management)
- Intelligent (investments on controllability instead of “passive” wires)
- Flexibility by controllability (passive networks have flexibility by capacity)

The technical solutions operate as active components in managing the network to enable an easy interconnection of DG units.

Technical solutions

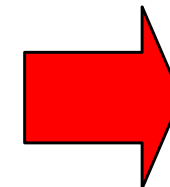
To make Active Network Management possible, a set of technical solutions are developed and demonstrated in real-life environment.

Technical solutions

- Protection of distribution network including DG
 - Application of communication based relays at distribution networks
 - Fault location with high earth fault resistance and influence of DG
 - Co-ordinated protection planning on Network Information System
- Voltage control of distribution network including DG
 - Droop control of small-scale microturbine
 - Centralized voltage control application on SCADA / DMS
- New-generation medium voltage STATCOM
 - capable of filtering harmonics, eliminating flicker, compensating voltage dips, compensating reactive power, improving recovery of the network during line fault and controlling the voltage level of the distribution network

ADINE Subprojects

SP1	SP2	SP3	SP4
WP 1.1: Management of consortium and knowledge			
WP 1.2: Adaptation of ANM to European distribution networks			
SP5	WP 2.1 Research for protection application demos WP 2.2 New protection relay applications WP 2.3 New fault location solutions in distribution network WP 2.4 New protection planning methods	WP 3.1 Voltage control of the DG unit WP 3.2 Defining coordinated voltage control WP 3.3 Demonstrating co-ordinated voltage control	WP 4.1 Development of new features of STATCOM WP 4.2 Demonstrating the operation of new features of STATCOM
WP 5.1: Developing the integrated simulation environment and running the simulations			
WP 5.2: Developing and verifying of Active Network Management method			



Outcome:
 Verified Active Network Management method and technical solutions

Research and demonstration work

Developing of Technical Solutions

1. Technical solutions are tested in appropriate simulations
2. Real-life demonstrations are planned, built and taken to operation
 - Protection relay and fault location applications
 - Software prototype of co-ordinated protection planning
 - Voltage droop control of small-scale microturbine
 - Centralized voltage control on SCADA/DMS
 - New-generation STATCOM on wind park or on industrial site
3. The network behaviour before and during the demonstration as well as the operation of technical solutions are monitored

Verifying of Active Network Management method

1. The actual controllers, protection relays and monitored data from the demonstrations are taken into combined real-time simulation environment for the interaction simulations
2. The description of the Active Network Management method

Combined real-time simulation environment of RTDS/dSPACE

