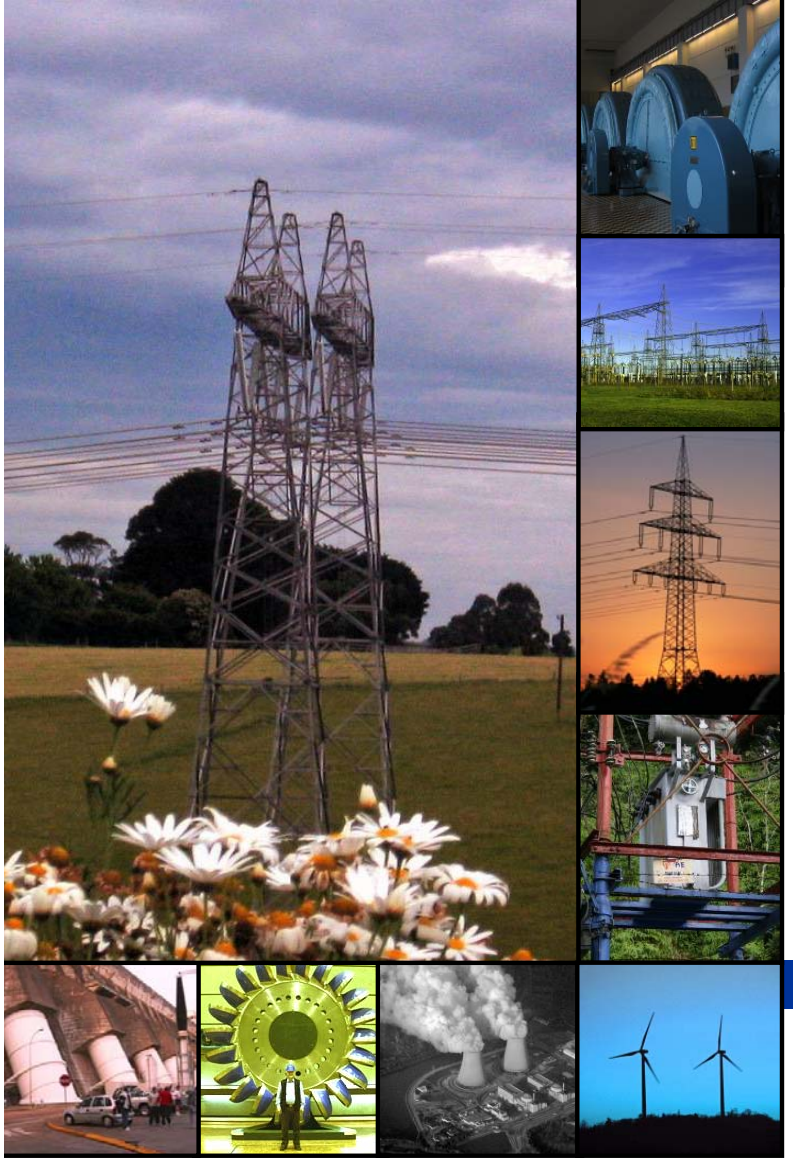

Weiterentwicklung und Pflege der Normenreihen IEC 61850 und IEC 61400-25

FGH Fachtagung „IEC 61850“
Heidelberg, 12.-13. Juni 2008

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SCC

Standards and projects

- Standards and projects
  - IEC 61850 Editon 2
  - IEC 61850-7-410 Extensions for hydro power plants
  - IEC 61850-7-420 Extensions for decentralized energy resources (DER)
  - IEC 61850-7-5xx Application examples
  - IEC 61400-25-xx Extensions for wind power plants
  - IEC 62351-7 Extensions for Network Management
  - Examples for DER

IEC 61850-x-y: Communication networks and systems for power utility automation

Document	Title	Publication	Edition 2
1	Introduction and overview	TR Ed1:2003-04	CD 2008
2	Glossary	TS Ed1:2003-08	
3	General requirements	IS Ed1:2002-02	
4	System and project management	IS Ed1:2002-01	CD 2008
5	Communication requirements for functions and device models	IS Ed1:2003-07	CDV 2008
6	Configuration description language for communication in electrical substations related to IEDs	IS Ed1:2004-03	CDV 2008-02
7-1	Basic communication structure – Principles and models	IS Ed1:2003-07	CDV 2008-05
7-2	Basic communication structure – Abstract communication service interface (ACSI)	IS Ed1:2003-05	CDV 2008
7-3	Basic communication structure – Common data classes	IS Ed1:2003-05	CDV 2008

current work in 2008	current work in 2008

IEC 61850-x-y: Communication networks and systems for power utility automation

150 Logical Nodes (Ed2) – 90 (Ed 1)
800 Data Objects (Ed2) – 500 (Ed 1)

60 Logical Nodes
350 Data Objects

Document	Title	Publication	Edition 2
7-4	Basic communication structure – Compatible logical node classes and data classes	IS Ed1:2003-05	CDV 2008-05
7-410	Hydroelectric power plants - Communication for monitoring and control	IS Ed1:2007-08	CD 20xx
7-420	Communications systems for distributed energy resources (DER) - Logical nodes	FDIS Mid 2008	CD 20xx
7-500	Use of logical nodes to model functions of a substation automation system	Draft 2008	
7-510	Use of logical nodes to model functions of a hydro power plant	Draft 2008	
7-520	Use of logical nodes to model functions of distributed energy resources	Draft 2008	
		current work in 2008	current work in 2008

50 Logical Nodes (Draft 2008-05)
450 Data Objects (Draft 2008-05)

IEC 61850-x-y: Communication networks and systems for power utility automation

Document	Title	Publication	Edition 2
8-1	Specific communication service mapping (SCSM) – Mappings to MMS (ISO/IEC 9506-1 and ISO/IEC 9506-2) and to ISO/IEC 8802-3	IS Ed1:2004-05	CDV 2008
9-1	Specific communication service mapping (SCSM) – Sampled values over serial unidirectional multidrop point to point link	IS Ed1:2003-05	
9-2	Specific communication service mapping (SCSM) – Sampled values over ISO/IEC 8802-3	IS Ed1:2004-04	CDV 2008
10	Conformance testing	IS Ed1:2005-05	CD 2008
80-1	Guideline to exchange information from a CDC based data model using IEC 60870-5-101/104	TS Ed1:2008-??	
90-1	Using IEC 61850 for the communication between substations	Draft 2008	
90-2	Using IEC 61850 for the communication between substations and control centres	Draft 2008	
		current work in 2008	current work in 2008

IEC 61400-25-x: Wind Turbines - Communications for monitoring and control of wind power plants

16 Logical Nodes
250 Data Objects

61400-25-1	Overall description of principles and models	IS ED1:2006-12	Tissues 2008
61400-25-2	Information models	IS ED1:2006-12	Tissues 2008
61400-25-3	Information exchange models	IS ED1:2006-12	Tissues 2008
61400-25-4	Mapping to communication profiles	FDIS 2008-05	
61400-25-5	Conformance testing	IS ED1:2006-12	Tissues 2008
61400-25-6	Logical node classes and data classes for condition monitoring	CDV 2008-05	

current work in 2008	current work in 2008

1 Logical Node
20 Data Objects

Networkmanagement-Models in IEC 61850

- IEC 62351-7 TS Ed. 1 (neues Projekt):
- Data and communication security – Part 7: Network and system management (NSM) data object models
  - 150 Data Objects

How many objects are defined?

- IEC 61850 (Core)
- IEC 61400-25 (Wind)
- IEC 62361-7 (Networkmanagement)

Logical Nodes and Data Objects (2008-05*)

- IEC 61850 (2008-05)
  - 260 Logical Nodes
  - 1.600 Data Objects
- IEC 61400-25 (2008-05)
  - 16 Logical Nodes
  - 270 Data Objects
- IEC 62351-7 (2008-04)
  - 150 Data Objects
- Total (2008-05)
  - 275 Logical Nodes (90 in 2003)
  - 2.000 Data Objects (500 in 2003)

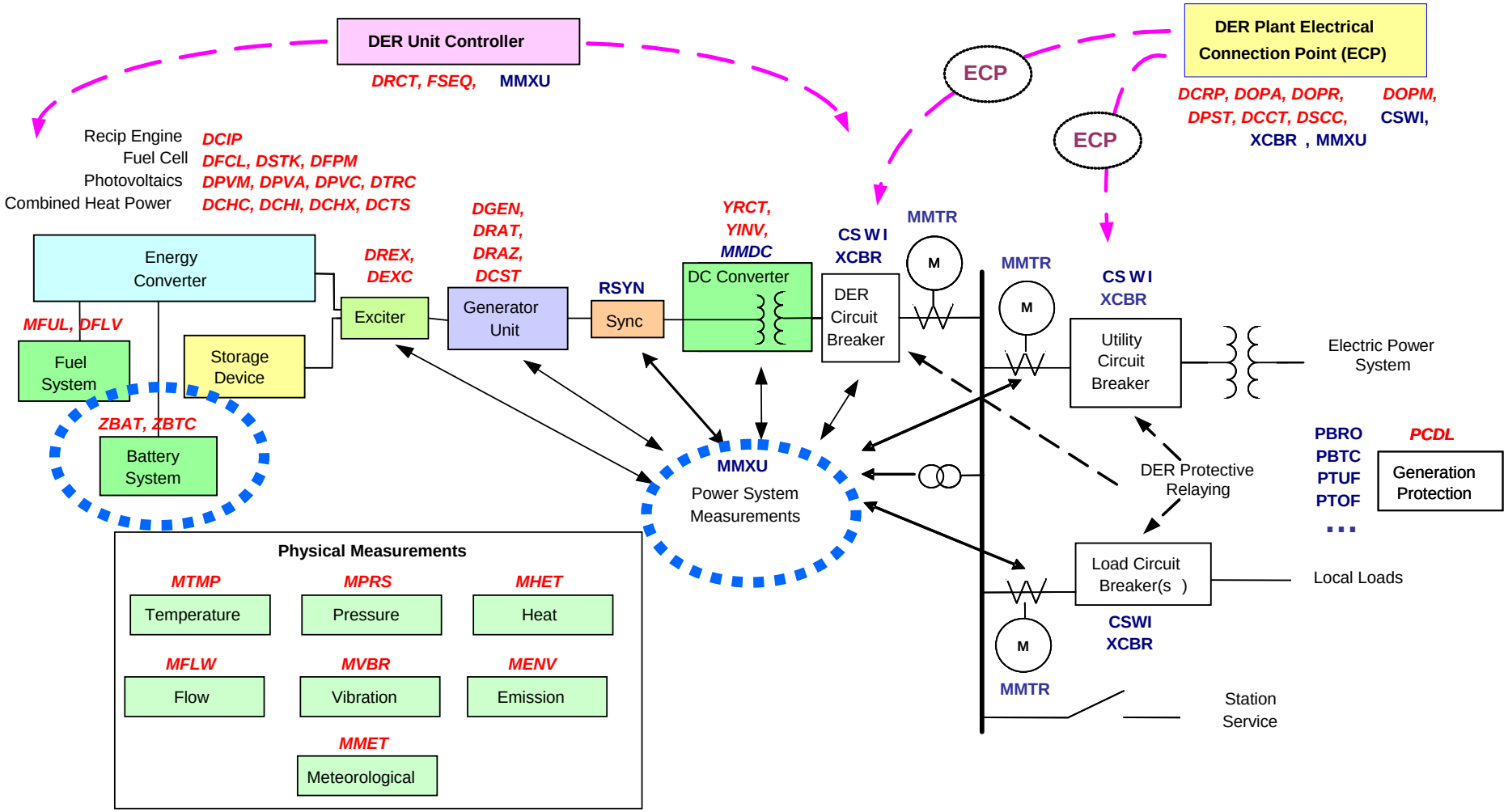
* Standards and drafts, in some cases the numbers are estimated

Examples for extensions

- DER
  - – DER overview
  - – Battery system
  - – Battery charger
- E-Energy-Projekte
- Smart Grid Vehicle
  - ... putting IEC 61850-7-420 on Wheels

DER Overview (IEC 61850-7-420)

Overview: Logical Devices and Logical Nodes for Distributed Energy Resource (DER) Systems



Source: Draft FDIS 61850-7-420 2008-04-19

Battery systems Logcal Node, Name: ZBAT (1)

Status information				
BatSt	SPS	Battery system status – True: on		M
BatTestRsl	SPS	Battery test results: Value: Explanation 0: Not applicable / Unknown 1: All good 2: Bad 99: Other		O
BatVHi	SPS	Battery voltage high or overcharged – True: high or overcharged		O
BatVLo	SPS	Battery voltage low or undercharged – True: low or undercharged		O
Settings				
BatTyp	ING	Type of battery: Value: Explanation 0: Not applicable / Unknown 1: Lead-Acid 2: Nickel-Metal Hydrate (NiMH) 3: Nickel-Cadmium (NiCad) 4: Lithium 5: Carbon Zinc 6: Zinc Chloride 7: Alkaline 8: Rechargeable Alkaline 9: Sodium sulphur (NaS) 10: Flow 99: Other		M

Source: Draft FDIS 61850-7-420 2008-04-19

Battery systems Logcal Node, Name: ZBAT (2)

ZBAT Class				
Attribute Name	**Attr. Type**	**Explanation**	**T**	**M/O**
AhrRtg	ASG	Amp-hour capacity rating		O
BatVNom	ASG	Nominal voltage of battery		O
BatSerCnt	ING	Number of cells in series		O
BatParCnt	ING	Number of cells in parallel		O
DisChaCrv	CSG	Discharge curve		O
MaxBatA	ASG	Maximum battery discharge current		O
DisChaRte	ASG	Self discharge rate		O
LoBatVAlm	ASG	Low battery voltage alarm level		O
HiBatVAlm	ASG	High battery voltage alarm level		O
Measured values				
Vol	MV	External battery voltage		M
VolChgRte	MV	Rate of output battery voltage change		O
InBatV	MV	Internal battery voltage		O
Amp	MV	Battery drain current		O
InBatA	MV	Internal battery current		O
InBatTmp	MV	Internal battery temperature		O
Controls				
BatSt	SPC	Turn on battery		O
BatTest	SPC	Start battery test		O

Source: Draft FDIS 61850-7-420 2008-04-19

Battery charger Logical Node, Name: ZBTC

Status information				
BatChaSt	ING	Battery charger charging mode status Value: 0 = Not applicable / Unknown; 1 = Off; 2 = Operational mode; 3 = Test mode; 99 = Other		M
ChaTms	INS	Charging time since last off/reset		O
Settings				
BatChaTyp	ING	Type of battery charger: Value: 0 = Not applicable / Unknown; 1 = Constant voltage; 2 = Constant current; 99 = Other		O
ChaCrv	CSG	Charge curve		O
ReChaRte	ASG	Recharge rate		O
BatChaMod	ING	Battery charger Mode setting Value: 0 = Not applicable / Unknown; 1 = Off; 2 = Operational mode; 3 = Test mode; 99 = Other		M
Measured values				
ChaV	MV	Charging voltage		O
ChaA	MV	Charging current		O

Source: Draft FDIS 61850-7-420 2008-04-19

Smart Grid Vehicle

- Smart Grid Vehicle
  - ... putting IEC 61850-7-420 on Wheels
  - http://www.smartgridvehicle.org/
  - eine Initiative der Deutschen Gesellschaft für Sonnenenergie
  - Präsentation für IEC TC 57 WG 17 (27.05.2008):
    - http://dispowergen.com/std/der/meetings/kassel_2008-05/2008-05-DGS-FASM-Kassel-SGV.pdf