

Active market participation of customers and distributed resources

SGEM WP 5.2

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VTT's contribution in WP 5.2

- In tasks 5.2.2 (aggregator & VPP concepts) and 5.2.3 (business models for DR)
- Continuation for the work done in INCA

Contents of the work

- Further development of VTT's simulation tools used for optimal scheduling of DER
 - Evaluation of other tools when possible
 - Inputs from the ADDRESS project
 - (ECN PowerMatcher)
 - The tool used in INCA, Flexprof
- Evaluation of the profitability of DER aggregation in Nordic context
 - Especially the balancing market

Balancing market simulation tool for DER aggregation

- Excel / VB –based tool for optimization of the allocation of demand response
- Taking into account
 - Intra-day spot market
 - Balancing market
- Mixed-integer model
- Simulation hour-by-hour for one year or more

time	spot price / forecast	realized CIP	CIP forecasts			spot sale	spot buy	spot offer or obligation MW	up-regulation		down-regulation		P(up-reg accept)	P(down-reg accept)	expected up-regulation MW	expected down-regulation MW	term customer deviation from balancing
			peak dev	tail dev	peak share				price	power	price	power					
0	45.07	43.21				0	1.94289E-16	-1.94289E-16	52.070	0.26	38.070	0			0	0	
1	42.92		3	10	0.75	1.12133E-16	0	1.12133E-16	49.92	0.26	35.92	0	6.8 %	6.8 %	0.0176	0.0000	0.0176
2	39.80		3	10	0.75	1.12133E-16	0.000	1.12133E-16	46.80	0.26	32.80	0.000	6.8 %	6.8 %	0.0176	0.0000	0.0176
3	42.57		3	10	0.75	0	0.000	0	49.57	0.26	35.57	0.000	6.8 %	6.8 %	0.0176	0.0000	0.0176
4	38.44		3	10	0.75	0	0.000	0	45.44	0.26	31.44	0.000	6.8 %	6.8 %	0.0176	0.0000	0.0176
5	44.62		3	10	0.75	0	0.000	0	51.62	0.26	37.62	0.000	6.8 %	6.8 %	0.0176	0.0000	0.0176
6	39.67		3	10	0.75	2.88658E-17	0.000	2.88658E-17	46.67	0.26	32.67	0.000	6.8 %	6.8 %	0.0176	0.0000	0.0176
7	37.36		3	10	0.75	-2.88658E-17	0.000	-2.88658E-17	44.36	0.26	30.36	0.000	6.8 %	6.8 %	0.0176	0.0000	0.0176
8	33.98		3	10	0.75	0	0.000	0	40.98	0.26	26.98	0.000	6.8 %	6.8 %	0.0176	0.0000	0.0176
9	39.87		3	10	0.75	0	0.000	0	46.87	0.26	32.87	0.000	6.8 %	6.8 %	0.0176	0.0000	0.0176
10	36.82		3	10	0.75	0	0.000	0	43.82	0.26	29.82	0.000	6.8 %	6.8 %	0.0176	0.0000	0.0176
11	40.94		3	10	0.75	0	0.000	0	47.94	0.26	33.94	0.000	6.8 %	6.8 %	0.0176	0.0000	0.0176
12	45.20		3	10	0.75	0	0.000	0	52.20	0.26	38.20	0.000	6.8 %	6.8 %	0.0176	0.0000	0.0176
13	43.16		3	10	0.75	0	0.000	0	50.16	0.26	36.16	0.000	6.8 %	6.8 %	0.0176	0.0000	0.0176
14	48.22		3	10	0.75	2.88658E-17	0.000	2.88658E-17	55.22	0.26	41.22	0.000	6.8 %	6.8 %	0.0176	0.0000	0.0176
15	47.59		3	10	0.75	1.2326E-32	0.000	1.2326E-32	54.59	0.26	40.59	0.000	6.8 %	6.8 %	0.0176	0.0000	0.0176
16	46.01		3	10	0.75	0.26	0.000	0.26	53.01	0.00	39.01	0	6.8 %	6.8 %	0.0000	0.0000	0.0000

Resources for February – April 2011

- Jussi Ikäheimo 1,5 months
- Corentin Evens 0,5...1 months
- Murtaza Hashmi 0,5...1 months