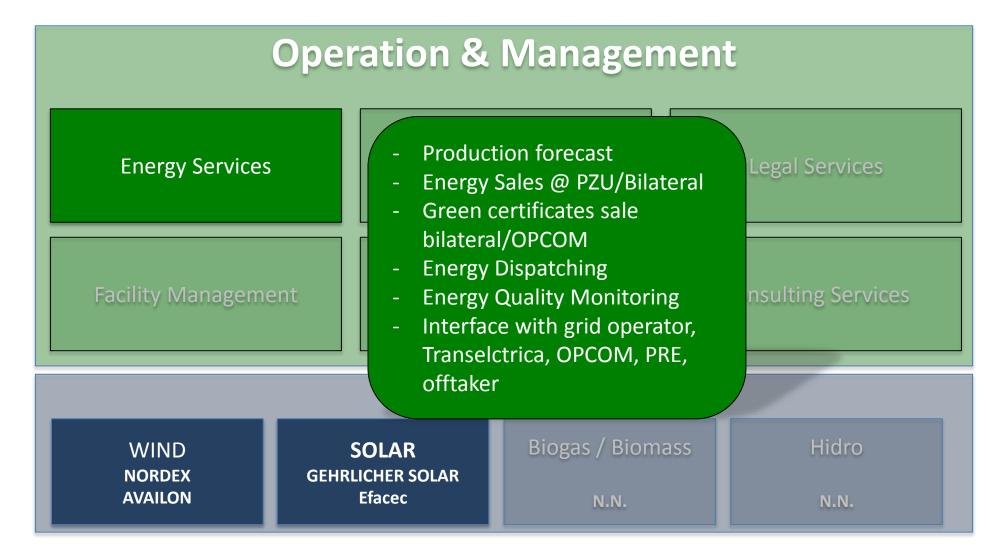


BI application for managing wind and solar plants

Romanian Solar Summit 2013 Razvan Neamtu



Operation & Management						
Energy Services		Financial Services		Legal Services		
Facility Management		Technology Services		Consulting Services		
	Maintenance					
WIND NORDEX AVAILON	GEHRL	BOLAR Biogas / Bior ICHER SOLAR Efacec N.N.		ass	Hidro N.N.	

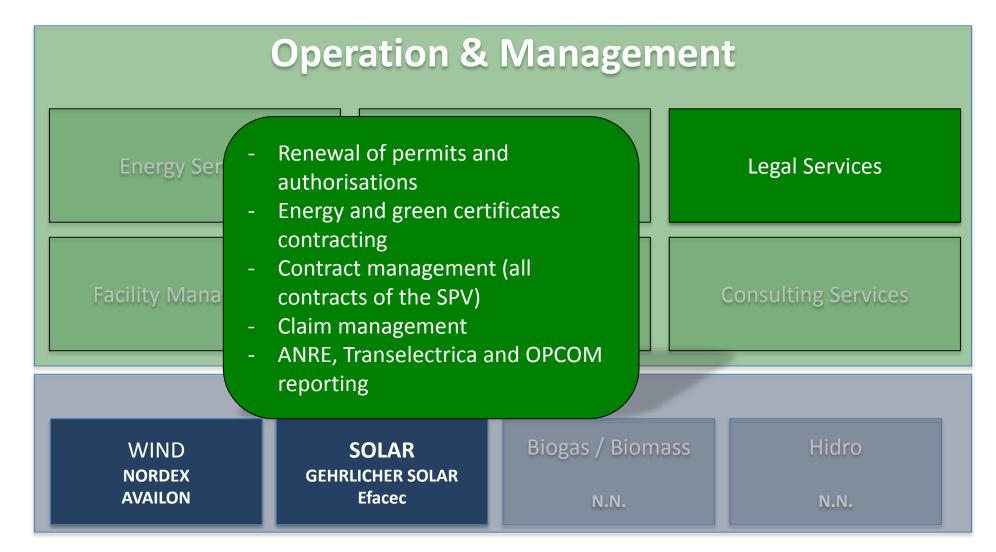


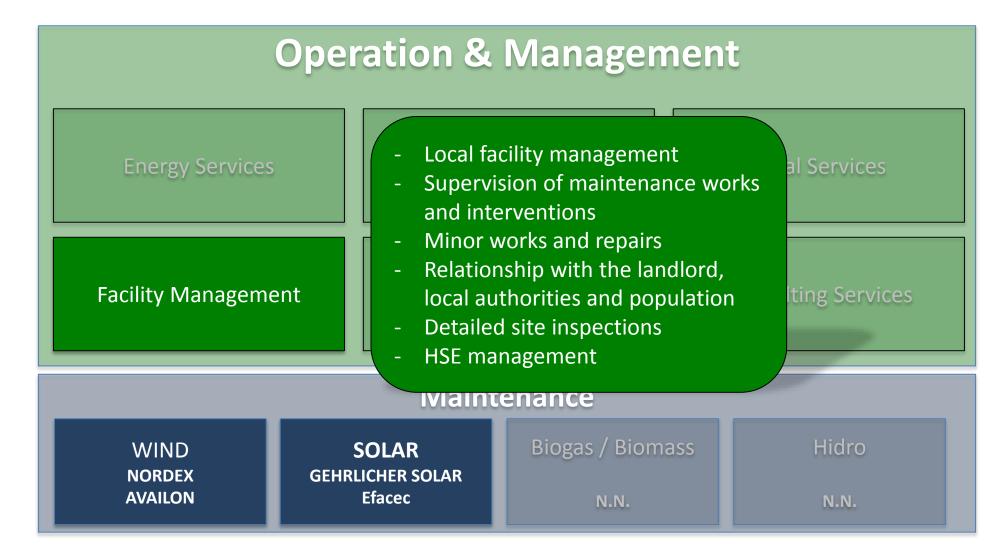
REPOM Services – Production forecasting process

Energy Production Forecast 7:00 AM/365 days	Availability Forecast 7:30 AM/365 days	Special Situation Adjustment 8:30 AM/365 days	Submit to Offtaker 8:45 AM/365 days	PRE + Offtaker/ DAM
COMPUTATION MODEL	REPOM Facility Mgr.	REPOM Forecaster	REPOM	
GFS COSMO EU		Knowlegde based adjustments		
ANM		Adjustment for dispatch units		4

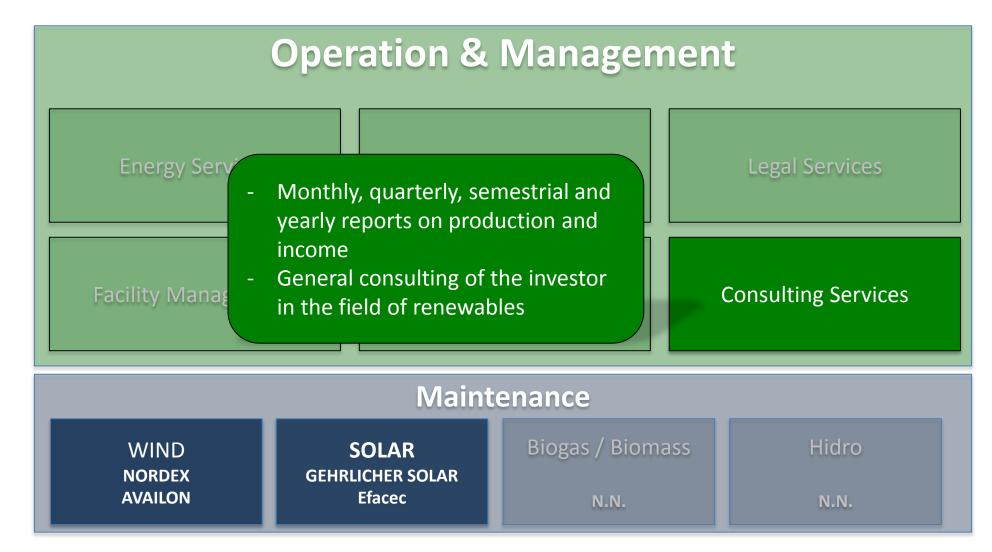
Operation & Management						
Energy Services Financial Services			Legal Services			
Facility Manageme	ent Technol	ogy Services	Consulting Services			
	Maintenance					
WIND NORDEX AVAILON	SOLAR GEHRLICHER SOLAR Efacec	Biogas / Bioma N.N.	ass Hidro N.N.			

Operation & Management						
Energy Services	Financial Services	Legal Services				
Facility Managemer	Facility Management Technology S - Invoicing and payment follow up - Validation of expenses and revenues - Financial reports					
	- Cash	c accountancy preparation flow management				
WIND NORDEX AVAILON	SOLAR GEHRLICHER SOLAR Efacec N.N.	N.N.				

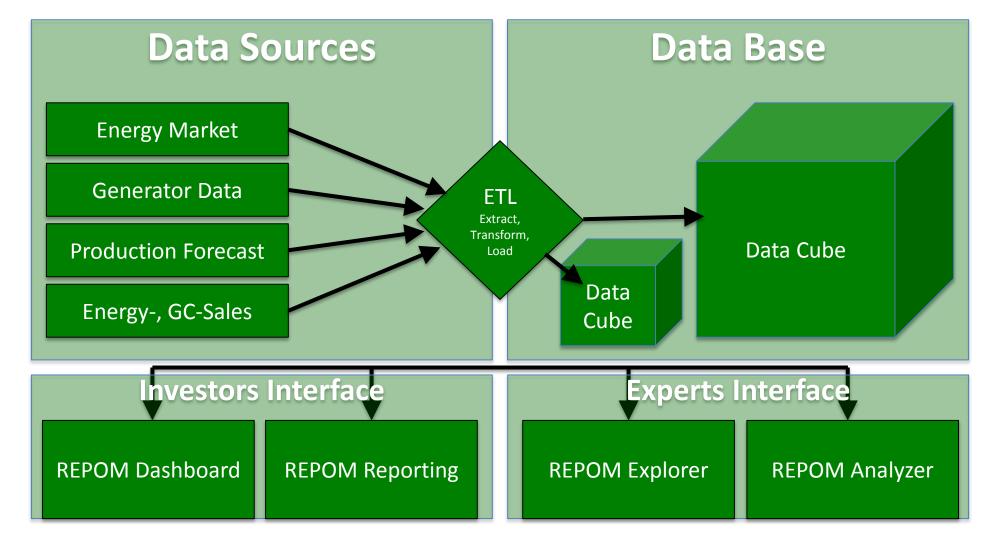


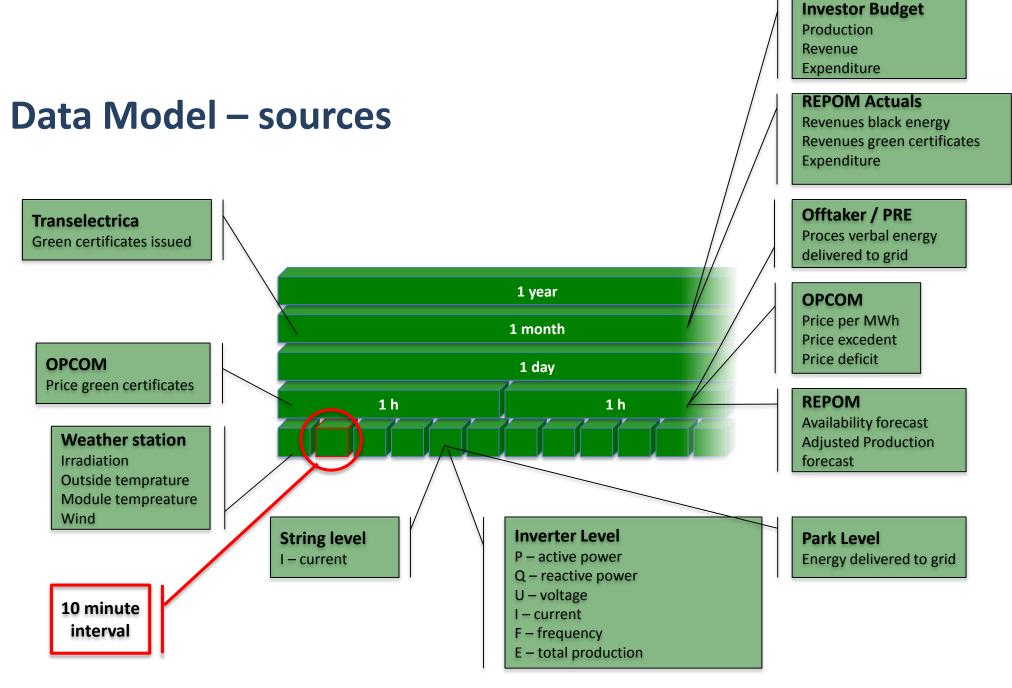


REF	POM Services		monitori - Availabili - Technica - Data cole	patch Center, plant ng and intervention ity forecast I analysis and reporting ection and analysis ot cause analysis
	Energy Services	Operation &	- Improver proposal - Retrofit s	ment and optimisation s
	Facility Manageme	nt Technolo	ogy Services	Consulting Services
		Maint	tenance	
	WIND NORDEX AVAILON	SOLAR GEHRLICHER SOLAR Efacec	Biogas / Biomas N.N.	s Hidro N.N.

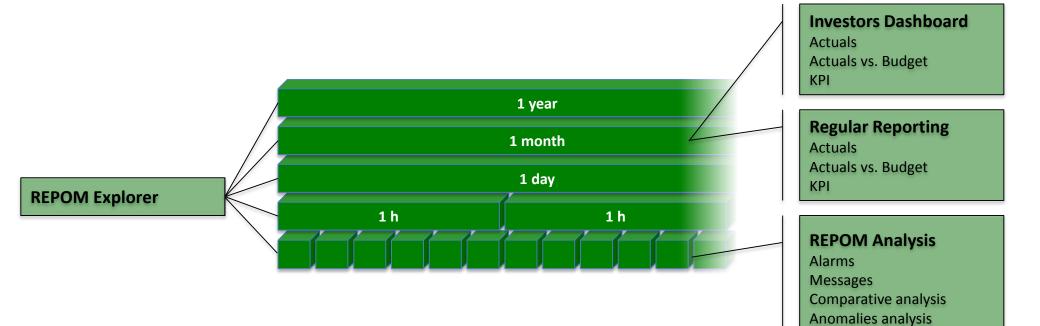


REPOM Business Intelligence





Data Model – reporting



Condition monitoring

BI Application – Investor's interface

DEMO

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Park Map v3

Close	Park Map v3	
E58 Voda Sängeorz-Bái Nasaud E	TE58 Map Satellite Hybrid E58 Ungheni	Călărasi Installed Power
Dej Beclean Bistrița	Hălăucești lași Holboca	Nisporeni E58 M21
Gherla E576	Toplita Tulghes Bicaz Neamt Roman	E581 Chisinau Durle Codru
Napoca	Săvinești E85 Movila	Lāpuşna laloveni Hīnceşti
ti Cojocna Sângeorgiu	Balan Vaslui	Huşi
Câmpia Ludus Tarou Mures	Sovata Bacău Esa Praid Moinești	trie Cimișlia
Ocna Mureş Tarnaveni	Odorheiu Miercurea-Ciuc Comănești Nicolae Secuiesc	Leova E584 largara Basarabeas
Aiud Dumbrăveni Secule	Bârlad	Comrat
lulia Mediaș	Baraolt Târgu Adjud Rezervația Naturală	Congaz Tvardita
Des Agnita Cona E68 Sibiului	Cotul Sfântu Vidra Panciu	Ceadir-Lunga Cahul Taraclia
Sibiu Selimbăr Victoria	Bod E578	Colibași-
Cisnădie Avrig Tălmaciu	Codler Prejmer Intorsura Buzăului	Bolhrad
Rezervația	E60 Platta - Ritsteni	Galați Reni Francisco M-15
Jnepenișul Stricatu Brezoi	mpullung	ila Izmail
Horezu Râmnicu de Arges	Comarnic Vălenii de Munte Câmpina	Túlcea
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Piteșt	i Târgoviște Ploiești Ess	Babadag Ra
Gorogle		

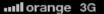
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Dark Man v2

Close	Park Map v3	
E58 Na	Sängeorz-Båi Asaud E576 Map Satellite Hybrid	heni Calarasi Installed Power
Dej Beclean	Bistrița	Nisporeni E58
Gherla E576	Toplița Tulgheș Piatra Cherăești Neamț Roman	E581 Chisinau Durle Codru
Napoca	E578 Săvimesti	Lăpușna laloveni Hincești
ti Cojocna	Gheorgheni Buhuşi Contra Buhuşi	March 3
Turda	de Mures Bacau Bacau	E581 Dimitrie
Câmpia Luduș Turzii	Nicolae Nicolae	Cantemir Leova E584
Ocna Mureş Tarnave Aiud	eni Cristuru Seculesc E578 / Târgu Ocna Dumbraveni Seculesc Bâlcescu Bârlad	Basarabeas
E81 Blaj	Sighişoara	Avdarma Congaz Tvardita
bes .	Agnita DEMO PARK	Ceadir-Lunga
E68 Ocna Sibiului Sibiului	Fägäraş Turzunulul GI 30 day Prod. 3,255.98 MWh	Cahul Taracila
Selim	800 20 day Avail 06 22%	Colibași Essa Bolhrad
Tälmaciu		C M2 17 M-15
Rezervația Jnepenișul	Plate Busteni Detailed Map Crailful Busteni Information View	Galați Reni Lerr Izmail
Stricatu Brezoi	Câmpulung Comar Tap arrows to browse	Bráila
Horezu Râm Vâl	nnicu de/Arges Icea : Buzău Vărbilău lanca	Catalói Bestep
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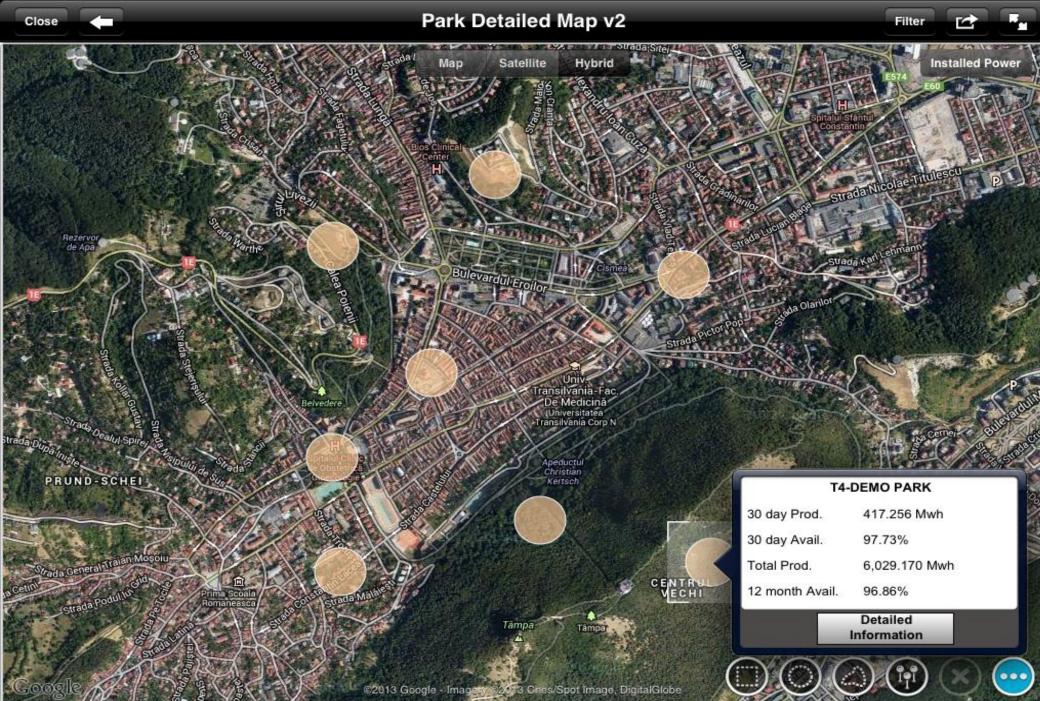
DEMO PARK

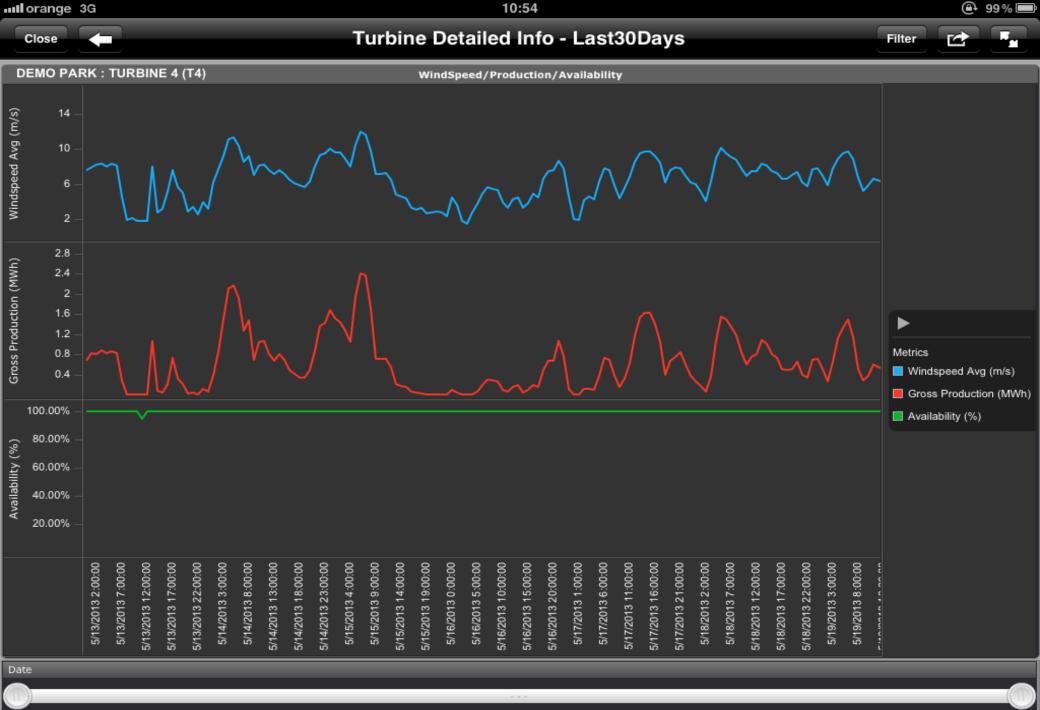


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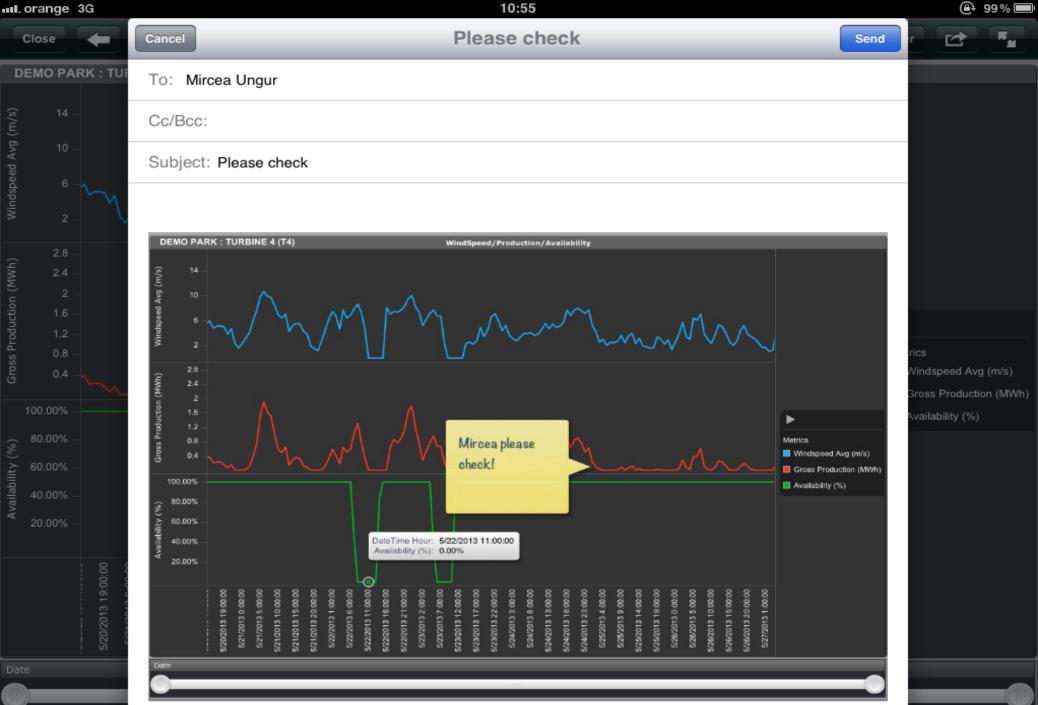
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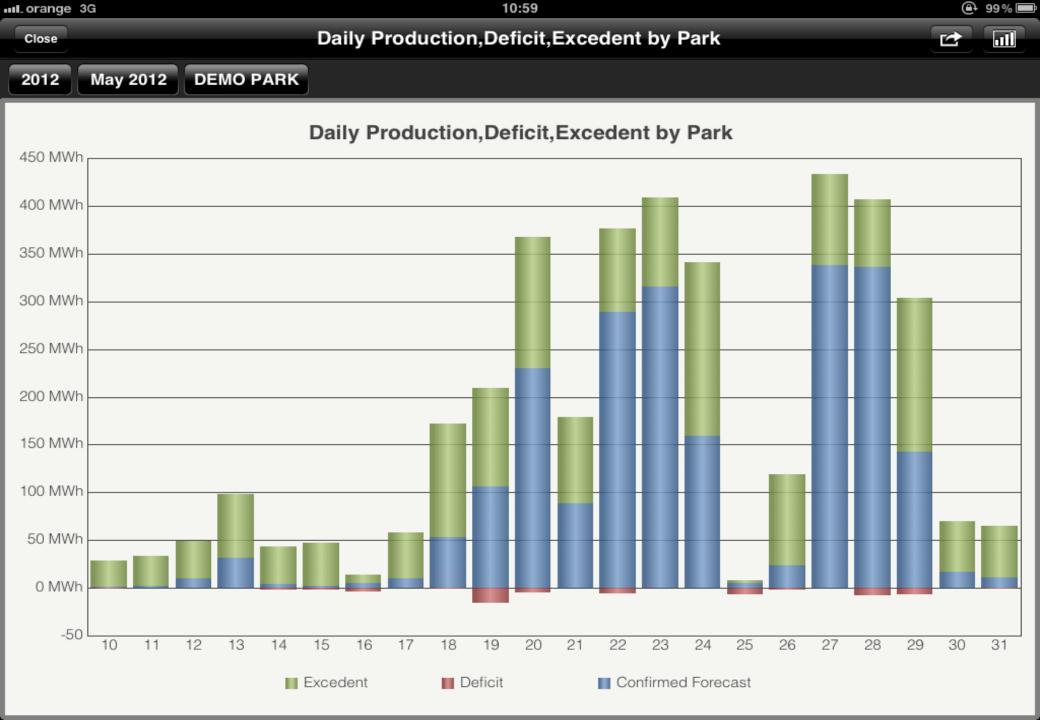
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Daily Income, Deficit, Excedent by Park

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4

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2012 Ma	ay 2012	DEMO PAR	к
Day Of Month Metrics	Forecast Income	Deficit Expense	Excedent Income
10	307.80 RON	-119.57 RON	1,724.90 RON
11	440.64 RON	-47.67 RON	2,285.04 RON
12	1,743.48 RON	-5.16 RON	2,216.86 RON
13	5,612.04 RON	-13.40 RON	6,888.61 RON
14	955.80 RON	-346.64 RON	3,082.04 RON
15	790.92 RON	-467.49 RON	1,670.50 RON
16	1,627.20 RON	-768.15 RON	810.11 RON
17	1,839.06 RON	-31.84 RON	3,941.61 RON
18	9,622.26 RON	-128.19 RON	9,772.59 RON
19	22,084.74 RON	-4,170.58 RON	8,429.11 RON
20	42,345.90 RON	-765.65 RON	14,938.77 RON
21	15,889.14 RON	-1.80 RON	9,904.44 RON
22	53,028.00 RON	-888.73 RON	10,223.82 RON
23	56,823.30 RON	0.00 RON	9,066.70 RON
24	28,628.28 RON	0.00 RON	13,204.86 RON
25	2,046.42 RON	-1,584.51 RON	476.12 RON
26	4,537.08 RON	-452.93 RON	7,373.13 RON
27	60,772.68 RON	0.00 RON	13,413.00 RON
28	61,816.68 RON	-1,001.13 RON	8,357.19 RON
29	26,963.64 RON	-975.60 RON	9,384.84 RON
30	2,986.92 RON	-69.90 RON	5,694.25 RON
31	2,074.68 RON	-75.34 RON	3,696.24 RON
Total	402,936.66 RON	-11,914.27 RON	146,554.74 RON

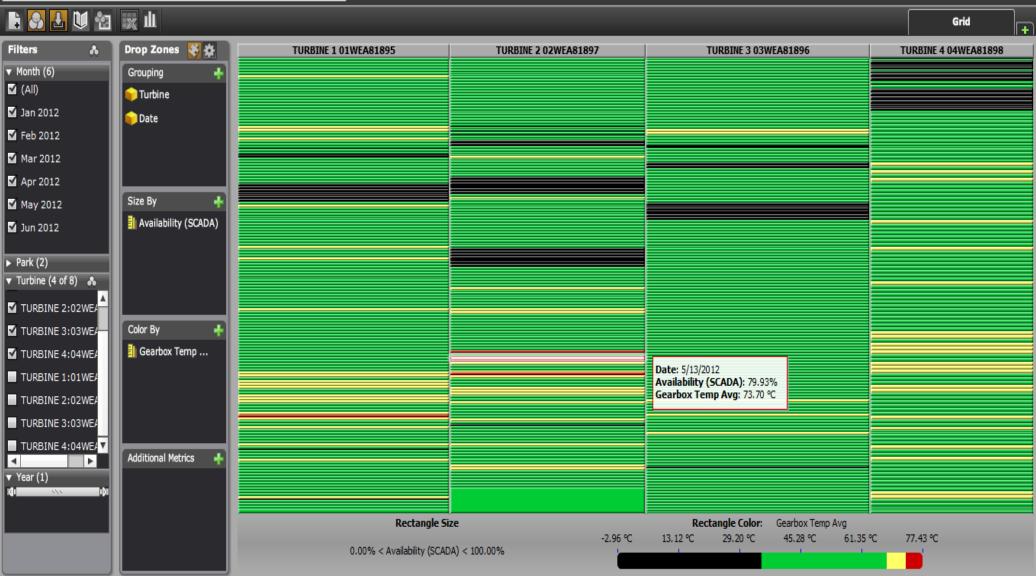


Financial Results January 2013

Park	DEMO PARK
Net Production	3,943.801 MWh
Total Energy	3,943.801 MWh
Forecast Income	276,486.65 RON
Excedent Income	272,051.89 RON
Total Energy Income	548,538.54 RON
GC Received Amount	1,233,465.00 RON
GC Open Amount	0.00 RON
Total GC Income	1,233,465.00 RON
Total Income	1,782,003.54 RON
Deficit Expense	-76,534.82 RON
PRE Expenses	1,406.98 RON
Total Expenses	-75,127.83 RON
Result	1,706,875.70 RON
Average Value/MWh (RON) Average Value/MWh (EUR)	432.80 92.09

BI Application – Data explorer and analysis

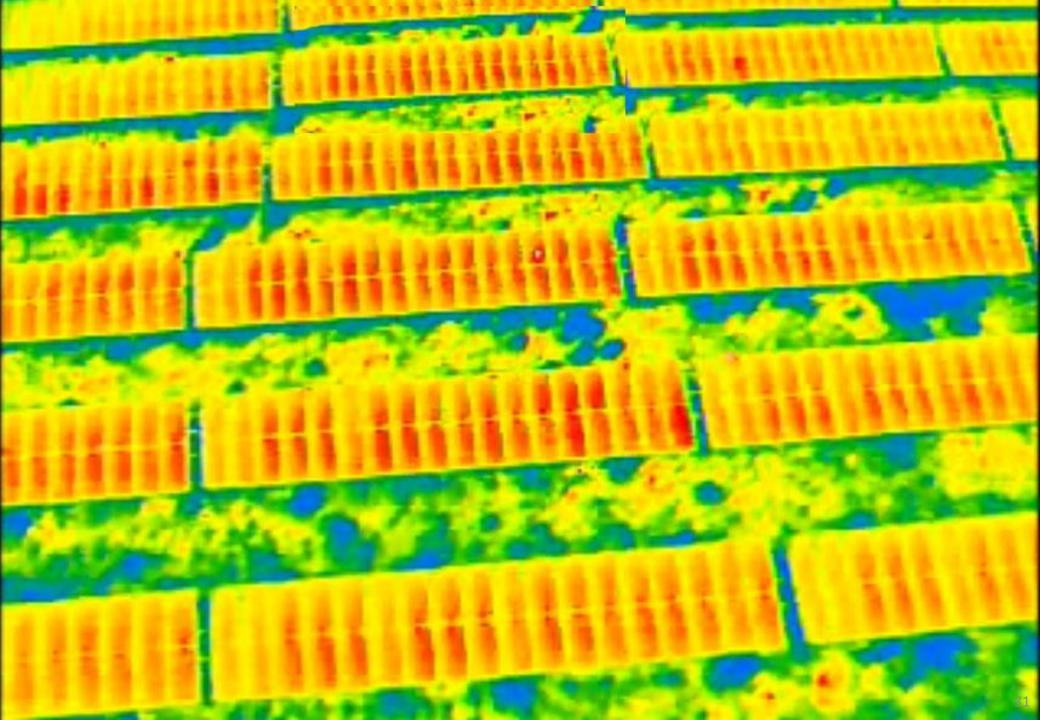
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REPORT DET	AILS	_				? ×
Report Filter Year = 2012						
PAGE-BY:	Park: GREBANU 👻					? *
	GREBHIG V					
						Data rows: 47 Data columns: 3
Year	Month	Turbine TURBINE 4	Metrics 04WEA81807	Windspeed Avg 6.57 m/s	Availability (SCADA) 98.06%	Gen Speed Avg 794.07
	May 2012	TURBINE 1	01WEA81945	8.38 m/s	99.95%	832.62
	May 2012	TURBINE 2	02WEA81945	8.14 m/s	99.63%	819.86
		TURBINE 3	03WEA81947	7.56 m/s	98.81%	808.15
		TURBINE 4	04WEA81807	7.90 m/s	99.65%	812.38
	Jun 2012	TURBINE 1	01WEA81945	6.34 m/s	98.40%	720.62
	Jun Lore	TURBINE 2	02WEA81946	6.08 m/s	93.17%	679.36
		TURBINE 3	03WEA81947	5.60 m/s	97.09%	674.00
		TURBINE 4	04WEA81807	6.61 m/s	45.30%	343.34
	Jul 2012	TURBINE 1	01WEA81945	7.59 m/s	96.64%	786.84
		TURBINE 2	02WEA81946	7.33 m/s	98.20%	790.03 =
		TURBINE 3	03WEA81947	6.70 m/s	98.34%	764.99
		TURBINE 4	04WEA81807	7.12 m/s	98.39%	778.32
	Aug 2012	TURBINE 1	01WEA81945	7.07 m/s	98.49%	782.71
		TURBINE 2	02WEA81946	6.56 m/s	87.59%	689.70
		TURBINE 3	03WEA81947	6.36 m/s	98.38%	759.94
		TURBINE 4	04WEA81807	6.48 m/s	95.84%	751.79
	Sep 2012	TURBINE 1	01WEA81945	5.44 m/s	99.95%	640.66
		TURBINE 2	02WEA81946	5.77 m/s	98.76%	690.81
		TURBINE 3	03WEA81947	5.12 m/s	99.99%	666.91
		TURBINE 4	04WEA81807	5.14 m/s	99.74%	646.78



Operation of a PV Plant

operational aspects, BI tool integration

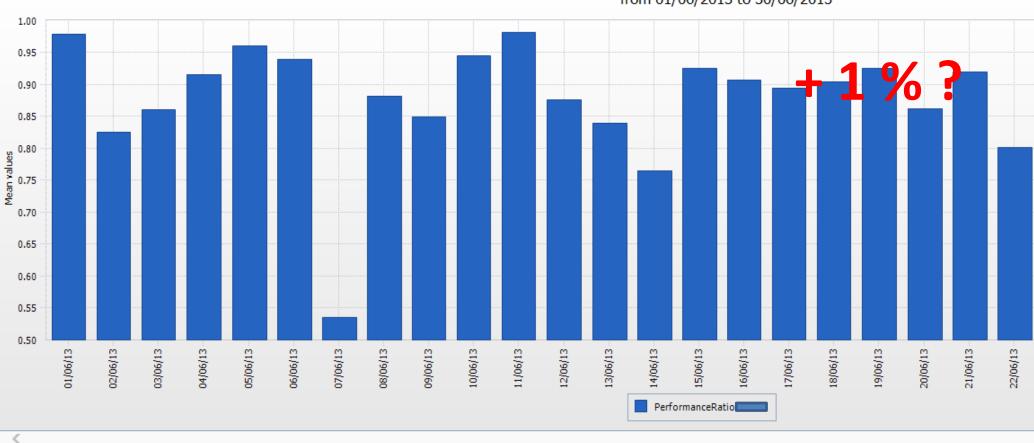












from 01/06/2013 to 30/06/2013



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Thank you for your attention!

sc REPOM srl Renewable Energy Production Operation + Management

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