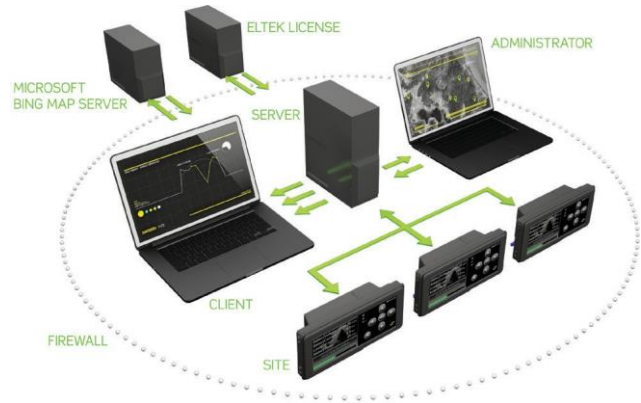


Remote Monitoring of All Sites in One Tool

Monitor energy and performance on multiple sites

- Statistics on energy produced
- Instant status overview
- KPI (Key Performance Indicators)
- Alarms
- Detect underperforming sites
- Email reports



MultiSite Monitor

Server-based Monitoring Software

v2.10.1

Doc 4061xx.DS3 – rev 2.10.1

PRODUCT DESCRIPTION

Server-based Monitoring Software

The *MultiSite* software is a server-based tool that gathers statistical data from connected sites and stores it in a database.

The software also includes web pages for viewing the data from the database. The tool support up to 25000 connected sites.

Monitor the sites energy performance

The *MultiSite* software is a tool for monitoring multiple sites' energy performance and status.

The site owner gets access to performance data that can be used to evaluate investments in hybrid DC power system and for marketing of site fleet's reduced carbon emission.

The instant status of sites makes *MultiSite* a 1st line site maintenance tool; whenever there is a site in alarm, it is easily seen in the map, the list and top bar. One click in the site's details view will open the site's web pages in a new tab for further investigation of the alarm.

KEY FEATURES

- **EASY ACCESS**
Through web browser for both clients and administrators
- **CLIENT MONITORING**
Not dependent on access to site network
- **CENTRAL DATABASE SERVER**
Holds statistical data, resulting in decreased browsing latency
- **SERVER TO SITE DATA TRANSFER THROUGH HTTP PORT 80**
Fire-wall friendly (SSL on port 443 is fully supported)
- **MAP VIEW**
Comprehensive sites overview
- **SITE LIST**
Grouping of sites enables a greater overview
- **SUPPORTS UP TO 25 000 SITES**
Based on multiple server installations
- **SUPPORT FQDN**

KEY FEATURES

- **AUTOMATIC DETECTION OF UNDERPERFORMING SITES**
Use of battery, energy, generator and network connectivity
- **COMPREHENSIVE ALARM VIEWS**
Rolling alarm view, alarm details view and alarm ranking of sites
- **KEY PERFORMANCE INDICATORS**
Set KPI targets and measure site energy and performance
- **EMAIL REPORTS**
- **SITE SURVEILLANCE**
Allows for site specific IP cameras to be monitored through *MultiSite Monitor*
- **BATTERY STATUS**
Remaining battery life and battery backup time
- **GRID AVAILABILITY**
- **CLOUD COMPUTING**
VMware platforms compatible

SPECIFICATIONS

AVAILABLE PACKAGES	Small	Medium	Large	Enterprise
Included clients/user accounts	2	5	15	15
Maximum no. of clients/user accounts	5	15	30	30
Included sites/connected power system controllers	5	50	200	3000
Max. no. of sites/connected power system controllers	49	199	3000	25000

SUPPORT AGREEMENTS	Limited	Maintenance & Service
Email support	No minimum response time	Reply within 2 business days
Telephone support (free support hours per year)	-	Small 4h
		Medium 15h
		Large 40h
Support availability	09:00-15:00 CET (not included)	09:00-15:00 CET
On-site support	-	Upon request
Free MSM software upgrade	-	Yes

SERVER REQUIREMENTS	Recommended Server Hardware	Recommended Free Disk Space after installation
Sites		
0 - 100	2 CPU Cores, 3 GB RAM	100 GB
100 - 250	3 CPU Cores, 5 GB RAM	250 GB
250 - 500	5 CPU Cores, 8 GB RAM	500 GB
500 - 1000	8 CPU Cores, 16 GB RAM	1 TB
1000 - 2000	8 CPU Cores, 32 GB RAM	2 TB
More than 2000	<i>Contact MSM.support@eltek.com</i>	

CLIENT REQUIREMENTS

Web browser with Silverlight (v4.0) plug-in on client computer

SITE AND CONTROLLER REQUIREMENTS

- Eltek system controller with Ethernet and JSON support: ..General requirement
- Smartpack2 Master: All versions
- Smartpack (only .242100.118): WebPower version >4.6 (not compatible with SNMP auto config.)
- Smartpack S: All versions
- Compack: Firmware version > 1.05
- Delta Orion:..... Firmware version v7.00 or newer
- 3rd party controllers/SNMP Devices: SNMP v1, v2c, v3. MIB Compiler and mapping feature in MSM

NETWORK INFRASTRUCTURE REQUIREMENTS

Bandwidth to sites (no dial-up)	Minimum 256 kB/s
Daily data usage on each site	Typically from 50kB to 3.0 MB, dependent on configuration
Maximum response time	700 ms
Transport layer/MSMJsonService:..... TCP Port 80 / TLS Port 443	MSMJsonService: TCP port 8082
Data Set/Get SNMP, Alarms SNMP Traps:..... UDP Port 161/162	MSMSNMPService: TCP port 8083
Transport layer/MSMNetworkUtilityService: UDP Port 20034	MSMNetworkUtilityService: TCP port 8084
Transport layer/MSMSNMPTrapReceiver: TCP port 8083	MSMNorthboundService: TCP port 8085
Transport layer/MSMRestrictedSiteService:..... TCP Port 8087	MSMSNMPNorthboundService: TCP port 8086
Transport layer/MSMSNMPDataCollectorService: TCP port 8088	

SECURITY

User login required, min 4 letters, upper/lower case & number

Specifications are subject to change without prior notice

FEATURES AND STATISTICS

DASHBOARD

- Total number of sites connected
- Number of sites in alarm
- Number of offline sites
- Solar energy generated in the last 24 hours

MAP VIEW

- Server data update interval every 10 minutes
- Map data from BING or similar service
- Use of JPG or BMP image as replacement to BING maps
- Site locations
- Visible monitors (6)

LIST VIEW

- Site Name
- IP Address
- Controller Type
- Number of Major Alarms
- Number of Minor Alarms
- Connection Status
- Alarm monitors (6) (default: Mains Voltage, Battery Voltage, Rectifier Current, Battery Temperature, Solar Current)
- SNMP for 3rd party controllers

ENERGY TREND, SINGLE SITE

Server data update interval, typical	<ul style="list-style-type: none"> • Daily
Energy from solar, wind, generator, rectifiers, DC load (Multi Tenant) and auxiliary equipment on mains	<ul style="list-style-type: none"> • Pie chart 24h/30d/50w (%) • Line chart 30h/30d/30w (kWh)
Generator run time, fuel consumption and efficiency (hybrid sites only)	<ul style="list-style-type: none"> • Line chart 30h/30d/30w (m), (l), (kWh/l)
Battery charge and discharge	<ul style="list-style-type: none"> • Bar Diagram (Ah) total
Battery back-up time	<ul style="list-style-type: none"> • Instant elimination and target (h)
Alarm Report	<ul style="list-style-type: none"> • Hourly
Solar CO2/OPEX savings trends	<ul style="list-style-type: none"> •

RUN HOURS

Generator, Grid, Battery	<ul style="list-style-type: none"> • Table min/day, Hours/week, Hours/Month
Eltek Cooling box (ECB), Aircondition	<ul style="list-style-type: none"> • Line chart 30d/30w/30months

COMPARE (COMPARISON OF SITES)

Server data update interval, typical	<ul style="list-style-type: none"> • Daily
Energy from solar, wind & renewable in total, Renewable versus total DC system or Mains energy	<ul style="list-style-type: none"> • Site versus Site • Group versus Site • Group versus Group • Bar diagram 30h/30d/30w (kWh), (%)
Energy usage DC Load, Multi tenant: (up to 8 channels)	<ul style="list-style-type: none"> • Site versus Site • Group versus Site • Group versus Group • Bar diagram 30h/30d/30w (kWh), (%)
Generator run time, fuel consumption and efficiency	<ul style="list-style-type: none"> • Site versus Site • Group versus Site • Group versus Group • Line chart 30h/30d/30w (m), (l), (kWh/l)
Battery temperature	<ul style="list-style-type: none"> • Site versus Site • Group versus Site • Group versus Group • Bar Diagram average (°C or °F)
Alarm Report	<ul style="list-style-type: none"> • Hourly

Table continues on next page

Specifications are subject to change without prior notice

FEATURES AND STATISTICS - CONTINUED

KPI VIEW [ENERGY]

Energy (Solar/Wind/Generator/Grid)	<ul style="list-style-type: none"> • Total • Last 30 days • Average run hours (generator only) • Average fuel efficiency (generator only) • Low fuel level (generator only)
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KPI VIEW [PERFORMANCE]

Energy	<ul style="list-style-type: none"> • Solar energy • Wind energy • Grid, other • Grid availability
Battery	<ul style="list-style-type: none"> • Near end of life • Backup time • Average battery temperature • Charge condition • Symmetry alarms
Generator	<ul style="list-style-type: none"> • Average run hours • Average fuel efficiency • Low fuel level
Connectivity	<ul style="list-style-type: none"> • Quality • Frequent loss of connectivity
Cooling	<ul style="list-style-type: none"> • ECB (Eltek Cooling Box) run time • Air conditioner run time

DETECTION OF UNDERPERFORMING SITES

Automatic detection of underperforming sites	<ul style="list-style-type: none"> • Use of Battery, Energy, Generator and network Connectivity, Cooling • KPI
--	--

BATTERY STATUS

Presentation of Battery Condition	<ul style="list-style-type: none"> • Bar diagram • Battery Life Days Remaining • Battery Backup Time
Smartpower & Grid Services Features	<ul style="list-style-type: none"> • Battery health / quality statistics • Battery testing / config • Battery detailed test overview with SoH

GRID STATUS

Grid Availability	<ul style="list-style-type: none"> • Run time • Bar diagram 30h/30d/30w (h), (%) • Pie chart 30h/30d/30w (h) (%)
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ALARMS (SNMP, ELTEK / DELTA)

Rolling alarm view	<ul style="list-style-type: none"> • See all alarm traps sent from controllers connected to the MSM • Filter by status, system template, search on site/ alarm description and time interval
Alarm details view	<ul style="list-style-type: none"> • See all active and historical alarms on a site/group • Filter by severity and date • Statistics about how long the site has been in alarm, and on witch level
Ranking of sites "In Alarm" time (all sites ranked)	<ul style="list-style-type: none"> • Shows an overview of how long a site has been in alarmstate compared to the other sites
Polling alarms (other)	<ul style="list-style-type: none"> • Alarm traps

Table continues on next page

Specifications are subject to change without prior notice

FEATURES AND STATISTICS - CONTINUED

LOGS

Event log	<ul style="list-style-type: none"> Log of site status change and email report sent
Change log	Logs when sites are altered: <ul style="list-style-type: none"> Configuration upload Firmware upgrade SNMP configuration changed

EMAIL REPORTS

Trigger type

Alarm Report	<ul style="list-style-type: none"> Active alarm
Underperforming report	<ul style="list-style-type: none"> Underperforming
Energy report	<ul style="list-style-type: none"> Hourly, Daily, Weekly interval Daily Energy summary (new) Weekly Energy summary(new) Daily Energy usage per site for last days(new)
Site summary report	<ul style="list-style-type: none"> Hourly interval Daily interval Weekly interval Monthly interval Quarterly interval Yearly interval
Run hour report	<ul style="list-style-type: none"> Monthly interval
KPI report (global report)	<ul style="list-style-type: none"> KPI Trigger

SITE SURVEILLANCE

IP camera integration	<ul style="list-style-type: none"> Visual surveillance of remote sites
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3RD PARTY APPLICATION SUPPORT

- Launch 3rd party applications through MultiSite Monitor
- Ticketing system

SITE INVENTORY

Serial numbers
Warranty alert
Module type
Part numbers
Hardware version
Software part numbers
Software version
Warranty period
Delivery date
Battery
Serial numbers etc. from Smart batteries

SITE MANAGEMENT

Deployment of configuration to multiple controllers	
Automatic SNMP configuration on connected controllers (requires controller software v.2.3 or higher)	
Compare controller configurations	
Show and upgrade controller firmware	
Northbound Communication	<ul style="list-style-type: none"> EDM Panama (XML format) SNMP w/MultiSite Monitor KPIs

Specifications are subject to change without prior notice

MAP VIEW / DASHBOARD (EXAMPLE)

Dashboard Metrics:

- Total nr of sites: 17
- Sites offline: 1
- Sites in alarm: 12
- Solar power yesterday: 48 kWh

Site Collection:

- Rio De Janeiro
- Sao Paulo
- SJC

SolVeisten Data:

BatteryVoltage	51,03	Volt DC
LoadCurrent	6	Amp
RectifierCurrent	0	Amp
BatteryTemp	35	Celsius
SolarCurrent	0	Amp

Gamba 3 Data:

BatteryVoltage	52,88	Volt DC
LoadCurrent	72	Amp
RectifierCurrent	55	Amp
SolarCurrent	18	Amp
BatteryTemp	28	Celsius
Fuel Remaining	0	

CUSTOM JPG/BMP VIEW/ DASHBOARD (EXAMPLE)

Dashboard Metrics:

- Total no of sites: 136
- Sites offline: 3
- Sites in alarm: 130
- Solar power yesterday: 1 kWh
- Work in progress:

Network Structure:

- My Network (136)
 - 10.20.2.68
 - burnin127
 - Compacks (85)
 - Drammen
 - Dummy sites
 - Green day
 - Hybrid solar 2
 - Local sites
 - Smartpack (44)
 - Smartpack 124
 - Test site - Drammen
 - Top Test

Filtering and Data Table:

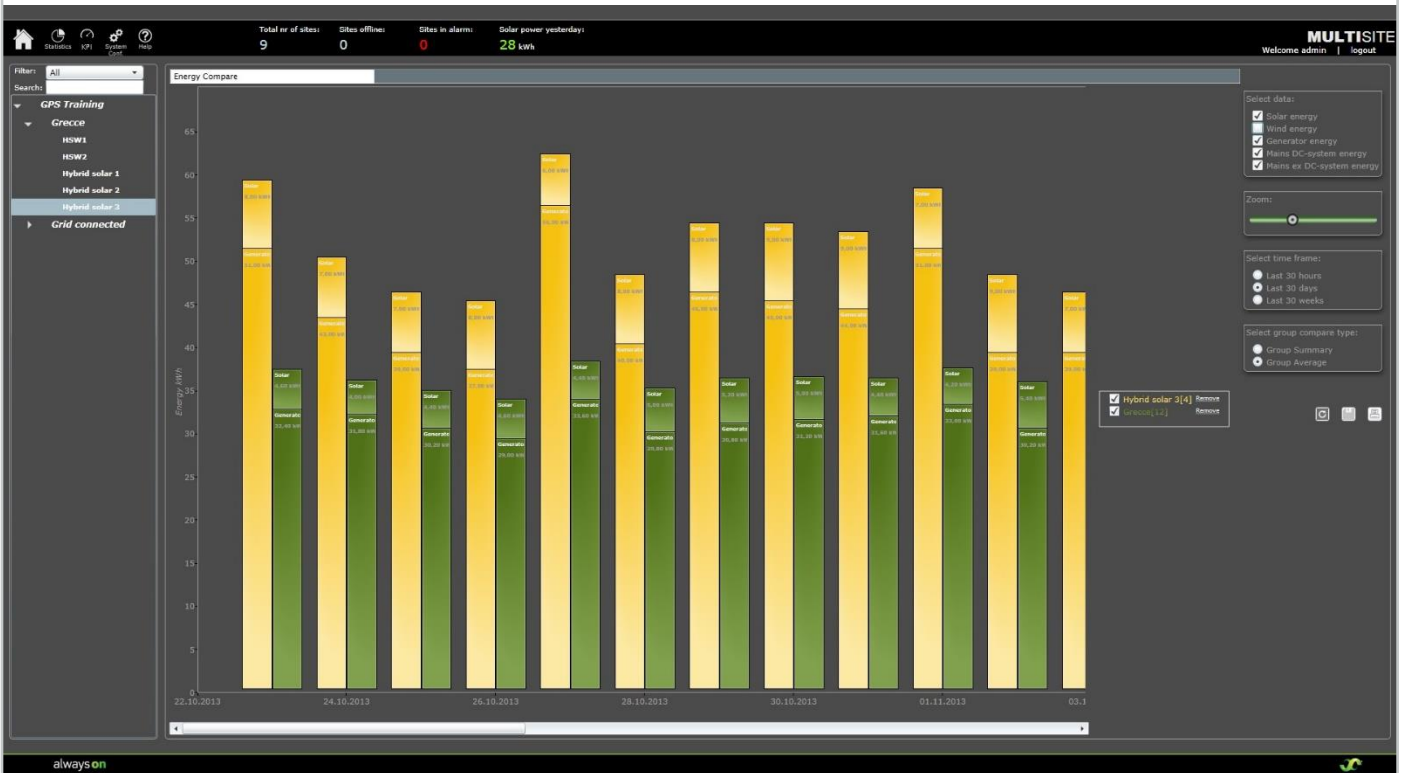
Filters: All | Site: | Priority: ALL | Status: ALL | Trap: | From: 13.10.2015 08:47 | To: |

Time	Trap	Status	Site	Site Priority	On/off	Repeat Count
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ENERGY TREND, SINGLE SITE (EXAMPLE)



COMPARE (COMPARISON OF SITES) (EXAMPLE)



KPI VIEW [ENERGY] & [PERFORMANCE] (EXAMPLE)

Home
 Inspect
 Analyze
 View
 System
 Help

Total no of sites: **6**

Sites offline: **4**

Sites in alarm: **1**

Solar power yesterday: **56 kWh**

MULTISITE

Welcome Paul Varel | [logout](#)

Key performance indicators (KPI's)

Energy

Energy source	Total	Last 30 days	Target
Solar	24,6 %	23,8 %	21,9 %
Wind	0,3 %	0,1 %	2 %
Diesel	1,8 kWh/l	0,5 kWh/l	0,1 kWh/l

Performance

Energy				Battery				Generator				Connectivity			
Description	Number of underperforming sites	KPI value	Target												
Solar energy	1/6	16%	1/6 (2%)												
Wind energy	0/6	0%	1/6 (2%)												
Grid, other	0/6	0%	1/6 (2%)												
Grid availability	1/6	16%	1/6 (2%)												

always on

ALARM DETAILS VIEW (EXAMPLE)

Home
 Inspect
 Analyze
 View
 System
 Help

Total no of sites: **6**

Sites offline: **4**

Sites in alarm: **1**

Solar power yesterday: **56 kWh**

MULTISITE

Welcome Paul Varel | [logout](#)

Filter: All | Search:

- ▶ Live grid sites (1)
- ▶ Live Hybrid sites (5)
 - ▶ Americas (1)
 - ▶ China (3)
 - ▶ Norway (1)
 - ▶ Drammen
 - ▶ Singapore (1)

Alarm Details Drammen

Monitored since: 27.09.2012 Number of sites in Alarm: 0

Total time in Major Alarm: 13,08 % 2985,23 Hours Major Alarm Ranking: 2

Total time in Minor Alarm: 0 % 0 Hours Minor Alarm Ranking: No Minor Alarms registered on this site

Total time Offline: 0,01 % 1,57 Hours Offline Ranking: 8

◀ ▶
Status: ALL
From Date:
To Date:

Alarm description	Status	Site	Alarm on time	Last reported	Event Log	Acknowledge alarm
BatteryTemp1.1	Minor high	Drammen	21.05.2015 06:24:04			<input type="button" value="Ack"/>
LoadFuse 1	Major	Drammen	21.05.2015 06:24:03			<input type="button" value="Ack"/>
BatteryQuality	Major	Drammen	14.10.2014 10:35:35			<input type="button" value="Ack"/>
BatteryQuality	Minor	Drammen	14.10.2014 10:35:34			<input type="button" value="Ack"/>
BatteryTimeLeft	Major	Drammen	25.09.2014 23:44:44			<input type="button" value="Ack"/>
BatteryTimeLeft	Minor	Drammen	25.09.2014 23:30:39			<input type="button" value="Ack"/>

⏪ ⏩
Filter: All
Site:
Priority: ALL
Status: ALL
Trap:
From: 02.06.2015 12:23
To:

Time	Trap	Status	Site	Site Priority	On/Off	Repeat Count

always on

ALARM RANKING (EXAMPLE)

Home Inspect Analyze View System Conf. Help
Total no of sites: 6 Sites offline: 4 Sites in alarm: 1 Solar power yesterday: 56 kWh
MULTISITE
Welcome Paul Varel | Logout

Filter: All Search:

- Live grid sites (1)
- Live Hybrid sites (5)
 - Americas (1)
 - China (3)
 - Norway (1)
 - Drammen**
 - Singapore (1)

Site Ranking

Major Alarm Minor Alarm Offline

Active:				Historical:				
#	Site	Hours in major alarm	Detected major alarm	#	Site	Total % in major alarm	Total hours in major alarm	Monitored since
1	Drammen	793,99	30.04.2015 12:20:09	2	Drammen	13.08	2985.23	27.09.2012 08:46:51
2	Eltek demo site	684,45	05.05.2015 01:52:37	4	Eltek demo site	9.74	489.533	08.10.2014 13:49:44
				5	Rooftop Singapore	9.66	1462.2	13.08.2013 15:11:51
				6	Top roof	6.05	1086.38	17.04.2013 09:58:33
				7	Top roof	1.59	286.183	17.04.2013 09:57:36
				8	SJC	0	0.666666	10.09.2013 15:18:15

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ROLLING ALARM VIEW (EXAMPLE)

Home Inspect Analyze View System Conf. Help
Total no of sites: 6 Sites offline: 4 Sites in alarm: 1 Solar power yesterday: 50 kWh
MULTISITE
Welcome admin | Logout

Filter: All Search:

- Live grid sites (1)
- Eltek demo site
- Live Hybrid sites (5)
 - Americas (1)
 - China (3)
 - Norway (1)
 - Drammen**
 - Singapore (1)

Road Aerial Labels

Filter: All Site: Priority: ALL Status: ALL Trap: From: 01.04.2015 08:18 To: 03.06.2015 08:18

Time	Trap	Status	Site	Site Priority	On/off	Repeat Count
22.05.2015 10:07:05	Heart beat trap		Drammen	3	On/off	
22.05.2015 10:06:32	BatteryTemp1.1	Minor high	Drammen	3	On	13244
22.05.2015 10:06:31	LoadFuse 1	Major	Drammen	3	On	13244
22.05.2015 10:06:02	Heart beat trap		Drammen	3		
22.05.2015 10:05:30	BatteryTemp1.1	Minor high	Drammen	3	On	13243
22.05.2015 10:05:29	LoadFuse 1	Major	Drammen	3	On	13243
22.05.2015 10:04:56	Heart beat trap		Drammen	3		
22.05.2015 10:04:27	BatteryTemp1.1	Minor high	Drammen	3	On	13242
22.05.2015 10:04:26	LoadFuse 1	Major	Drammen	3	On	13242

Page 1 of 1

COMPARE CONFIG

Summary: Total no of sites: 136, Sites offline: 2, Sites in alarm: 131, Solar power yesterday: 1 kWh.

Description	Value
1 Company	
2 Model	FlatPack2 System
3 Message 1	
4 Message 2	
5 Smartpack Globals - Number of battery cells	24
6 Smartpack Globals - System capacity scale	0
7 Smartpack Globals - Temperature Scale	0
8 Smartpack Globals - System Polarity	0
9 System config cfgDesiAmpere	0
10 Low Float Voltage(Batt Test Standby voltage)	4440
11 Battery Disconnect Voltage	4300
12 Battery Reconnect Voltage	4700
13 Control system Number of control units	1
14 Control unit Com error alarm Enable(1)/Disable (0)	1
15 Control unit Com error alarm Major High	1
16 Control unit Com error Alarm group Major High	1
17 Control unit Com error alarm Minor High	1
18 Control unit Com error Alarm group Minor High	2
19 Control unit Com error delay	0
20 Control unit Com error Description	CtrlUnitError
21 Control unit Com error Manual reset Major High Only (2)/All Levels(1)/Disable (0)	0
22 SmartNode Com error alarm Enable(1)/Disable (0)	1
23 SmartNode Com error alarm Major High	1
24 SmartNode Com error Alarm group Major High	1
25 SmartNode Com error alarm Minor High	1
26 SmartNode Com error Alarm group Minor High	2
27 SmartNode Com error delay	0

Device Information:
 Description: 10.20.7.68
 Device: SMARTPACK_5
 SW: 2.4.1
 SMARTPACK2: 2.4

ELTEK COOLING BOX (ECB)

Summary: Total no of sites: 141, Sites offline: 6, Sites in alarm: 132, Solar power yesterday: 1 kWh.

ECB Run time (Last 30 days): The graph shows a steady increase in run time from approximately 30 hours on 12.09.2015 to a peak of about 50 hours on 02.10.2015, followed by a sharp drop to near 0 hours by 04.10.2015, with a slight recovery to about 10 hours by 12.10.2015.

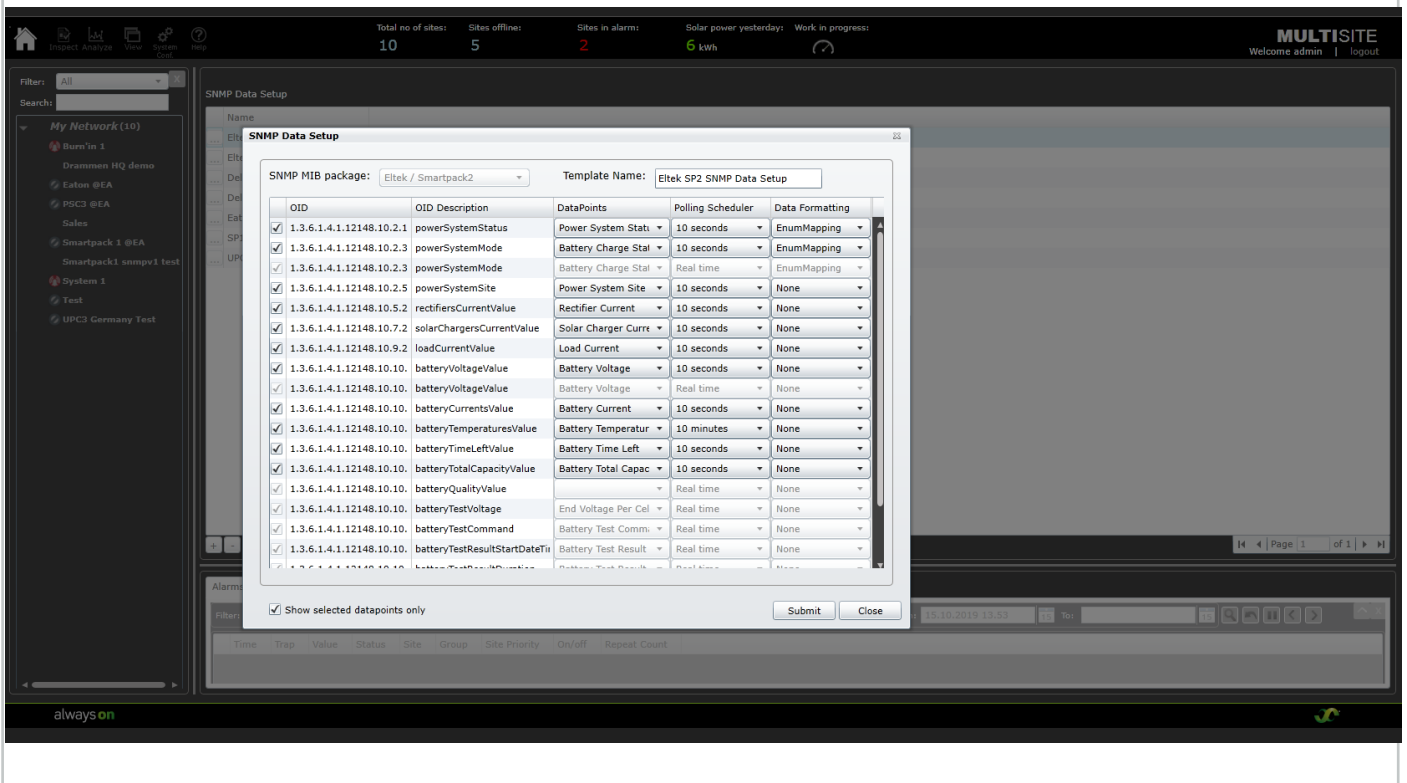
AirCon Run time (Last 30 days): The graph shows a steady increase in run time from approximately 25 hours on 12.09.2015 to a peak of about 45 hours on 02.10.2015, followed by a sharp drop to near 0 hours by 04.10.2015, with a slight recovery to about 10 hours by 12.10.2015.

Additional Info: Rect. capacity: 0%, Zoom: 0%, Select time frame: Last 30 days (selected), Last 30 weeks, Last 30 months. Select group compare type: Group Average (selected), Group Summary.

ENERGY SAVING FROM RENEWABLES (EXAMPLE)



MONITORING REMOTE SITES BY CONFIGURABLE SNMP (EXAMPLE)



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This product is CE marked and complies with
all current requirements for relevant
standards and directives.



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