

The background features a blurred high-speed train moving through a tunnel, with light trails and a dark blue color palette. On the left side, there are several overlapping red arrow shapes pointing towards the right.

Power Systems

Reliability – Always feature number one

Modularity and No Fans means the Lowest Total Cost of Ownership over 20 Year Life Time



MHE Rectifiers – Field proven reliability

- No Fan issues
- No Dust issues in electronics
- Efficiency 97%, low heat losses
- Field return rate < 0.2%
- Installation base > 6 000 rectifiers
- Warranty 5 Years



Over 40 years of experience in critical backup power systems – reliability always priority one

OPUS HE Systems product family summary



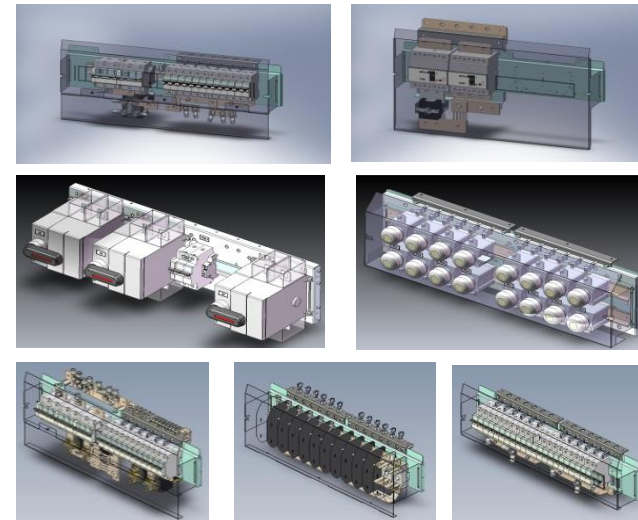
Wall Chargers



19" Rack Systems



Cabinet Systems



Electrical Options



Rectifiers



Inverters



DC/DC Converters



Controllers, Displays and aux Controllers



Modules for Systems



MHE Rectifiers



Voltage	Rectifier
220	2.0 kW
125	2.0 kW
110	2.0 kW
60	2.0 kW
48	2.0 kW
24	1.5 kW

- Efficiency 97% @ 50% power, >96% 30%-70%
- Systems up to 70kW
- MTBF / Telcordia SR-332 > 1 800 000 h @ 25°C
- Front cabling – no backplanes
- Wide Input range: 85 – 300 VAC
- Wide Temp.range: -40°C...+70°C (see de-rating)

RAIL CERTIFICATION

Harmonized EN Standards for Rail Track side Applications (MHE & VID12)

EN50124-1 Safety / Insulation Coordination

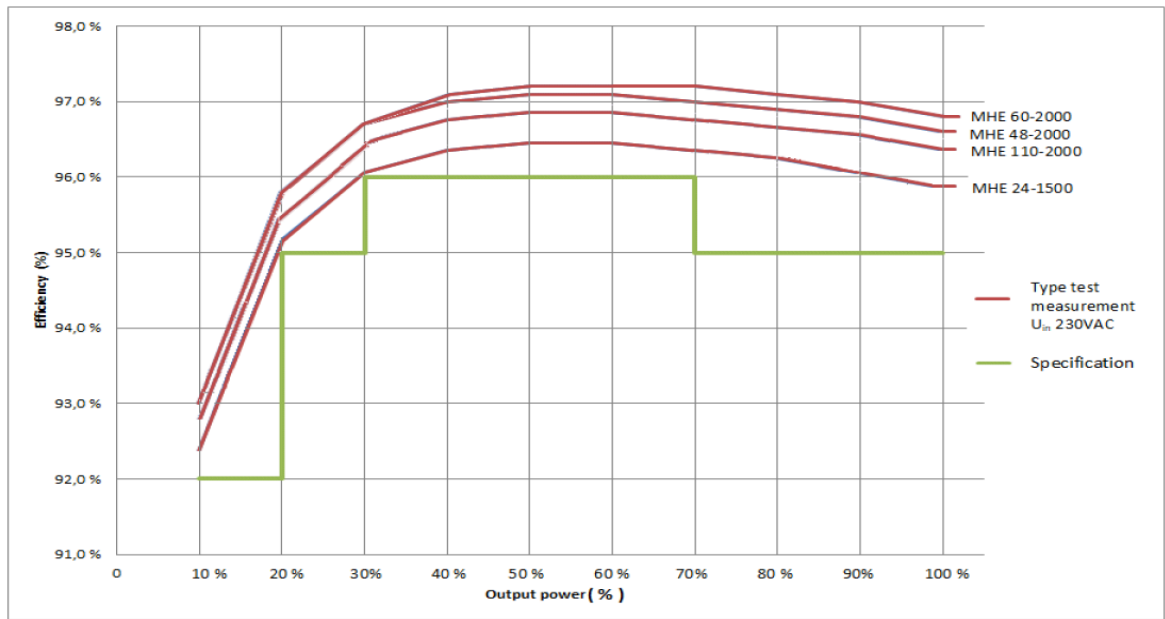
EN50121-4 EMC, Signalling & communication equipment

EN50121-5 EMC, Rail Substation equipment

EN45545 Fire protection on railway vehicles



Rail



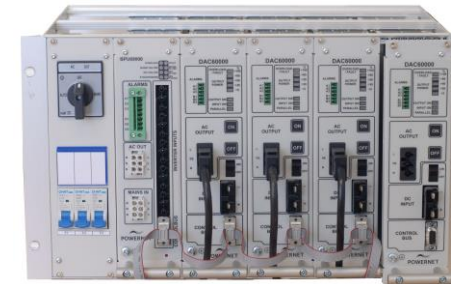
OPUS Inverters



Modular Architecture & No Fans



- VIDI+ controlled full functional inverter system with static switch, manual bypass, AC distribution
- Natural convection cooled modules:
 - 24VDC / 230VAC 1000VA
 - 48-60VDC / 230VAC 1000VA
 - 110-125VDC / 230VAC 1000VA
 - 220VDC / 230VAC 1000VA
- Modularity, n+1 redundancy
- Power range 1kVA – 24kVA, parallel connection of 1-20 modules
- Integration of the modules to OPUS cabinet



Rail

RAIL CERTIFICATION

Harmonized EN Standards for Rail Track side Applications

EN50124-1 Safety / Insulation Coordination

EN50121-4 EMC, Signalling & communication equipment

EN50121-5 EMC, Rail Substation equipment



OPUS DC/DC Converters

Modular Architecture

Description	Input voltage range	Nominal output	Output setting & max power
EDC 110-220/12-750	65-300VDC	12VDC	0-36VDC / 750W
EDC 110-220/24-750	65-300VDC	24VDC	0-36VDC / 750W
EDC 110-220/36-750	65-300VDC	36VDC	0-54VDC / 750W
EDC 110-220/48-750	65-300VDC	48VDC	0-72VDC / 750W
EDC 110-220/60-750	65-300VDC	60VDC	0-108VDC / 750W
EDC 110-220/110-750	65-300VDC	110VDC	0-144VDC / 750W
EDC 48-60/12-500	40-87VDC	12VDC	0-36VDC / 400W
EDC 48-60/24-500	40-87VDC	24VDC	0-36VDC / 500W
EDC 48-60/36-500	40-87VDC	36VDC	0-54VDC / 500W
EDC 48-60/48-500	40-87VDC	48VDC	0-72VDC / 500W
EDC 48-60/60-500	40-87VDC	60VDC	0-108VDC / 500W
EDC 48-60/110-500	40-87VDC	110VDC	0-144VDC / 500W

- Modularity, n+1 redundancy, parallel connection 500W – 10kW
- Integration of the modules to OPUS cabinet



VIDI+ & VIDI2 System Controllers

Basic functionality

- Float charging, boost charging and temperature compensated charging
- 12 x configurable relay alarms
- 12 x configurable inputs (alarm, temp. control)
- Alarm and event logs
- Energy saving function
- Earth leakage monitoring
- Remote monitoring: Modbus, Ethernet, SNMP, IEC61850 SCADA, RS-232

Extensive battery monitoring

- Battery current monitoring
- Charge current limitation
- Battery testing
- Battery Health Analysis & alarm
- Graphical battery test information
- Battery deep discharge protection
- Battery temperature measurement
- Battery midpoint and block voltage monitoring



VIDI+ / VIDI2 Controller
& VIDI aux controllers



System measurements,
diagnostics and
parameter setting



UIF Display



UIF Touch
Service Display



Control & Monitoring
for Rectifiers
and Inverters



VIDI+ System Controller, Remote Access & Web Interface

The screenshot displays the VIDI+ web interface in a browser window. The address bar shows the URL `http://192.168.40.109/epos.cgi/`. The page title is "OPUS/VIDI+". The interface includes a navigation menu on the left with links for Status, Measurements, Actions, Event Log, Alarm Log, Battery Test Log, System Logs, Inventory, Parameters, Maintenance, and Administration. Below the menu, there are fields for Username (admin) and Logout.

The main content area is titled "Status" and contains the following information:

Local Time	29.09.2019 13:00:43
Voltage Version	48 V
Charge Mode	Float Charge
System Voltage	54.6 V
Load Current	0.9 A
Rect. Current	0.8 A
Batt. Current	-0.2 A
Batt. Discharge	12.8 Ah
Batt. State	In Stand-by
Active Alarms	0
Non-acknowledged Alarms	37
System Location	Demo Hall, Efore Powernet Oy, Vantaa
System Serial Number	AP218240002

Below the status section, there are three summary sections:

- Rectifiers:** A table showing the status of three rectifiers (G1, G2, G3).
- Inverters:** A message stating "No inverter devices present".
- Bypass:** A message stating "No bypass modules present".

On the right side of the interface, there is a "System Measurements" section with an "Update" button and a "Start Auto-update" button. The measurements include:

Voltage version	48 V
Battery Status	In Stand-by
System voltage	54.6 V
Rect. Current	0.7 A
Batt. Current	-0.2 A
Load Current	0.9 A
Discharged	12.8 Ah

Below the measurements, there are sections for "Temperatures", "Battery Lifetime", "Battery Measurements", and "Battery String 1".

Temperatures	
A1-pT16: System Temperature	36.9 C
A1-pDT3: Battery Temperature Tb1	21.0 C
Battery Lifetime	
Battery Temperature Lifetime Used Factor	7.6 %
Battery Temperature Lifetime Remaining	4.6 years
Battery Cycle Lifetime Used Factor	100.0 %
Battery Cycle Lifetime Remaining	0 cycles
Deepest Battery Discharge Depth	99.5 %
Measured Battery Temperature	21.0 C
Battery Configured Design Temperature	20.0 C
Battery Configured Design Lifetime	5.0 years
Battery Configured Base Cycles	1000 cycles
Battery Measurements	
A1-pl1: Battery Current Rb1	-0.2 A
Battery String 1	
A5-pUb1: Battery Voltage B1	54.78 V
A5-pUb1: Block Voltage B1.1	13.95 V
A5-pUb2: Block Voltage B1.2	13.40 V
A5-pUb3: Block Voltage B1.3	13.71 V
A5-pUb4: Block Voltage B1.4	13.50 V

- Ethernet (TCP/IP), Modbus TCP/IP, IEC61850 SCADA, SNMP, RS-232
- TCP/IP protocols: HTTP, HTTPS, telnet, SSH, SMTP, SNMP, NTP and DHCP
- Network Security

OPUS HE, Configurable Cabinet Power Systems

Footprint 600 x 600mm, 4.5kW – 24kW



- Dimensions:
H 2000 x W 600 x D600 mm OR
H 1600 x W 600 x D600 mm
- OPUS Cabinets IP20/IP21
- IC Cabinets IP20/21, IP31/31,
IP40/IP41
- Configurable features:
 - Qty of Rectifier Modules
 - Qty of Battery Shelves
 - Battery fuses, MCB/Fuse/MCCB
 - Load distribution
- Inverter and DC/DC Converters options
- Cabling access from the top,
bottom access option

OPUS HE, Configurable Cabinet Power Systems

Footprint 800 x 600mm, 12kW – 70kW



- IC 2086 cabinets:
H 2000 x W 800 x D600 mm
IP20/21, IP31/31, IP40/IP41
- Configurable features:
 - Qty of Rectifier Modules
 - Qty of Battery Shelves
 - Battery fuses, MCB/Fuse/MCCB
 - Load distribution
- Inverter and DC/DC Converters options
- Cabling access from the top, bottom access option

OPUS Inverter Systems

Configurable Cabinet AC Power Systems 1kVA – 16.8kVA



OC2066 Cabinets:
 H 2000 x W 600 x D 600 mm
 1-5 x inverters, 1kVA - 6kVA
 1-14 x inverters, 1kVA – 16.8kVA



IC2086 Cabinets:
 H 2000 x W 800 x D 600 mm
 1-9 x inverters, 1kVA - 10.8kVA

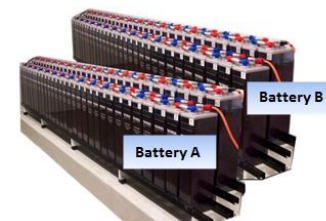
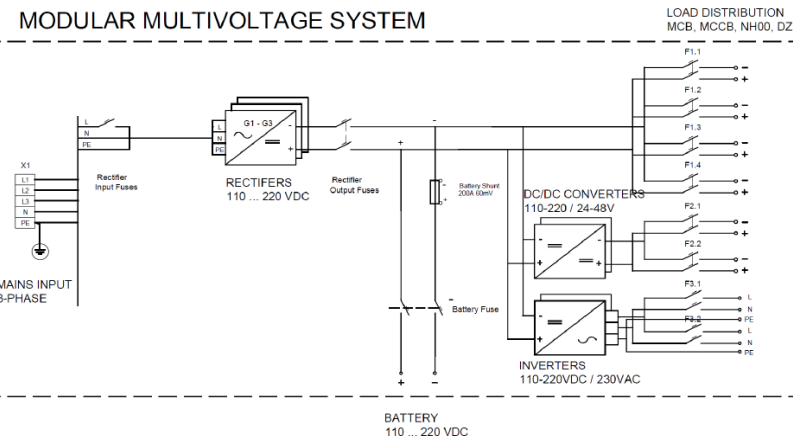


OC0864 Wall Cabinets:
 H 800 x W 600 x D 490 mm
 1-5 x inverters, 1kVA - 6kVA

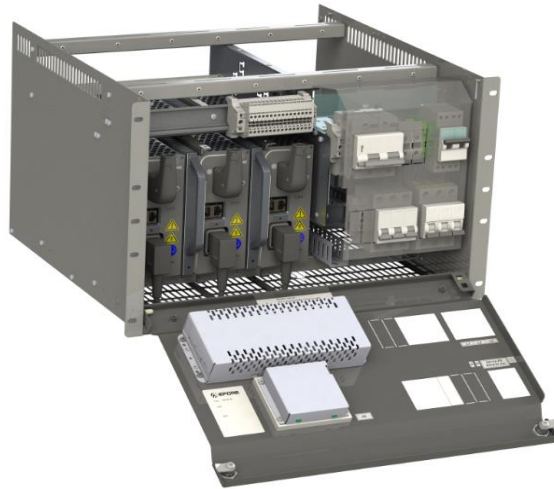
OPUS HE WMC Wall Charger Systems



- Dimensions:
H 800 x W 600 x D400 mm
- OPUS Cabinets IP20/IP21
- Configurable features:
 - Qty of Rectifier Modules
 - Battery fuses, Switch fuse / NH00
 - Load distribution
- Inverter and DC/DC Converters options
- Cabling access from the top and bottom
- A+B double Systems



OPUS HE Rack System 7U



- 19" rack assembly or wall-mounted
- Common modular construction for all systems from 24 VDC to 220 VDC
- Maximum output power 6,0 kW
- Dimensions (h*w*d): 311*438*451 mm
- IP20, option IP21
- Place for 3 MHE-rectifiers
- Battery fuse
- Optional battery LVD

OPUS HE Rack System 12U



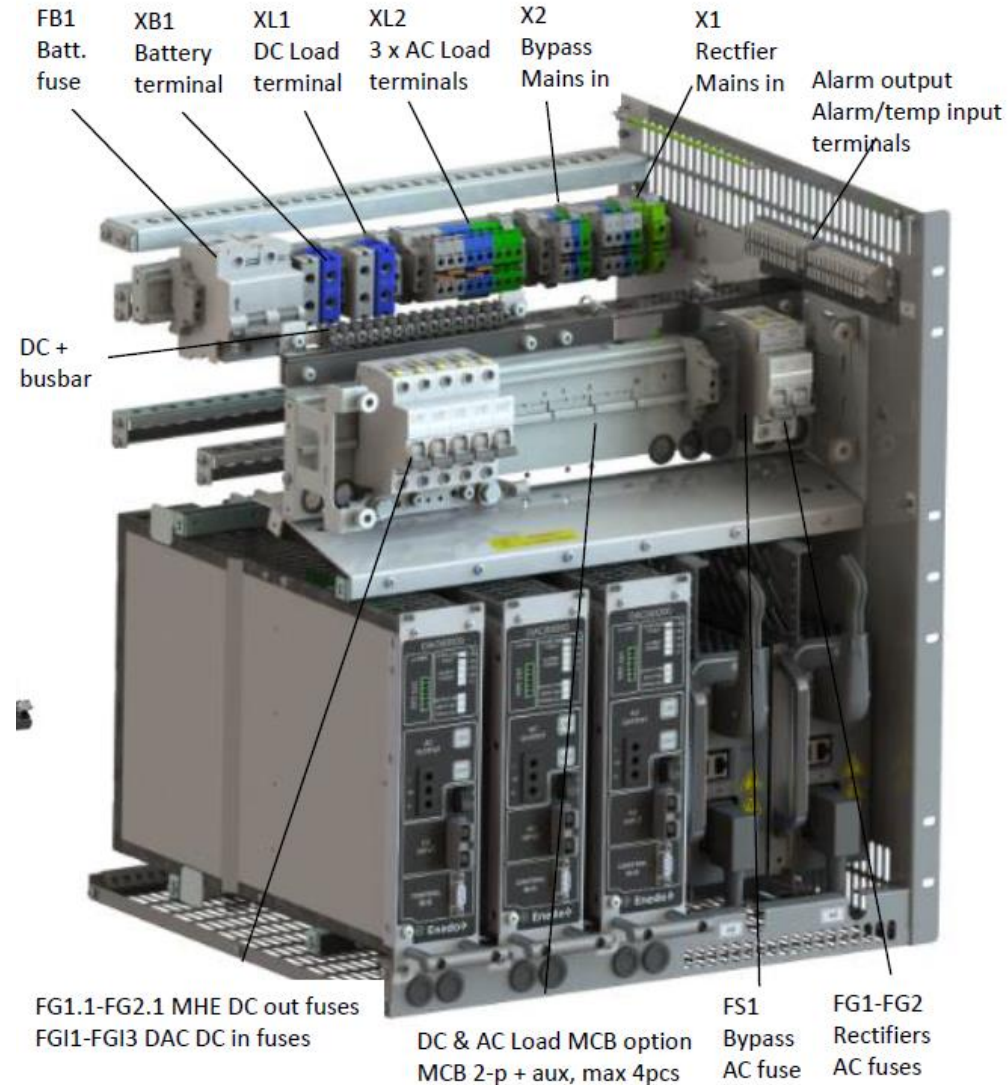
- 19" rack assembly or wall-mounted
- Common modular construction for all systems from 24 VDC to 220 VDC
- Maximum output power 10,0 kW
- Dimensions (h*w*d): 533*438*370 mm
- IP20, Option IP21, Option wall mounting
- Load distribution: 1-10 x 1-pole MCB + aux or 1-6 pcs x 2-pole MCB + aux
- Battery connection MCB
- UPS Rack, rectifiers, inverters, bypass

OPUS MVPS Modular UPS Rack System 19" 12U



DC 24V-220V max 4kW
AC 208-240V max 3.6kVA

- Compact DC & AC power Rack module
- Backup by professional station main battery bank, e.g. OPzV 20 year batteries
- Replacement for unreliable UPS devices



OPUS HE Bulk Rack 9U Building Block for System Building Partners



- Building Block Rack for integration partners
- Readymade rectifier shelf block
- Battery fuses, display/controller, load distribution and local variations built by integration partner
- Common modular construction for all systems from 24 VDC to 220 VDC
- Maximum output power 12,0 kW
- Master-Slave up to 24kW

Building Block Modules for System Building Partners



- Building Block Modules:
Rectifiers 24VDC-220VDC
Inverters 24V-220VDC/230VAC
DC/DC Converters 48-220VDC/12-125VDC
- Controllers, Display
- Aux Controllers: Battery Monitoring, LVD drivers
- Cables, racks, mounting adapters
- Common modular construction for all systems from 24 VDC to 220 VDC

System engineering - industrial projects

- System engineering for industrial/energy projects
- Commissioning and installation
- Documentation, training
- 1 cabinet and multi cabinet solutions
- Internal and external batteries



Technical support and System Engineering

Services offering

- Consultation for specification
- Engineering of new systems
- Training
- Installation and commissioning
- Customer support
- Maintenance, spare parts
- Upgrade





Amps with passion.