



ITALIAN
POWER
TECHNOLOGY



LOW VOLTAGE
MEDIUM VOLTAGE
POWER QUALITY
SPECIAL PROJECTS
REVAMPING

INDUSTRIAL SOLUTIONS







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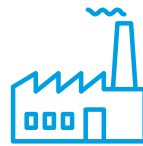
ENERGY

- Solar
- Storage
- Wind
- Hydro
- Cogeneration
- Fuel Cell



BIG SCIENCE

- Particle Accelerator
- Nuclear Fusion
- Special Projects



INDUSTRY

- LV solutions
- MV solutions
- Power Quality
- Special Projects
 - Marine Solutions
 - Test benches
- Revamping



ROPEWAYS

- Revamping
- Drives and Inverters
- Blondins, material lifting

THE COMPANY

Since 1978 EEI is a leader company active in the international Market with a background of different and consolidated experiences in power electronics, automation systems and production technologies in many industrial fields.

From experiences of collaboration with the major worldwide manufacturers and the special knowledge acquired, EEI is able to work with quality and expertise in various fields:

- Ropeway systems
- Drive and control of industrial systems
- Static Energy Conversion
- Special projects
- Big Science

EEI INDUSTRIAL DIVISION

Industrial drive and control systems: The experience gained over the years in collaboration with leading international Companies allowed EEI to stand for a leading position in the sector of drive and control sistem for industrial applications. EEI drives are the ideal solution in all single/multiple-motor industrial applications that require excellent static and dynamic performance and independent control or combination of speed, acceleration, torque and space.

EEI INDUSTRIAL DIVISION MAIN FIELDS OF APPLICATIONS ARE:

- Single motor applications
- Metal wire machining
- Cement processing
- Material Handling
- Processing of paper and plastic

SPECIAL PROJECTS

Since its beginning EEI is leader in providing solutions in applications characterized by high rate of innovation and the need to provide custom solutions.

Thanks to the experience and the technical capabilities acquired during its hystory, EEI is able to supply innovative equipment in many different fields that have in common high performance requirements, safety and reliability.

MARINE APPLICATIONS

EEI successfully operate in the marine industry with customized solutions, suitable for use in the marine environment, designing and implementing systems fir the following applications:

- Converters for charging and discharging of the batteries of boats/submarines.
- Soft-start for thrusters and propulsion
- Variable speed drives fot thrusters
- 50/60 Hz Frequency Converters.

EEI EV9 SERIES

AC CABINET FOR INDUSTRY



EEI Turn-key cabinet solution for 2Q / 4Q drive for a single AC motor applications.

PRODUCT RANGE

- AC power from 90kW to 3 MW
- Supply Voltage: 400 / 690 Vac
- Output Voltage from 0 up to 100% of Vac
- Output frequency from 0 up to 150 Hz

MAIN FEATURES

- Drives with SCR or IGBT power circuit
- Low inductance connections
- HMI with embedded data-logger for local data storage and remote control
- Film capacitors for extended lifetime
- Air cooled

MOTOR CONTROL

- Close loop FOC
- Sensorless FOC
- V/F control

GENERAL FEATURES

- Mains: 380-415Vac Or 690V +/-10% at 50/60Hz
- Aux. Circuit supply: 110Vac / 24Vdc
- Altitude: < 1000 mt
- Humidity: 95% at +20°C
- Ambient Temperature : +5° to +40°C
- Cooling type: Air forced
- Cabinet Access: Front (passive components on rear)



MODULAR

Modular design permits compact solution



ADVANCED

Flexible software configuration allow wide functionalities



READY

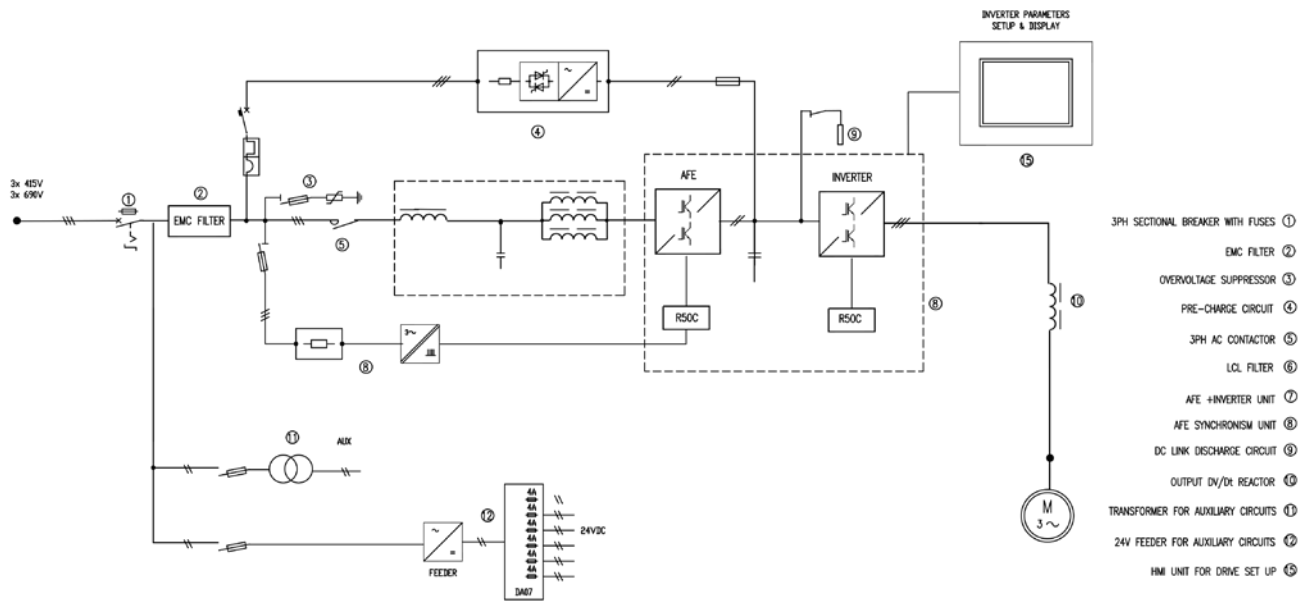
Turn-key cabinet solution with easy accessibility and maintainance



RELIABLE & EFFICIENT

Equipped with latest power technology, robust design and energy saving





AFE INVERTER CABINET		NORMAL DUTY		HEAVY DUTY		Dimensions(*) WxHxD [mm]
380-415VAC		P _N [kW]	I _N (**) [A]	P _N [kW]	I _N (**) [A]	
9W090QA04		90	170	75	145	1200 x 2200 x 600
9W0110QA04		110	210	90	170	1200 x 2200 x 600
9W0132QA04		132	260	110	210	1200 x 2200 x 600
9W0160QA04		160	320	132	260	1600 x 2200 x 600
9W0200QA04		200	360	160	320	1600 x 2200 x 600
9W0250QA04		250	480	200	360	1600 x 2200 x 600
9W0315QA04		315	580	250	480	1600 x 2200 x 600
9W0355QA04		355	660	315	580	1600 x 2200 x 600
9W0400QA04		400	725	355	660	2000 x 2200 x 800
9W0450QA04		450	810	400	725	2000 x 2200 x 800
9W0500QA04		500	900	450	810	2000 x 2200 x 800
9W0560QA04		560	1040	500	900	2000 x 2200 x 800
9W0630QA04		630	1150	560	1040	2400 x 2200 x 1000
9W0710QA04		710	1295	630	1150	2400 x 2200 x 1000
9W0800QA04		800	1450	710	1295	2400 x 2200 x 1000
690VAC						
9Y090SA04		90	95	75	82	1200 x 2200 x 600
9Y0110SA04		110	115	90	95	1200 x 2200 x 600
9Y0132SA04		132	140	110	115	1200 x 2200 x 600
9Y0160SA04		160	170	132	140	1200 x 2200 x 600
9Y0200SA04		200	215	160	170	1200 x 2200 x 600
9Y0250SA04		250	270	200	215	1200 x 2200 x 600
9Y0315SA04		315	340	250	270	1200 x 2200 x 600
9Y0355SA04		355	385	315	340	1200 x 2200 x 600
9Y0400SA04		400	435	355	385	1600 x 2200 x 800
9Y0450SA04		450	480	400	435	1600 x 2200 x 800
9Y0500SA04		500	545	450	480	1600 x 2200 x 800
9Y0560SA04		560	610	500	545	1600 x 2200 x 800
9Y0630SA04		630	685	560	610	2000 x 2200 x 1000
9Y0710SA04		710	760	630	685	2000 x 2200 x 1000
9Y0800SA04		800	870	710	760	2000 x 2200 x 1000

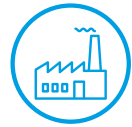
(*) dimensions could be changed during project developing

(**) values calculated for 4P AC motor with typical range.

(***) any other options required will be evaluated separately

EEI ET9 SERIES

DC CABINET FOR INDUSTRY



EEI Turn-key cabinet solution for 2Q / 4Q drive for a single DC motor applications.

MAIN FEATURES

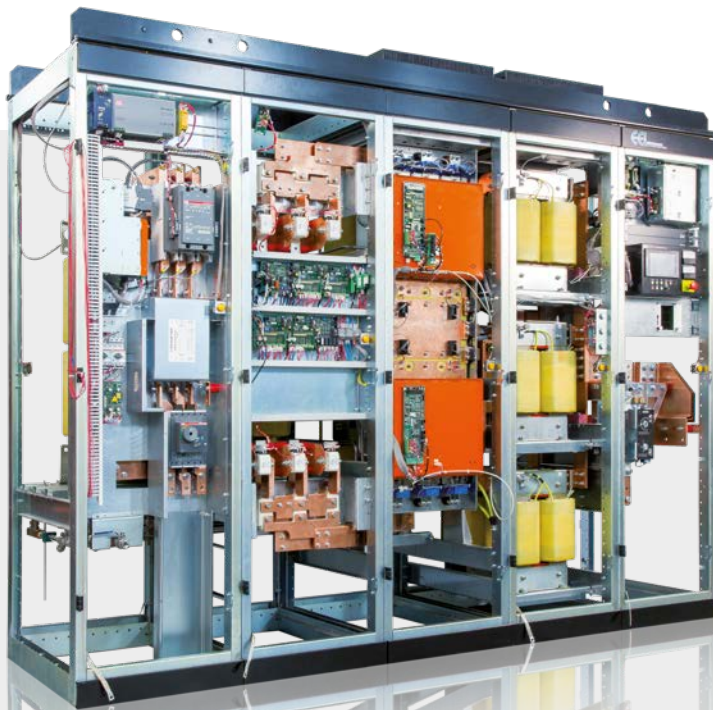
- Drives with SCR or IGBT power circuit
- Low inductance connections
- HMI with embedded data-logger for local data storage and remote control
- Air cooled

MOTOR CONTROL

- Close loop speed control
- Armature Voltage control
- Current predictive control

MAIN COMPONENTS INCLUDED IN THE CABINET:

- Main circuit breaker
- EMC filter
- Set of HS fuses
- Static pre-charge circuit
- AC line filter
- Bar discharger module
- Motor side inductor
- Active conversion unit
- Set of transformers and power supply for auxiliary circuits
- Set of relays and electronic cards
- HMI touch-panel.



MODULAR

Modular design permits compact solution



ADVANCED

Flexible software configuration allow wide functionalities



READY

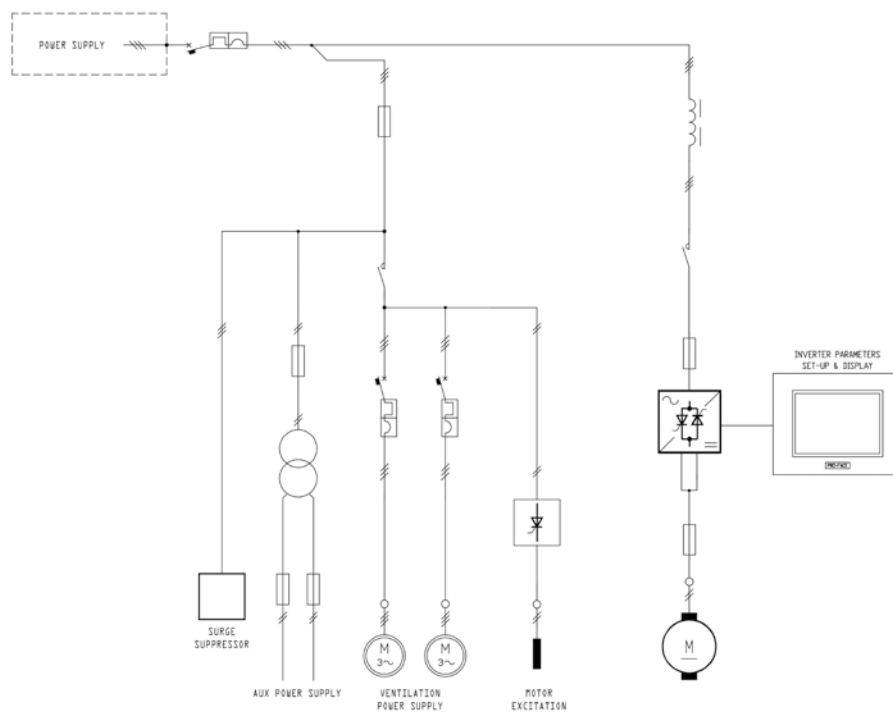
Turn-key cabinet solution with easy accessibility and maintainance



RELIABLE & EFFICIENT

Equipped with latest power technology, robust design and energy saving





NORMAL DUTY

DIMENSIONS (mm)

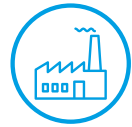
MODEL	I Nom.(A)	P Nom. At 500v. (Kw)	P Nom. At 600v (Kw)	I Field (A)	L	H	D
9T0140X	140	70	84	15	800	2000	600
9T0300X	300	150	180	15	800	2000	600
9T0450X	450	235	270	25	800	2200	600
9T0700X	700	350	420	25	800	2200	600
9T01250X	1250	625	750	40	1400	2200	750
9T02000X	2000	1000	1200	40	1400	2200	750

VOLTAGE RANGE : 400 VAC

*FOR OTHERS POWER SIZE PLEASE CONTACT EEI STAFF

EEI MV 1200 SERIES

CORE DRIVE FOR MV SOLUTIONS



The EEI-MV1200 Series converters offer a competitive drive solution, which can be adapted to specific Customer needs with a wide range of optionally available components and accessories.

EEI-MV1200 series inverters are characterized by:

- Compact design with single heatsink
- Keypad interface for setup drive parameters for easy commissioning.
- Easy access for service operations.
- Liquid cooled

EEI-MV1200 Series are suitable for use in a wide variety of activity fields, for applications in both 2Q and 4Q.

PRODUCT RANGE

Range of output power available

- 0,25 – 1,25 MVA 1,2kV

SYSTEM ARCHITECTURE 2 LEVEL

- Solution 2Q – 6 Pulse Inverter
- Solution 4Q – Afe/ Inverter

MOTOR CONTROL

- Close loop FOC
- Sensorless FOC
- V/F control

ADDITIONAL COMPONENTS

- Capacitor bank
- Braking unit
- Transformer
- dV/dt or sinus filters generator side
- LCL Filters grid side
- Common mode filter



MODULAR

Compact design with single heatsink



ADVANCED

Flexible software configuration allow wide functionalities



READY

Drives designed for easy and fast integration in cabinet

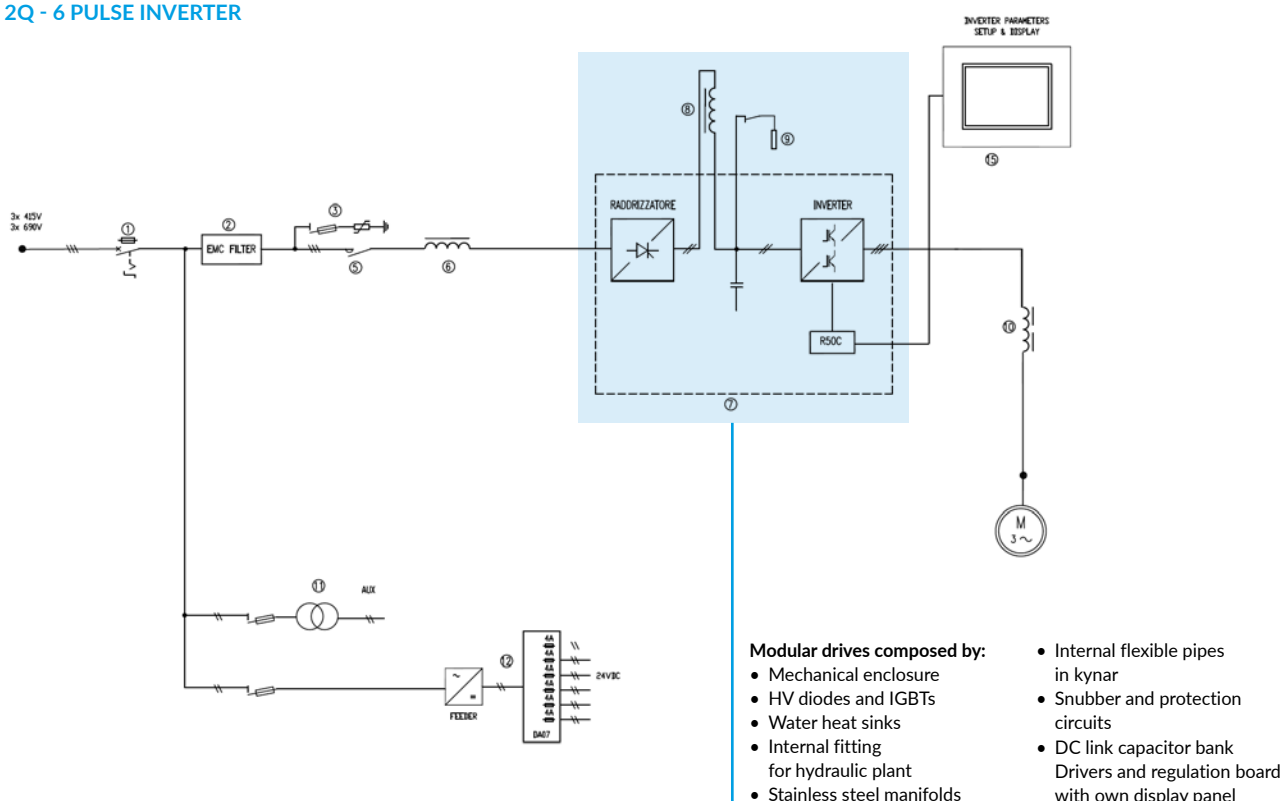


RELIABLE & EFFICIENT

Equipped with latest power technology, robust design and energy saving



2Q - 6 PULSE INVERTER



MODEL	9MV122Q-25	9MV122Q-31	9MV122Q-63	9MV122Q-80	9MV122Q-125
GENERAL SPECIFICATION					
Rated Power	250 kW	315 kW	630 kW	800 kW	1250 kW
Rated current	160 A	250 A	400 A	500 A	800 A
Rated Input Voltage	1,2KVac +10%/-15% 3Ph IT or TN				
Rated input frequency	50/60 Hz ±5%	50/60 Hz ±5%	50/60 Hz ±5%	50/60 Hz ±5%	50/60 Hz ±5%
Auxiliaries voltage	24 VDC	24 VDC	24 VDC	24 VDC	24 VDC
Topology	2 level	2 level	2 level	2 level	2 level
System Architecture	2Q- 6P DIODE RECTIFIER + INVERTER				
Overload	110% for 1 every 10				
Motor Power factor	0,87	0,87	0,87	0,87	0,87
Dimensions (WxHxD)	375x810x315 mm	375x810x315 mm	650x1050x375 mm	650x1050x375 mm	800x1050x400 mm

INSTALLATION

Operating temperature	-5°C ÷ +50 °C	-5°C ÷ +50 °C	-5°C ÷ +50 °C	-5°C ÷ +50 °C	-5°C ÷ +50 °C
Storage temperature	-10 °C ÷ +55 °C	-10 °C ÷ +55 °C	-10 °C ÷ +55 °C	-10 °C ÷ +55 °C	-10 °C ÷ +55 °C
Relative Humidity	90% @ 20°C no condensing				
Altitude	< 1000 m a.s.l.	< 1000 m a.s.l.	< 1000 m a.s.l.	< 1000 m a.s.l.	< 1000 m a.s.l.
Protection Degree	IP 00	IP 00	IP 00	IP 00	IP 00
Cooling method	Water cooling system				

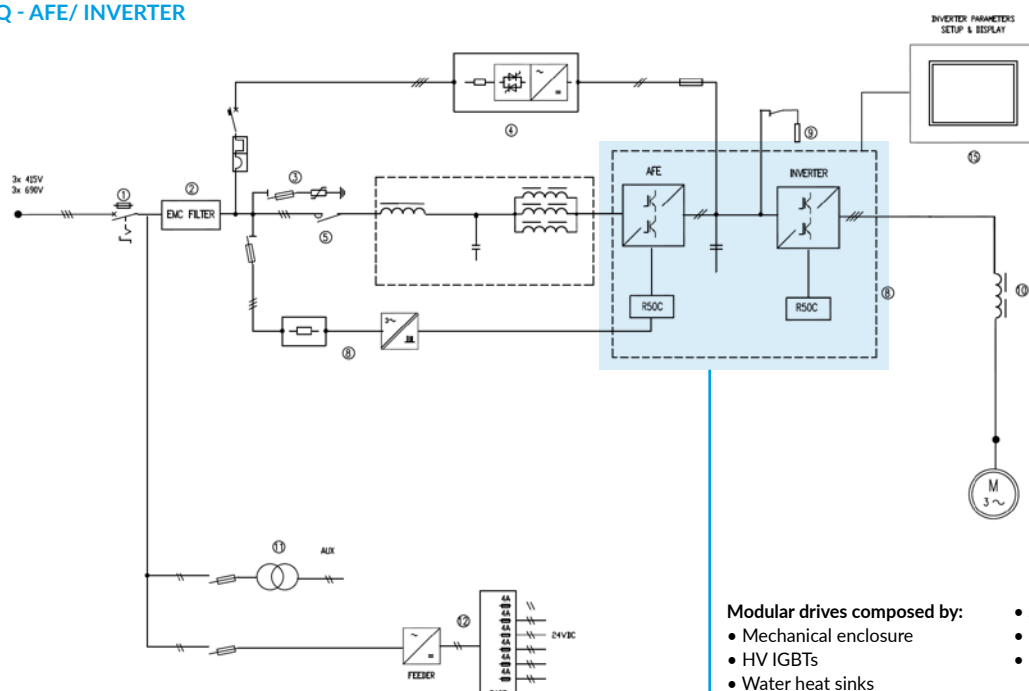
COMMUNICATION

Communication interfaces	CAN Bus and RS485 built in communication or Ethernet connection through Modbus TCP or Profibus (TBD)
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PROTECTIONS

Self-diagnostic	Over current, Short circuit, Ground Fault, Phase loss detection, Over Voltage, Under Voltage, Over temperature. Others upon request.
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4Q - AFE/ INVERTER



Modular drives composed by:

- Mechanical enclosure
- HV IGBTs
- Water heat sinks
- Internal fitting for hydraulic plant
- Stainless steel manifolds
- Internal flexible pipes in kynar
- Snubber and protection circuits
- DC link capacitor bank
- Drivers boards and regulation board with own display panel
- The connection with between section AFE and section INVERTER could be as totem, side by side etc... (TBD)

MODEL	9MV124Q-25	9MV124Q-31	9MV124Q-63	9MV124Q-80	9MV124Q-125
GENERAL SPECIFICATION					
Rated Power	250 kW	315 kW	630 kW	800 kW	1250 kW
Rated current	160 A	250 A	400 A	500 A	800 A
Rated Input Voltage	1,2KVac +10%/-15% 3Ph IT or TN				
Rated input frequency	50/60 Hz ±5%	50/60 Hz ±5%	50/60 Hz ±5%	50/60 Hz ±5%	50/60 Hz ±5%
Auxiliaries voltage	24 VDC	24 VDC	24 VDC	24 VDC	24 VDC
Topology	2 level	2 level	2 level	2 level	2 level
System Architecture	4Q HV IGBT AFE +INVERTER				
THDI (grid side)	< 3%	< 3%	< 3%	< 3%	< 3%
Overload	110% for 1 every 10				
Motor Power factor	0,87	0,87	0,87	0,87	0,87
Dimensions (WxHxD)	375x1210x315 mm	375x1210x315 mm	650x1500x375 mm	650x1500x375 mm	800x1500x400 mm

INSTALLATION

Operating temperature	-5°C ÷ +50 °C	-5°C ÷ +50 °C	-5°C ÷ +50 °C	-5°C ÷ +50 °C	-5°C ÷ +50 °C
Storage temperature	-10 °C ÷ +55 °C	-10 °C ÷ +55 °C	-10 °C ÷ +55 °C	-10 °C ÷ +55 °C	-10 °C ÷ +55 °C
Relative Humidity	90% @ 20°C no condensing				
Altitude	< 1000 m a.s.l.	< 1000 m a.s.l.	< 1000 m a.s.l.	< 1000 m a.s.l.	< 1000 m a.s.l.
Protection Degree	IP 00	IP 00	IP 00	IP 00	IP 00
Cooling method	Water cooling system				

COMMUNICATION

Communication interfaces	CAN Bus and RS485 built in communication or Ethernet connection through Modbus TCP or Profibus (TBD)
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PROTECTIONS

Self-diagnostic	Over current, Short circuit, Ground Fault, Phase loss detection, Over Voltage, Under Voltage, Over temperature. Others upon request.
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EEI MV3300 SERIES

CORE DRIVE FOR MV SOLUTIONS



The EEI-MV3300 Series converters offer a competitive drive solution, which can be adapted to specific Customer needs with a wide range of optionally available components and accessories.

EEI-MV series inverters are characterized by:

- Modular design: EEI MV drives are made of modular stacks, for an easy maintenance and reduced MTTR.
- Keypad interface for setup drive parameters for easy commissioning.
- Easy access for service operations.
- Liquid cooled

EEI-MV Series are suitable for use in a wide variety of activity fields, for applications in both 2Q and 4Q and for the connection toward the grid of generators.

PRODUCT RANGE

Range of output power available

- 0,9 – 3,6 MVA 3,3kV

SYSTEM ARCHITECTURE NPC 3 LEVEL:

- Solution 2Q – SCR DUAL FEED 3,3kV
- Solution 4Q – 3 LEVEL NPC INPUT 3,3kV

MOTOR CONTROL

- Close loop FOC
- Sensorless FOC
- V/F control

ADDITIONAL COMPONENTS

- Capacitor bank
- Braking system
- Transformer
- dV/dt or sinus filters generator side
- LCL Filters grid side
- Common mode filters



MODULAR

Drives are made of modular stacks for easy maintainance



ADVANCED

Flexible software configuration allow wide functionalities



READY

Drives designed for easy and fast integration in cabinet

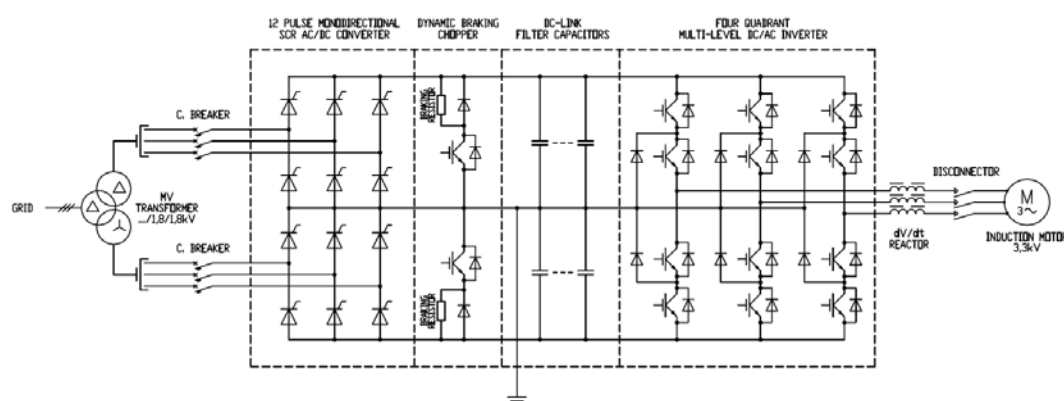


RELIABLE & EFFICIENT

Equipped with latest power technology, robust design and energy saving



2Q - 12 PULSE INVERTER



Complete chassis MV 2Q 12PULSE INVERTER 3,3kV, water cooled made by EEI

The unit is composed by HV double diode rectifier and HV IGBT inverter suitable for command and control A.C. Asynchronous motor 3,3kV 3Ph.

There are included also the following parts:

- Set drive (front end and inverter)
- Dc-link capacitor bank

- Set of dc-link chokes
- Set internal fitting for hydraulic plant (no. two stainless steel manifolds and fitting + internal flexible pipes in kynar)

- Kit PCBs
- HMI (optional)
- braking unit (optional)

MODEL	9MV332Q-90	9MV332Q-180	9MV332Q-270	9MV332Q-360
GENERAL SPECIFICATION				
Rated Power	900 kW	1800 kW	2700 kW	3600 kW
Rated current	200 A	400 A	600 A	800 A
Rated Input Voltage	3,3KVac +10%/-15% 3Ph IT or TN			
Rated input frequency	50/60 Hz ±5%			
Auxiliaries voltage	Aux. supply circuit voltage: : 24 VDC			
Topology	NPC 3 level PWM Technology			
System Architecture	2Q- 12P DIODE RECTIFIER + INVERTER			
Overload	110% for 1 minute every 10 minutes			
Motor Power factor	0,87			
Dimensions 12 pulse module (WxHxD)	500x650x750 mm		500x800x750 mm	
Dimensions for each phase module (WxHxD)	250x652x750 mm		300x800x750 mm	

INSTALLATION

Operating temperature	-5°C ÷ +50 °C	-5°C ÷ +50 °C	-5°C ÷ +50 °C	-5°C ÷ +50 °C
Storage temperature	-10 °C ÷ +55 °C	-10 °C ÷ +55 °C	-10 °C ÷ +55 °C	-10 °C ÷ +55 °C
Relative Humidity	90% @ 20°C no condensing			
Altitude	< 1000 m a.s.l.	< 1000 m a.s.l.	< 1000 m a.s.l.	< 1000 m a.s.l.
Protection Degree	IP 00	IP 00	IP 00	IP 00
Cooling method	Water cooling system			

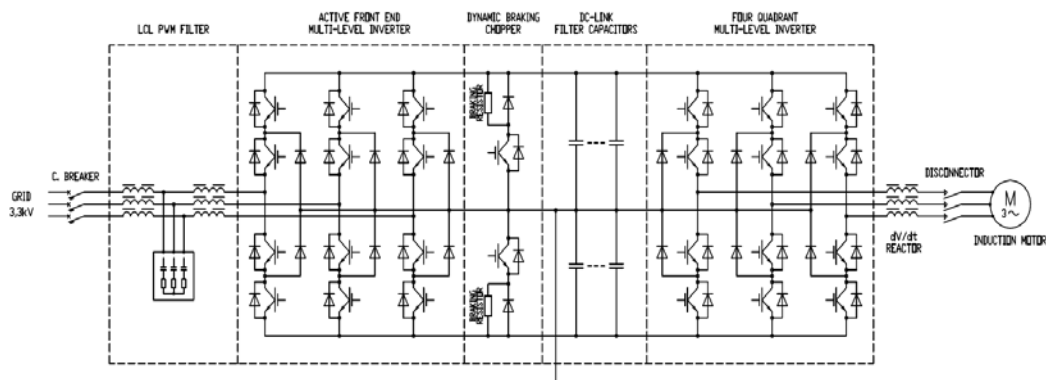
COMMUNICATION

Communication interfaces	CAN Bus and RS485 built in communication or Ethernet connection through Modbus TCP or Profibus (TBD)
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PROTECTIONS

Self-diagnostic	Over current, Short circuit, Ground Fault, Phase loss detection, Over Voltage, Under Voltage, Over temperature. Others upon request.
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4Q - AFE/ INVERTER



Complete chassis MV 4Q AFE+INVERTER 3,3kV, water cooled made by EEI.
The unit is composed by HV 3,3kV double stage "AFE" (Active Front End) and inverter suitable for command and control A.C. Asynchronous motor 3,3kV 3Ph

There are included also the following parts:

- Set drive (front end and inverter) with own display panel
- Dc-link capacitor bank
- Set internal fitting for hydraulic plant (no. two stainless steel manifolds and fitting +

internal flexible pipes in kynar

- Kit PCBs
- HMI (optional)
- Precharge circuit (optional)
- braking unit (optional)

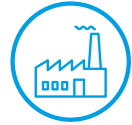
The connection with between section AFE and section INVERTER could be as totem, side by side etc... (TBD)

MODEL	9MV334Q-90	9MV334Q-180	9MV334Q-270	9MV334Q-360
GENERAL SPECIFICATION				
Rated Power	900 kW	1800 kW	2700 kW	3600 kW
Rated current	200 A	400 A	600 A	800 A
Rated Input Voltage	3,3kVac +10%/-15% 3Ph IT or TN			
Rated input frequency	50/60 Hz ±5%			
Auxiliaries voltage	Aux. supply circuit voltage: : 24 VDC			
Topology	NPC 3 level PWM Technology			
System Architecture	4Q -AFE + INVERTER			
THDI (grid side)	< 3%			
Overload	110% for 1 minute every 10 minutes			
Motor Power factor	0,87			
Dimensions for each phase module (WxHxD)	250x650x755 mm		300x800x750mm	
INSTALLATION				
Operating temperature	-5°C ÷ +50 °C	-5°C ÷ +50 °C	-5°C ÷ +50 °C	-5°C ÷ +50 °C
Storage temperature	-10 °C ÷ +55 °C	-10 °C ÷ +55 °C	-10 °C ÷ +55 °C	-10 °C ÷ +55 °C
Relative Humidity	90% @ 20°C no condensing			
Altitude	< 1000 m a.s.l.	< 1000 m a.s.l.	< 1000 m a.s.l.	< 1000 m a.s.l.
Protection Degree	IP 00	IP 00	IP 00	IP 00
Cooling method	Water cooling system			
COMMUNICATION				
Communication interfaces	CAN Bus and RS485 built in communication or Ethernet connection through Modbus TCP or Profibus (TBD)			
PROTECTIONS				
Self-diagnostic	Over current, Short circuit, Ground Fault, Phase loss detection, Over Voltage, Under Voltage, Over temperature. Others upon request.			

EEI-MV66SS/MV33SS

SOFT STARTER

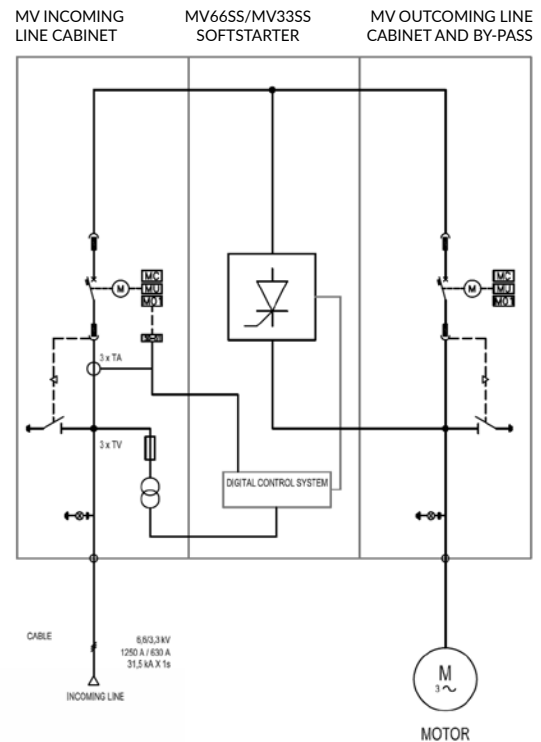
FOR MEDIUM VOLTAGE APPLICATIONS



EEI-MV66SS/MV33SS medium voltage Soft Starter are an integrated solution for motors control and protection. MV66SS/MV33SS soft starters combine advance soft start and extensive motor and system protection, plus a user-friendly interface and complete commissioning diagnostic.

MAIN FEATURES:

- Designed with SCR power circuit to ensure high reliability.
- Extended lifetime and easy accessibility and maintenance with its modularity system.
- Digital management of control parameters, alarm diagnostic, analogue and digital I/O signals from dedicated microcontroller.



MODULAR

Easy accessibility and maintenance with its modularity concept



ADVANCED

Flexible software configuration allow wide functionalities



RELIABLE

Equipped with latest power technology and consolidated design with more than 40 years of experience



MODEL	MV33SS1000	MV33SS500	MV33SS70
GENERAL ELECTRICAL SPECIFICATIONS			
System Architecture	Thyristor bridge		
Rated Input Voltage	3,3 kV ± 10%	3,3 kV ± 10%	3,3 kV ± 10%
Rated Input Frequency	50/60 Hz	50/60 Hz	50/60 Hz
Withstand short circuit current	31 kA x 1s	31 kA x 1s	31 kA x 1s
Inline vacuum circuit breaker	1250 A	630 A	630 A
Bypass	CB 1250 A	CB 630 A	Contactors
Grounding	TN or TT	TN or TT	TN or TT
Rated Motor current In	1000 A	500 A	70 A
Overload	600 % In X 30 s		
Auxiliaries	Auxiliary voltage: 400 VAC 3ph (*) – 3 kVA / Signal Circuit: 24 VDC		
Other	Electronic Boards tropicalized		
ENVIRONMENTAL CONDITIONS			
Operating temperature	+5°C ÷ +40 °C	+5°C ÷ +40 °C	+5°C ÷ +40 °C
Storage temperature	-10 °C ÷ +50 °C	-10 °C ÷ +50 °C	-10 °C ÷ +50 °C
Relative Humidity	90% @ 20°C no condensing	90% @ 20°C no condensing	90% @ 20°C no condensing
Altitude	< 1000 m a.s.l.	< 1000 m a.s.l.	< 1000 m a.s.l.
Protection Degree	IP 4X(*)	IP 4X(*)	IP 4X(*)
Cooling method	Air cooling	Air cooling	Air cooling
COMMUNICATION			
HMI	7" Touch panel with data logger		
Communication interfaces	CAN Bus and RS485 built in communication Ethernet connection through Mod-bus TCP or web server available as an option. Front door operator interface.		
PROTECTIONS			
Self-diagnostic	Over current, Short circuit, Ground Fault, Phase loss detection, Over Voltage, Under Voltage, Over temperature. Others upon request.		
Function standard*	50-51	50-51	50-51
SIZE AND WEIGHT			
Approx. dimensions	3000 X 1800 X 2780 L x P x H (mm) Included top mounted cooling fans		1500 X 1800 X 2780 L x P x H (mm)
Weight	≈ 2900 kg	≈ 2900 kg	≈ 2000 kg

(*) Other standard on request

MODEL	MV66SS1000	MV66SS500	MV66SS70
GENERAL ELECTRICAL SPECIFICATIONS			
System Architecture	Thyristor bridge		
Rated Input Voltage	6,6 kV ± 10%	6,6 kV ± 10%	6,6 kV ± 10%
Rated Input Frequency	50/60 Hz	50/60 Hz	50/60 Hz
Withstand short circuit current	31 kA x 1s	31 kA x 1s	31 kA x 1s
Inline vacuum circuit breaker	1250 A	630 A	630 A
Bypass	CB 1250 A	CB 630 A	Contactors
Grounding	TN or TT	TN or TT	TN or TT
Rated Motor current In	1000 A	500 A	70 A
Overload	600 % In X 30 s		
Auxiliaries	Auxiliary voltage: 400 VAC 3ph (*) – 3 kVA / Signal Circuit: 24 VDC		
Other	Electronic Boards tropicalized		
ENVIRONMENTAL CONDITIONS			
Operating temperature	+5°C ÷ +40 °C	+5°C ÷ +40 °C	+5°C ÷ +40 °C
Storage temperature	-10 °C ÷ +50 °C	-10 °C ÷ +50 °C	-10 °C ÷ +50 °C
Relative Humidity	90% @ 20°C no condensing	90% @ 20°C no condensing	90% @ 20°C no condensing
Altitude	< 1000 m a.s.l.	< 1000 m a.s.l.	< 1000 m a.s.l.
Protection Degree	IP 4X(*)	IP 4X(*)	IP 4X(*)
Cooling method	Air cooling	Air cooling	Air cooling
COMMUNICATION			
HMI	7" Touch panel with data logger		
Communication interfaces	CAN Bus and RS485 built in communication Ethernet connection through Modbus TCP or web server available as an option. Front door operator interface.		
PROTECTIONS			
Self-diagnostic	Over current, Short circuit, Ground Fault, Phase loss detection, Over Voltage, Under Voltage, Over temperature. Others upon request.		
Function standard*	50-51	50-51	50-51
SIZE AND WEIGHT			
Approx. dimensions	3000 X 1800 X 2780 L x P x H (mm) Included top mounted cooling fans		1500 X 1800 X 2780 L x P x H (mm)
Weight	≈ 2900 kg	≈ 2900 kg	≈ 2000 kg

(*) Other standard on request

EEI AHF

ACTIVE HARMONIC FILTER



The EEI Active Filter is an innovative equipment for the compensation of current harmonics generated by distorting loads.

It is a good alternative to the use of passive filters since it avoids the well-known drawbacks of these ones: uncontrolled resonances, e.g. caused by variations of parasitic parameters of the line, overloads caused by harmonic currents produced by near users, detuning caused by drift of the features of the employed components, slow response to load variations.

Moreover, the Active Filter achieves a better current harmonic compensation in sight of future restrictions imposed by the rules.

MAIN FEATURES:

- Innovative control algorithm
- Very fast response
- Multi-level topology, low losses
- User friendly interface – high resolution 4.3" display
- Automatic Fan regulation
- Stack mounted for bigger capacity of compensation

OTHER FEATURES:

- Tunable Harmonics amplitude compensation
- THD under 3% according main standards
- Up to 14 harmonics simultaneously
- Overheating protection
- DC short circuit protection
- Overcurrent protection
- Internal components easy to replace
- Direct access to the Fuses
- Standard Rack sizes (19")



MODULAR

Suitable for stack mounting for bigger capacity of compensation



ADVANCED

Innovative control algorithm and flexible software configuration



MULTI-FUNCTIONS

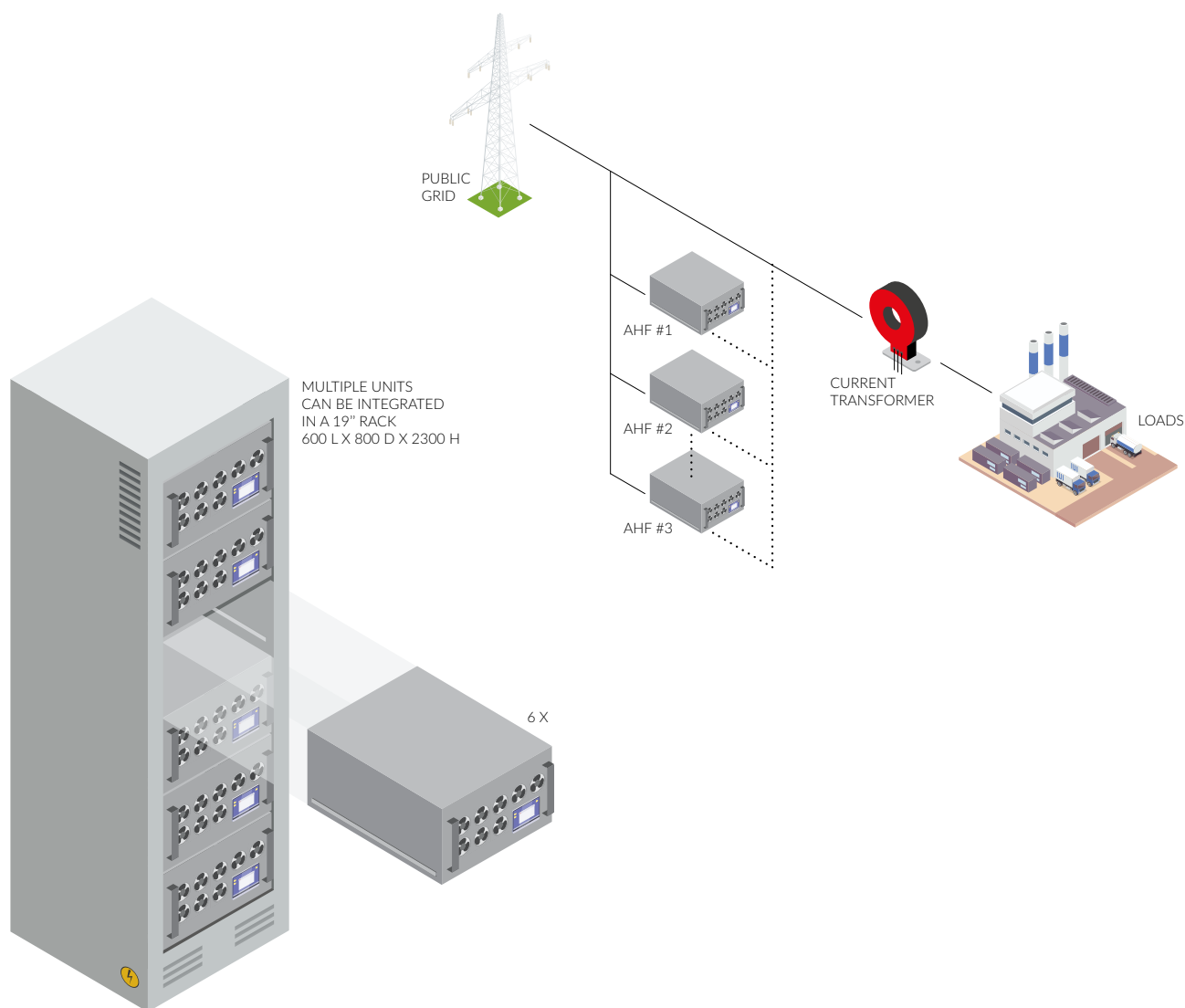
Available wide set-up functionalities



RELIABLE & EFFICIENT

Equipped with latest power technology and compact design and energy saving





MODEL	AHF100	AHF150
Power Rate	100 A	150 A
Rated AC input voltage	400V (+- 10%) 3Ph+N (-10%) 400V... 480 V (+10%) 3 Ph	400V (+- 10%) 3Ph+N (-10%) 400V... 480 V (+10%) 3 Ph
Frequency	50 Hz	50 Hz
Temperature storage	-20 °C to +50 °C	-20 °C to +50 °C
Temperature operating	-10 °C to +40 °C	-10 °C to +40 °C
Altitude storage	≤ 10000 m	≤ 10000 m
Altitude operating	≤ 1000 m	≤ 1000 m
Operating relative humidity	Max. 90% @ 20 °C non-condensing	Max. 90% @ 20 °C non-condensing
Protection class	IP20	IP20
Colour	RAL 7035 (light grey)	RAL 7035 (light grey)
Ventilation	~1600 m3/h	~1600 m3/h
Dimensions HxWxD	265,9x483x653 mm	265,9x483x653 mm
Weight	51,5 kg	55,5 kg

EEI

REACTIVE COMPENSATOR



In the last 30 years EEI has provided various reactive power compensators as tailor made solutions for different applications:

- Power factor correction on the point of connection
- Reactive power injection according to the drop voltage controller
- Reactive power set point by an external controller through Modbus TCP/IP interface or analogic signal

MAIN FEATURES

- Modular IGBT power circuit architecture
- Film capacitors
- Low inductance connections
- LC sinusoidal filter
- Full digital PWM management
- HMI with datalogger for remote control
- Designed on customer request

MAIN ADVANTAGES:

- High reliability ensured
- Extended lifetime
- Easy accessibility and maintenance
- Low current harmonics distortion <5%
- Suitable for different type of plants



ADVANCED
flexible software configuration
allow wide functionalities



READY
Turn-key cabinet solution with easy
accessibility and maintainance

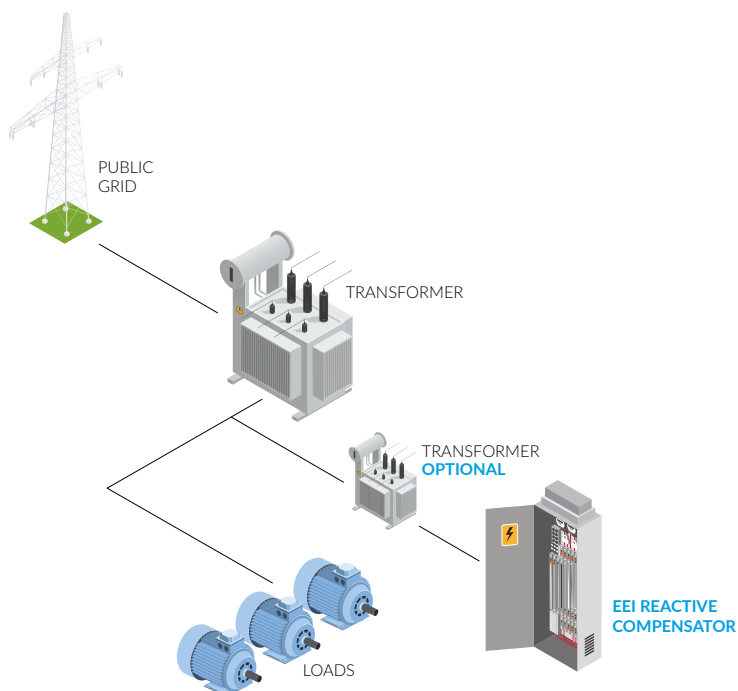


RELIABLE & EFFICIENT
Equipped with latest power technology and
design with more than 40 years of experience



COOLING
Available air and
water solution





MODEL	RPC-75	RPC-115	RPC-178	RPC-356
GENERAL SPECIFICATION				
Input voltage MV	TBD	TBD	TBD	TBD
Input voltage LV	500Va.c. ±10% 3Ph	600Va.c. ±10% 3Ph	600Va.c. ±10% 3Ph	600Va.c. ±10% 3Ph
Nominal Frequency	15÷75Hz	15÷75Hz	50÷60Hz	50÷60Hz
Nominal Power	650kVAr	1200kVAr	1850MVAr	3700MVAr
Nominal Current	750A	1150A	1780A	3560A
Dimensions (WxHxD)mm	1960x 2200x 750	2000x2600 x 1000	2000x2600 x 800	2000x2600 x 1000
ENVIRONMENTAL CONDITIONS				
Operating Temperature	0°C ÷ +40 °C	0°C ÷ +40 °C	0°C ÷ +40 °C	0°C ÷ +40 °C
Storage Temperature	-5 °C ÷ +50 °C	-5 °C ÷ +50 °C	-5 °C ÷ +50 °C	-5 °C ÷ +50 °C
Operating relative humidity	95% @ 20°C no condensing			
Operating Altitude	< 1000 m a.s.l.	< 1000 m a.s.l.	< 1000 m a.s.l.	< 1000 m a.s.l.
IP Protection	IP 43 (*)	IP 43 (*)	IP 21	IP21
Cooling System	Water/Air	Water/Air	Water/Air	Water/Air
INTERFACE				
HMI and comunication	7" Touch panel with datalogger, Ethernet Modbus TCP/IP for remote control, programming and command			
PROTECTIONS				
Self-diagnostic	Over current, Short circuit, Ground Fault, Phase loss detection, Over Voltage, Under Voltage, Over temperature. Others upon request.			

(*) Other standard on request

EEI SPC SERIES

SHORE POWER CONVERTER



EEI Power Systems shore power converters allow full operation of the vessels on board electrical system without generators. Connection to the shore can be via one or multiple cords thanks to the modular design of the SPC input stage. Thanks to the input transformers shore power is isolated to avoid tripping shore earth leakage circuit breakers. Voltage back conversion to the desired AC voltage and frequency for the vessel is fully filtered and stable, suitable for onboard loads.

Totally seamless power transfer from vessel generator to shore and vice versa is possible according to the high precision synchronization function.

COMPACT AND MODULAR

Thanks to its modular structure SPC can be located in several locations when the available space is fragmented or in the same place when it's possible. Furthermore the modular design along with compact dimensions allow to customize the system, matching customer needs.

SUITABLE FOR MARINE ENVIRONMENT

Coated print circuit boards, appropriate protection degree, stainless steel, all it needs for marine environment.

WIDE INPUT RANGE

LV /MV solutions

FUNCTIONAL FEATURES

- Multiple shore cords: thanks to modular structure it is possible the connection to several shore cords without restriction. (no pre assigned master connection).
- Seamless Transfer: power transfer from shore to vessel and vice versa.
- Remote touch panel control
- Other options can be implemented on demand thanks to our staff

COMPREHENSIVE PRODUCT LINE

EEI Marine Division designs and manufactures power conversion equipment for commercial, military and marine applications.

Our products are suitable for parallel modular systems from 100 kVA up to 1000 kVA, also for containerized solutions.



ADVANCED

Flexible software configuration allow wide functionalities



ADAPTIVE

Wide product range LV and MV solutions



RELIABLE

Equipped with latest power technology and design with more than 40 years of experience



ROBUST

Suitable for marine environment



MODEL	SPC 100	SPC 250	SPC 315
SHORE SIDE INPUT			
Type	3 Ph	3 Ph	3 Ph
Rated Power	106 kW	266 kW	355 kW
Rated Voltage	400/690 Vac $\pm 10\%$	400/690 Vac $\pm 10\%$	400/690 Vac $\pm 10\%$
Rated Current	153/88 A	384/223 A	485/280 A
Frequency	50/60 Hz $\pm 5\%$	50/60 Hz $\pm 5\%$	50/60 Hz $\pm 5\%$
Power Factor	Unitary	Unitary	Unitary
THD I	< 3%	< 3%	< 3%

LOAD SHIP SIDE OUTPUT			
Type	3 Ph	3 Ph	3 Ph
Voltage (*)	400 \div 690 Vac	400 \div 690 Vac	400 \div 690 Vac
Current	148 / 85 A	368 / 214 A	465 / 270 A
Frequency	50 / 60 Hz	50 / 60 Hz	50 / 60 Hz
Power rating	102 kVA	255 kVA	322 kVA
Overload (**)	150%	150%	150%
THD V	< 2%	< 2%	< 2%
Efficiency	> 96%	> 96%	> 96%
Output transformer	Optional	Optional	Optional

ENVIRONMENTAL CONDITIONS			
Operating temperature	0 \div +45°C	0 \div +45°C	0 \div +45°C
Storage temperature	-10 \div +55°C	-10 \div +55°C	-10 \div +55°C
Relative Humidity	0 - 95%	0 - 95%	0 - 95%
Altitude	< 1000 m a.s.l.	< 1000 m a.s.l.	< 1000 m a.s.l.

GENERAL SYSTEM SPECIFICATION			
Dimensions (WxHxD)	1200 x 2000 x 600mm	1600 x 2000 x 600mm	1600 x 2000 x 600mm
Cooling	Forced Air	Forced Air	Forced Air
Cable entry	From bottom	From bottom	From bottom
Protection degree (***)	IP42	IP42	IP42
Weight	650 kg	970 kg	1120 kg

(*) according to transformer ratio

(**) 30 sec. every 10 min.

(***) other standard upon request

EEI 8YS

ON-BOARD STORAGE SYSTEM



EEI's Hybrid solution oriented towards navigation with reduced environmental impact.

The 8YS-inverters, thanks to the wide functionality and a high level of customization, are able to comply every existing grid code or operate in parallel with diesel group.

The Storage on-board System is a double stage inverter with IGBT technology.

The first stage, connected to the grid, is an Active Front End inverter, while the second stage has a booster or buck/booster configuration. These two parts are connected each other with a DC-link. Both the incoming line and the output are protected.

8YS inverters can be paralleled to obtain multi MW power solutions.

MAIN CHARACTERISTICS

- Inverter enclosure made of 20/10mm steel panels.
- Front opening through lockable doors or bolted panels to ease access to all parts.
- Side and rear access through bolted panels.
- IGBT power circuit
- Film capacitors and low inductance connections in order to ensure high robustness and reliability, extended lifetime
- Easy accessibility and maintenance.
- Digital management of control parameters, alarm diagnostics, analogue and digital I/O signals from dedicated microcontroller and DSP software.
- Communication interfaces between each inverter and the main system PCS-controller, via Modbus
- TCP/IP or Can Open.
- Water Cooling System
- HMI panel with data logger, local control/setting, alarm display.



ADVANCED

Flexible software configuration allow wide functionalities



ADAPTIVE

Wide range of batteries compatibility



RELIABLE

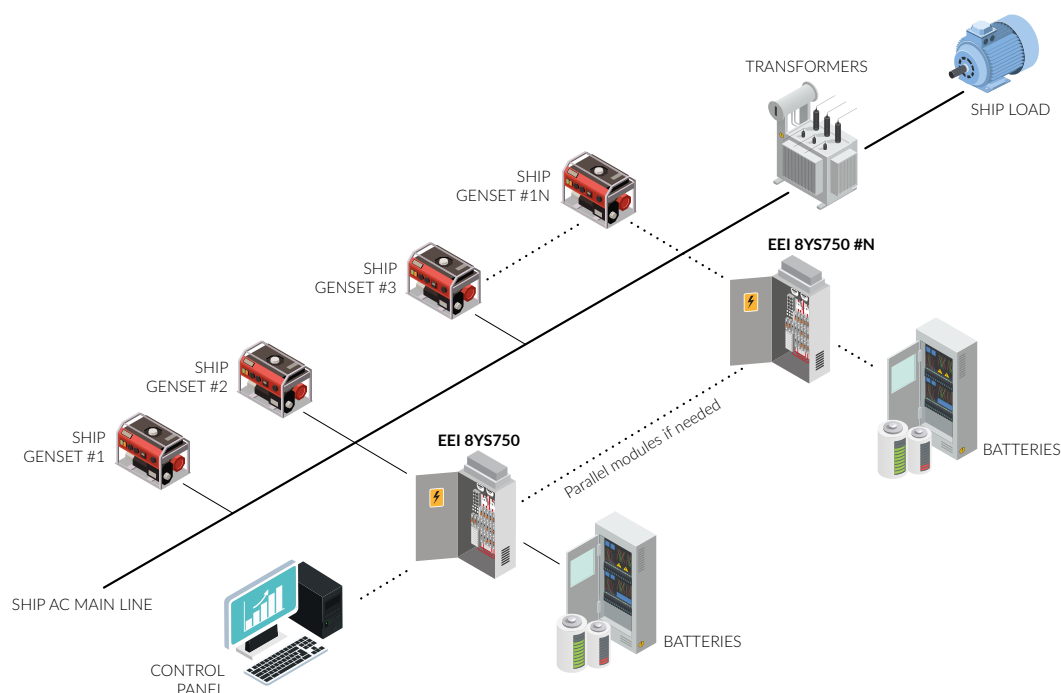
Equipped with latest power technology and robust design



MODULAR

Modular design permit a wide output power range





MODEL

8YS750

GENERAL ELECTRICAL SPECIFICATION

SHIP SIDE

Main voltage	690VAC $\pm 1\%$ 3Ph IT System
Auxiliaires voltage	230 V AC $\pm 10\%$
Rated frequency	60 Hz $\pm 1\%$
Architecture	Active Front End (AFE) IGBT inverter
Rated power	750 kVA@ Cos ϕ =0,85
Overload	110% (only for active power) For 30sec every 10 minutes
Rated current	650 A
Maximum current	700A
THDI	< 3%
Max phases current imbalance	20%

BATTERY SIDE

Architecture	Multi DC/DC Buck-Boost converter
Input Voltage range / Rated Input Voltage	491 ÷ 692 Vdc / 601 Vdc
Max. charge/discharge current	1600A
Max. charge/discharge power	780 kW
Max. Current ripple	$\pm 1\%$

INSTALLATION

Operating temperature	0°C ÷ + 50 °C
Storage temperature	-10 °C ÷ + 70 °C
Relative Humidity	95% @ 20°C no condensing
Altitude	< 1000 m a.s.l.
Protection Degree	IP 31 (1)
Cooling System Type	Water (inlet temperature range + 6÷12°C)

WEIGHT AND DIMENSIONS

Length (mm)	2000
Height (mm)	1300
Depth (mm)	1000
Weight (kg)	1800
Protection Degree	IP 31 (1)

SPECIAL PROJECTS

CHARGING / DISCHARGING STATIONS



EEL Charging/Discharging stations are developed for conventional electrical powered submarines. Stations are controlled by smart system able for charging and discharging submarines main batteries with voltage range capacities up to 950 Vc.c. and with a current up to 3000 A.

Using the EEI smart thyristor bidirectional power converter we can offer charging/discharging systems for a variety of conventional powered submarines (e.g. type U-209, type U-212 Todaro, type Sauro, type U-214 ect...) .

The system is designed to command and control the batteries charge/discharge cycles in local mode or remote mode through ethernet with the possibility to pre-defined curves IU, user configuration, save/recall different cycles and file data-logger for each battery cycle. We are able to customized our product according to the technical specification requested.

MAIN FEATURES:

- Isolation transformer with double winding
- Rectifier bridge with 12 pulses connection
- Full digital thyristor regulation
- Ripple filter choke
- Filter capacitor
- Fuses protection
- Operating and monitoring panel
- HMI with datalogger and remote control
- Supervisory system
- Tailor-made solution
- Available also new solutions with IGBT technology

MAIN ADVANTAGES:

- High reliability ensured
- Extended lifetime
- Easy accessibility and maintenance
- Low current harmonics distortion
- Suitable for different batteries technologies.



SPECIAL PROJECTS TEST BENCHES



Since its beginning EEI is a leader in providing solutions in applications characterized by a high rate of innovation and the need to provide custom solutions.

EEI can supply drives for test bench for different applications.

SOLUTIONS FOR:

- Engines
- Rolling test bench for auto and motorcycle
- Synchronous and asynchronous motors and generators
- Transformer
- Research Laboratory
- Genset
- Gear Box

STANDARD APPLICATION RANGE:

- AC power from 100 kW to 6 MW
- Supply Voltage: 400 / 690 Vac
- Output Voltage from 0 to 100% of Vac
- Output frequency from 0 to 150 Hz

MAIN FEATURES:

- Possibility of regeneration towards the grid
- Advanced IGBT technology
- High efficiency
- Low harmonic distortion
- Unitary power factor
- Modular design permits compact solution
- Custom-developed algorithms
- Cooling air or water
- Cabinet solution with easy accessibility and maintainance



EEI REVAMPING

EEI IS ABLE TO PROPOSE VARIOUS RETROFIT SOLUTIONS FOR AC & DC APPLICATIONS



- WIRE DRAWING MACHINE
- STRAND LINE
- WIRE LINE
- SOFT-START
- DC DRIVE FOR SINGLE MOTOR APPLICATION
- AC DRIVE FOR SINGLE MOTOR APPLICATION

1ST SOLUTION

TOTAL RETROFIT

It consists to replace all old cabinet+control desk with a new complete electrical equipment with big advantage to maintain the same existing mechanical layout of cabinet and control desk in order to permit customer to reuse power and signal cables in the same connection position.

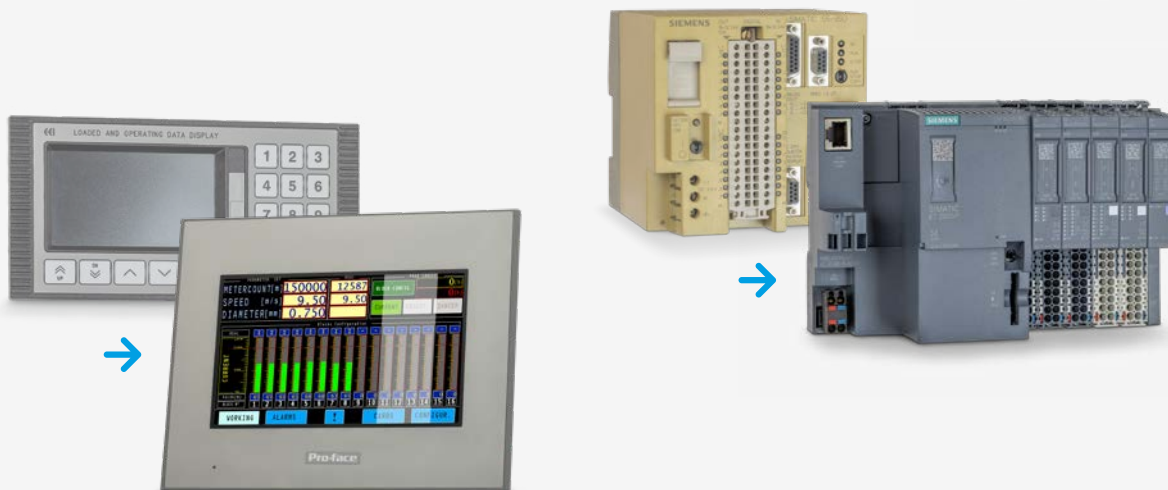
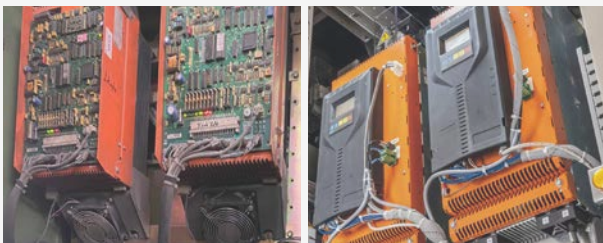


2ND SOLUTION PARTIAL RETROFIT

- It consists to supply a standard and easy-to-use electronic system in order to replace the old end of life and obsolete parts in the existing EEI Equipment with new regulation digital control based on microprocessor in order to upgrade the actual system to a full digital control system to guarantee spare parts at least next 10-12 years
 - This solution permits to avoid the complete replacement of electrical cabinet maintaining the frame, electromechanical parts, bus bars connection, wound components.
 - This permits the reduction of plant stoppage and therefore costs
- KIT for AC/DC converter is composed by one full digital regulation card and one SCR driver card mounted in a mechanical chassis completed with wires and terminal boards for connection with existing SCR power modules.
 - KIT for DC/AC drive for each block composed by one complete new generation EEI drive
 - KIT for new HMI
 - KIT for new PLC
 - Mounting and internal connections usually performed by customer electrical team or by EEI service team upon request
 - Assistance to the commissioning performed by EEI qualified Engineer

THE MAIN PARTS TO BE REPLACED ARE THE FOLLOWING:

- KIT for each block with new AC or DC full digital drive
- Videkeyboard with new HMI panel
- Old PLC with New PLC and coordination card



EEI SERVICE

AFTER SALES AND TECHNICAL SUPPORT

EEI SERVICE

EEI offers a superior support for the wide range of its products with an effective and professional After Sales Service, with the aim of a full Customer satisfaction.

EEI Service can provide a full set of services:

- On-site intervention
- Preventive maintenance contracts
- Spares
- Repairs
- Training

EEI operates worldwide fully in compliance with the international quality rules, through skilled staff and precision instruments.

ON-SITE INTERVENTION

EEI has a team of skilled technicians able to respond immediately with corrective actions and always ready for intervention. They are prepared to support the Customer during start-up of the equipment and during the lifetime of the inverter in order to ensure maximum technical assistance and high maintenance level.

Activities performed by our technical staff includes:

- Diagnostic and functional tests
- Start-up and commissioning of brand new equipment
- Modernization and rewamping of regulation systems
- On-site repairs
- Maintenance programs
- Periodical inspections



PREVENTIVE MAINTENANCE PROGRAMS

In order to assist our Customers in keeping their equipment operating economically and at peak performance, EEI offers preventive maintenance contracts. The frequency of visits is established based on duration of daily operation and work week. Extra non-warranty service visits are provided at a preferred contract rate.

SPARES

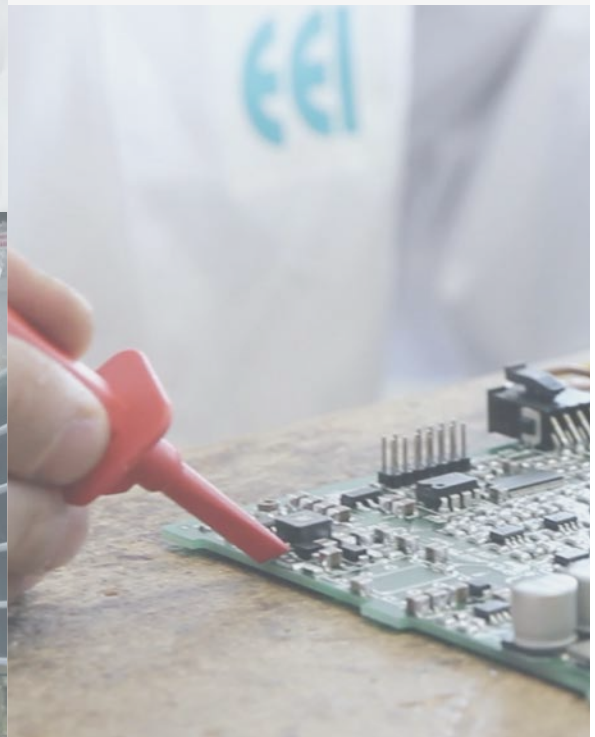
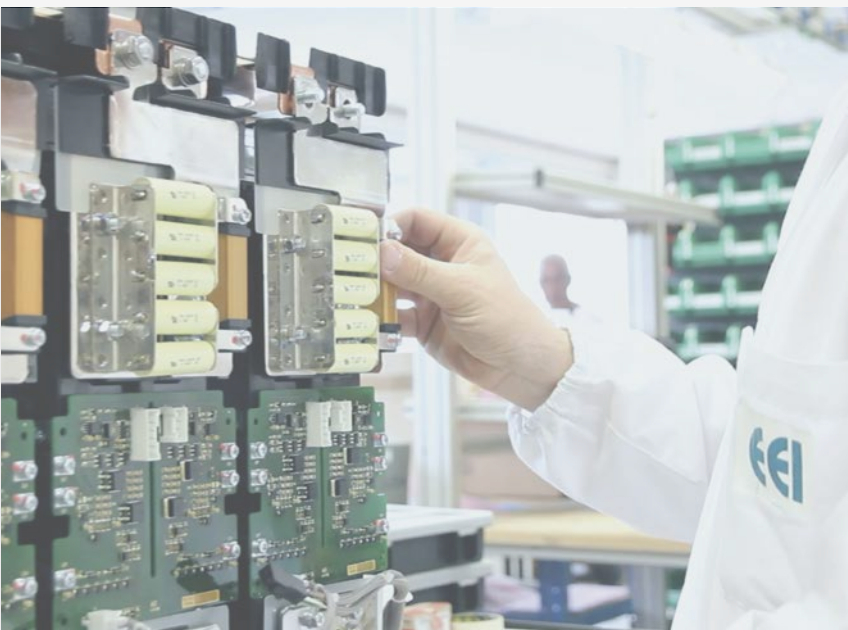
EEI spare parts are available at the EEI headquarters in Vicenza and in its Service Center located all over the world. EEI's flexibility allows to produce in its laboratories, and in a short time, electronic boards manufactured even more than 20 years ago.

REPAIRS

The repairs of all type of EEI products can either take place at the EEI manufacturing facility or at the Customer location.

TRAINING

Training courses organized for Customers's staff users and maintenance managers, for the correct operation and maintenance of standard EEI drives and for specific EEI customized project.



EEI

EXPERIENCE,
EFFICIENCY,
INNOVATION

Your best partner
in every application field



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