



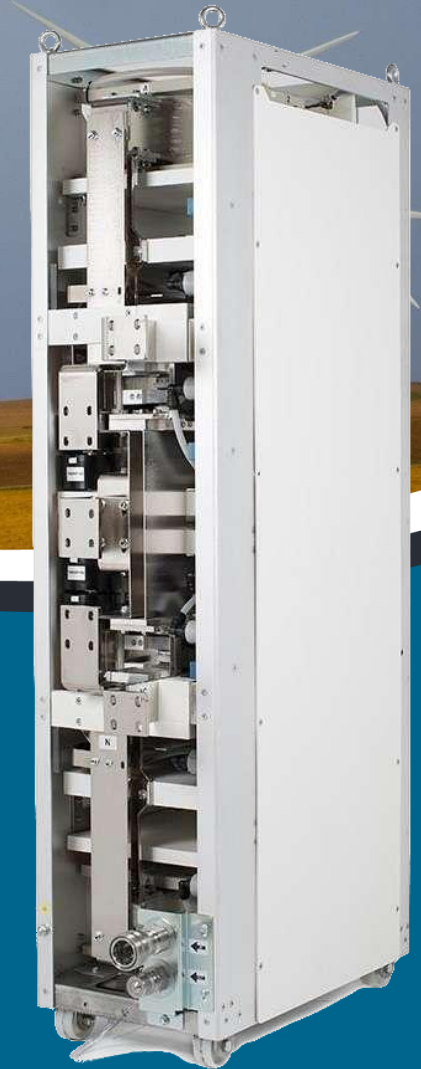
# SECOM

Power Electronic Equipment & Components



SECOMDrive

## Medium Voltage Drives



# SECOMDrive MV



---

**MV MULTILEVEL DRIVES  
BIG POWER, BIG FLEXIBILITY!**

---



*Copyright Danieli Automation SpA, 2021 – Tutti i diritti riservati*

# SECOMDrive MV



## Our background

- Experience Industry applications for drives & automation
- Wide knowledge & field experience in drives system design, commissioning and servicing with all the major Drives brands products, for MV & LV AC & DC Drives, since 25 years

# SECOMDrive MV – Main features



Copyright Danieli Automation SpA, 2021 – Tutti i diritti riservati

“The idea to design and produce the SECOMDrive family was born many years ago, to overcome the lack on the market of a product, that includes all the features required for the Metals industry, easy to maintain for final Customer, with inbuilt troubleshooting system, and at a competitive price level...”

---

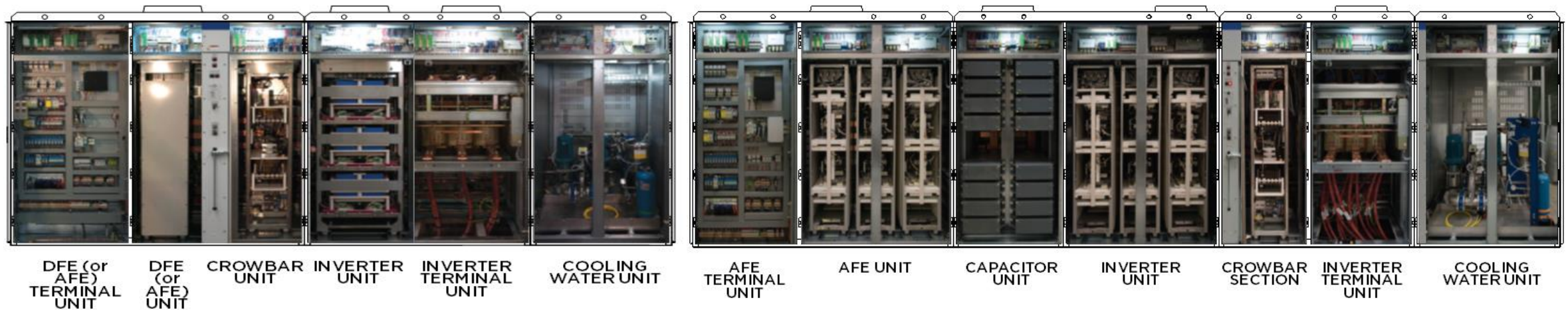
Our products have the following key features:

- State of art & latest technology
- Special power module design to allow easy maintenance
- Simple, flexible & powerful control architecture with embedded remote access and PLC functionalities
- Inbuilt drives process control functions for Metals applications
- Cabinets design focused on safety

# SECOMDrive MV

SDMV – 3 Level MV NPC IGCT & IGBT type

Hi-demanding and hi-performances 4 quadrants drives applications, water cooled converters ranging from 4 to 15 MVA, in single & multidrive configuration, up to 3.3 KV of rated motor voltage.



*Copyright Danieli Automation SpA, 2021 – Tutti i diritti riservati*

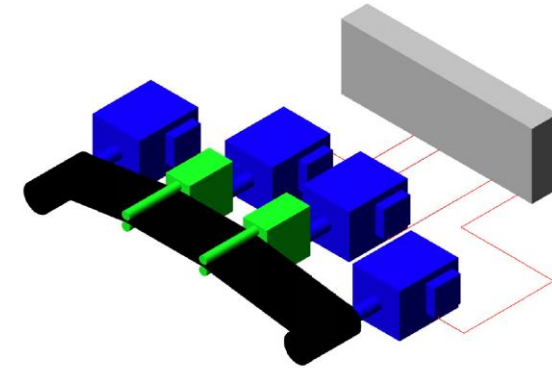
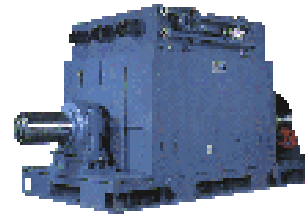
# SECOMDrive MV – High power & high dynamic Drives

Focus on SECOMDrive MV  
3 Level MV NPC IGCT & IGBT type

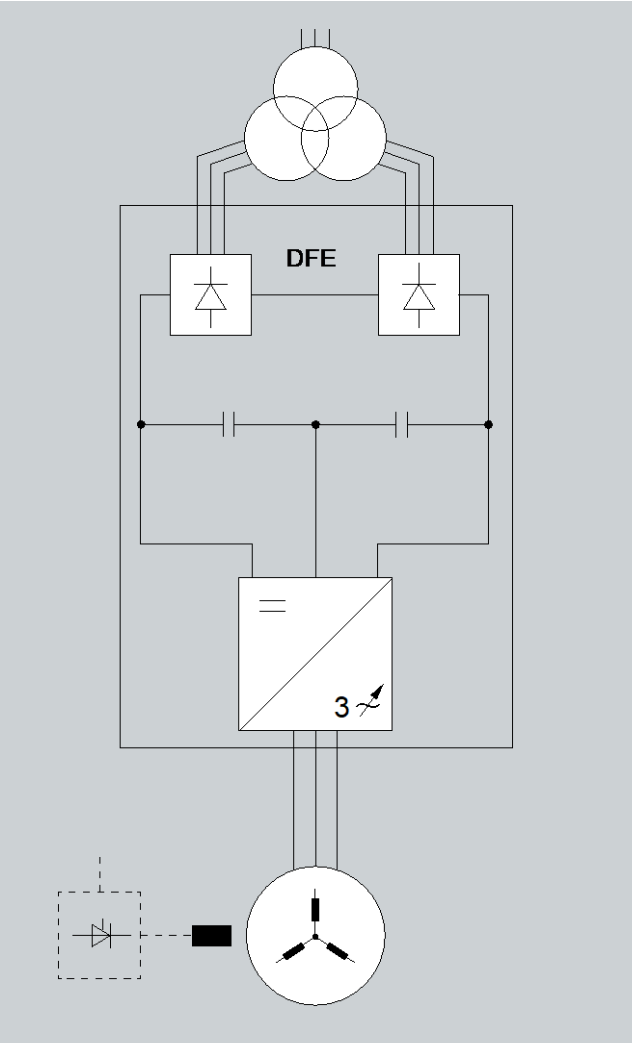
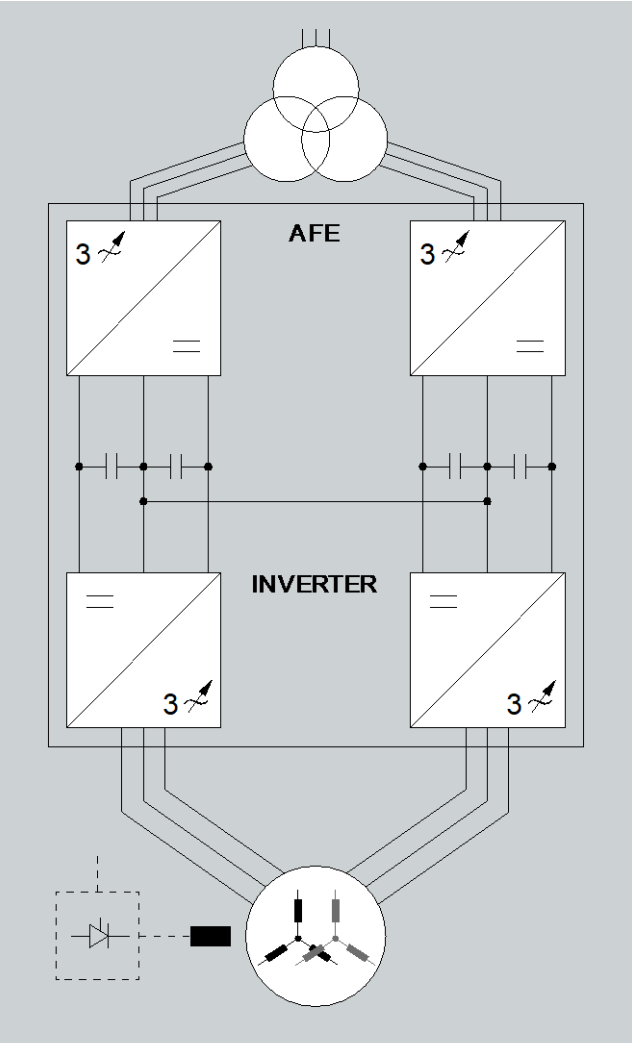
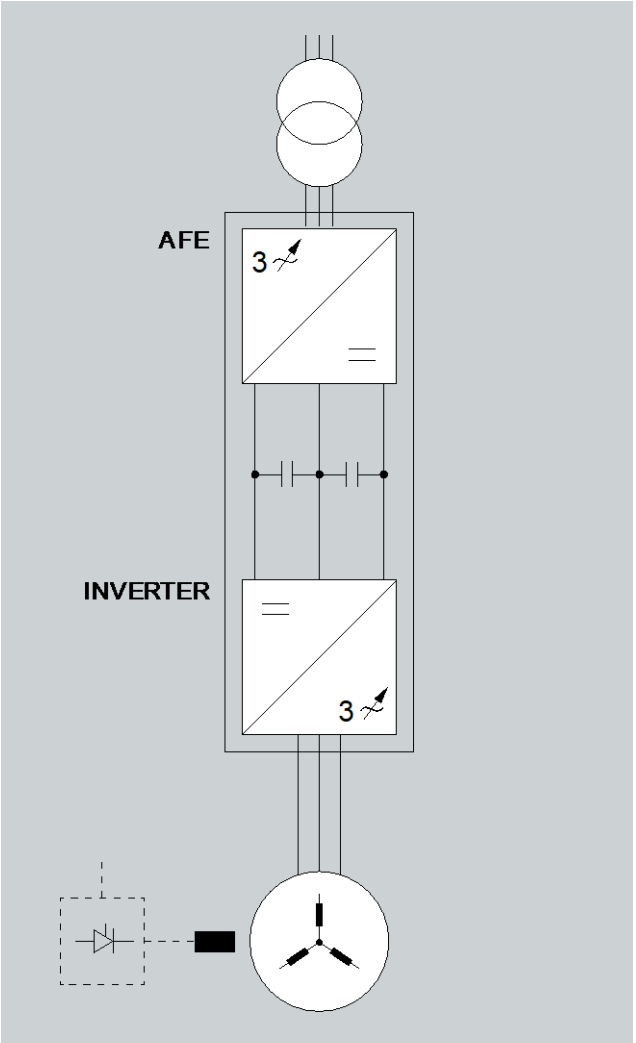
## Typical Metals Applications

- Fast Finishing Blocks & Sizing Stands
- Rev. Mill Stands for Flat & Long Products
- Coilers
- Edger
- Shears
- Piercing & Pilgrim Mill

Motors rated power typically ranges from  
2 MW up to 10 MW, with 3.15 kV Induction  
& Synchronous motors



# SECOM Drive MV – Basic single drive configurations

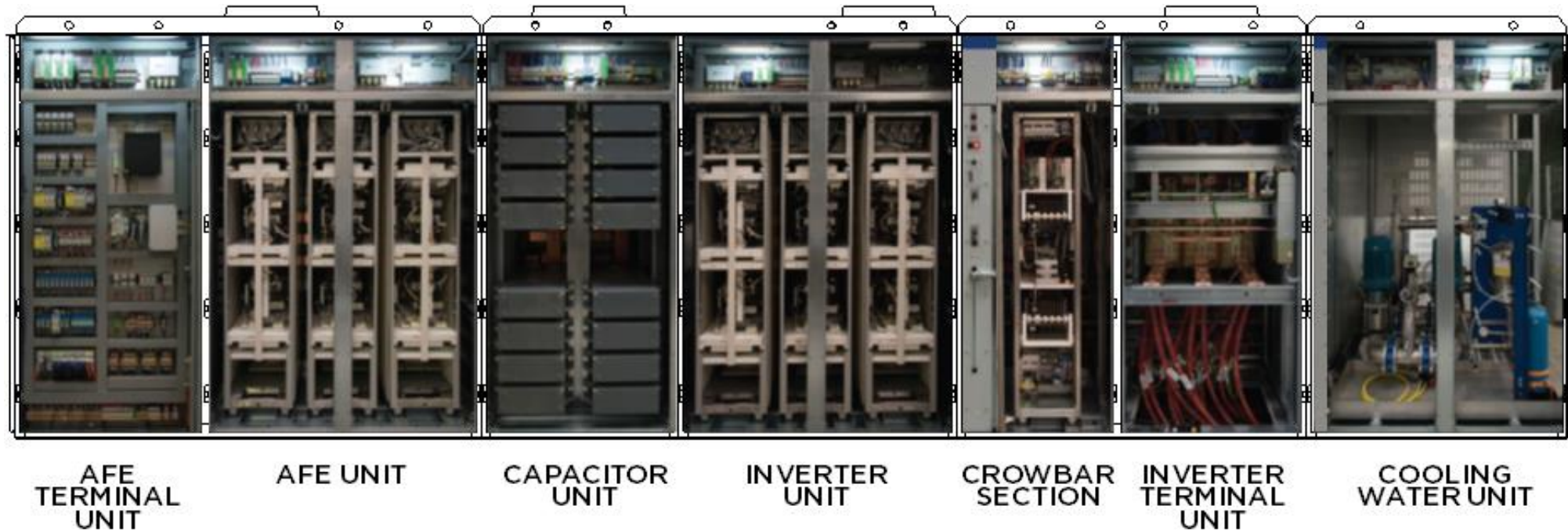


# SECOMDrive MV – Ratings of 3 level NPC power modules

IGCT	IGBT
<ul style="list-style-type: none"><li>• Single or double unit with AFE (Active Front End)</li></ul>	<ul style="list-style-type: none"><li>• Single unit with AFE (Active Front End) or DFE (Diode Front End)</li></ul>
<ul style="list-style-type: none"><li>• 10 MVA type (1250 A cont. / 1750 A max)</li><li>• 11 MVA type (1350 A cont. / 1890 A max)</li><li>• 12 MVA type (1500 A cont. / 2100 A max)</li><li>• 15 MVA type (1900 A cont. / 2650 A max)</li></ul> <p><i>Overload applicable for 60 s every 600 s</i></p>	<ul style="list-style-type: none"><li>• 4.0 MVA max (500 A cont. / 750 A max)</li><li>• 4.8 MVA max (590 A cont. / 880 A max)</li><li>• 6.0 MVA max (750 A cont. / 1100 A max)</li><li>• 7.0 MVA max (850 A cont. / 1280 A max)</li></ul> <p><i>Overload applicable for 60 s every 600 s</i></p>



# SECOMDrive MV – Typical IGCT arrangement type



*Copyright Danieli Automation SpA, 2021 – Tutti i diritti riservati*

# SECOMDrive MV – Typical IGBT arrangement type



DFE (or  
AFE)  
TERMINAL  
UNIT

DFE (or  
AFE)  
UNIT

CROWBAR  
UNIT

INVERTER  
UNIT

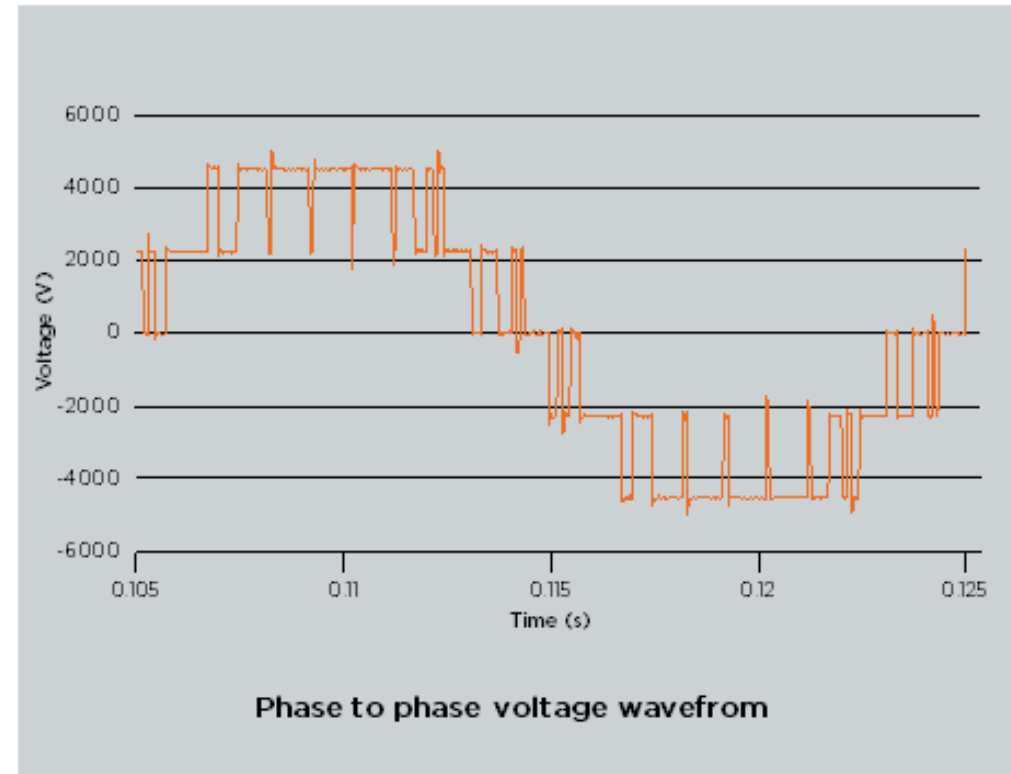
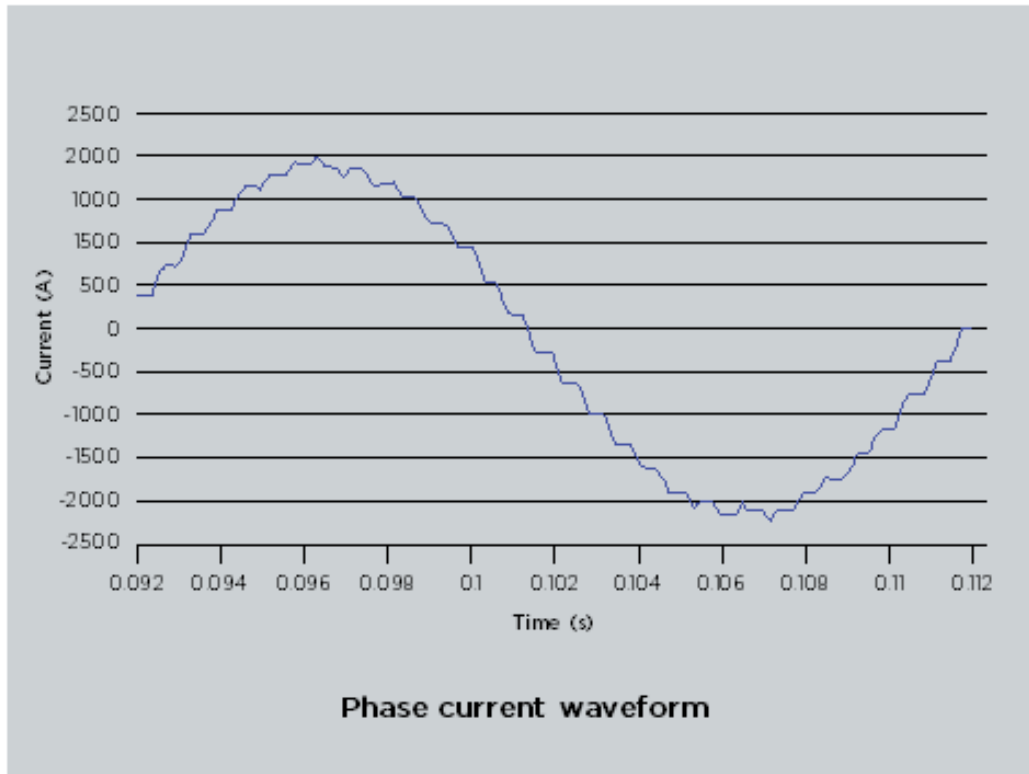
INVERTER  
TERMINAL  
UNIT

COOLING  
WATER UNIT

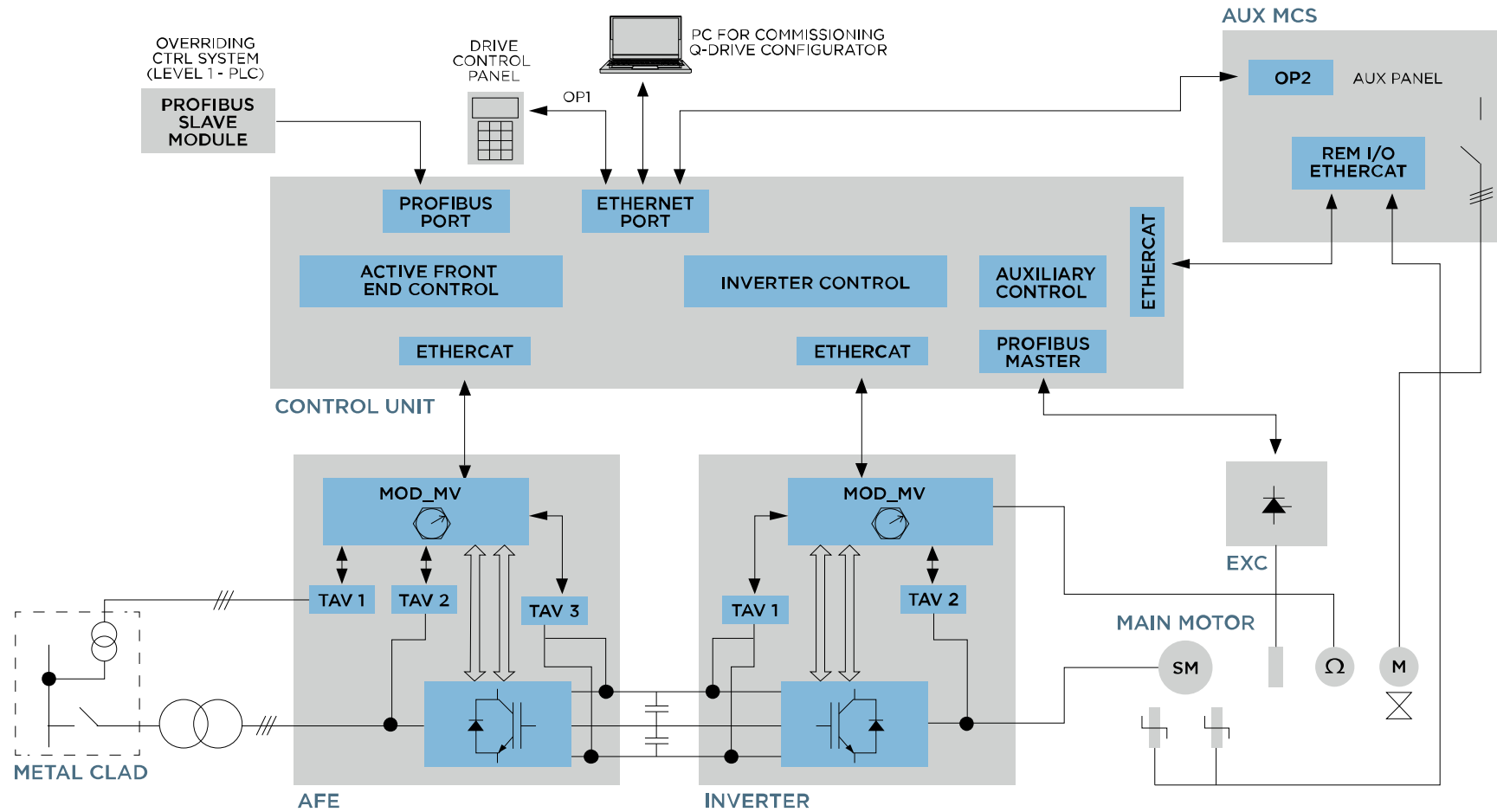
*Copyright Danieli Automation SpA, 2021 – Tutti i diritti riservati*

**SECOM**  
Power Electronic Equipment & Components

# SECOMDrive MV – Typical output current & voltage waveforms



# SECOM Drive MV – Control architecture



# SECOMDrive MV – Control functions for metal applications



## Functions for the Torsional Problem

- Adjustable Skip bands in the speed reference to avoid known resonances in the driven mechanical system
- Tunable bandpass – lowpass filters in setpoint & actual torque and actual speed signals to shape easily drive system frequency response

## Function for dynamic accuracy improvements

- Motor load observer could be activated to reduce impact load speed drop transient

## Function for high four quadrants dynamic

- Feed forward function from Inverter to AFE to help AFE dynamic in fast loading-generating transient

## Function for helping driven mechanical smooth operation

- Backlash compensation functions

## Function for torque “controlled” drives

- Speed controller with flexible integral action with possibility to disable, preset or reset the action value

# SECOMDrive MV – Static accuracy

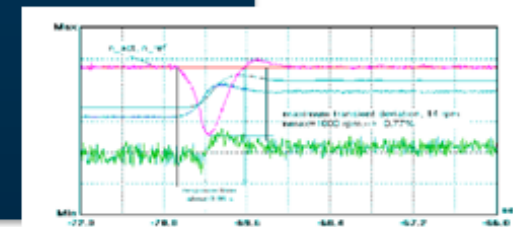
## Typical data

STATIC ACCURACY DATA	Induction motor (sensorless)	Induction motor (with speed encoder)	Separately Excited Synchronous motors (with speed encoder)
Operating range			
Speed control range lower limit (% of the rated motor speed)	5%	0%	0%
Maximum output frequency (we have always output reactor)	75 Hz	75 Hz	75 Hz
Field weakening range	1 : 3	1 : 3	1 : 4
Static accuracy			
Speed Static Accuracy (% of rated motor speed)	± 0.2 % (from 5% of rated speed)	± 0.01 %	± 0.01 %
Torque Accuracy (% of rated motor torque)	± 5 % (from 5% of rated speed)	± 5 %	± 2 %
Air gap Torque Ripple	< 2 %	< 2 %	< 2 %

# SECOMDrive MV – Static accuracy

## Typical data

DYNAMIC ACCURACY DATA	Induction motor (sensorless)	Induction motor (with speed encoder)	Separately Excited Synchronous motors (with speed encoder)
Torque rise time (from 10 to 90%) for a torque setpoint step of 20 %, in the range from 10 % to 100 % of rated torque	5 ms	5 ms	5 ms
Speed Dynamic accuracy (% of rated motor speed) - It depends heavily also on load inertia and system design	typ. 0.5%... 1% (from 5% of rated speed)	0.2%...0.5%	0.2%...0.5%



# SECOMDrive MV – Converter cabinet operator panel



LARGE TOUCH SCREEN OPERATOR PANEL

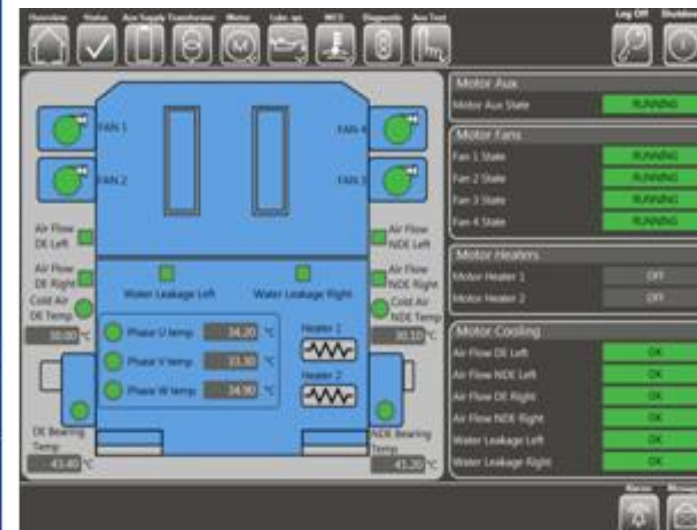
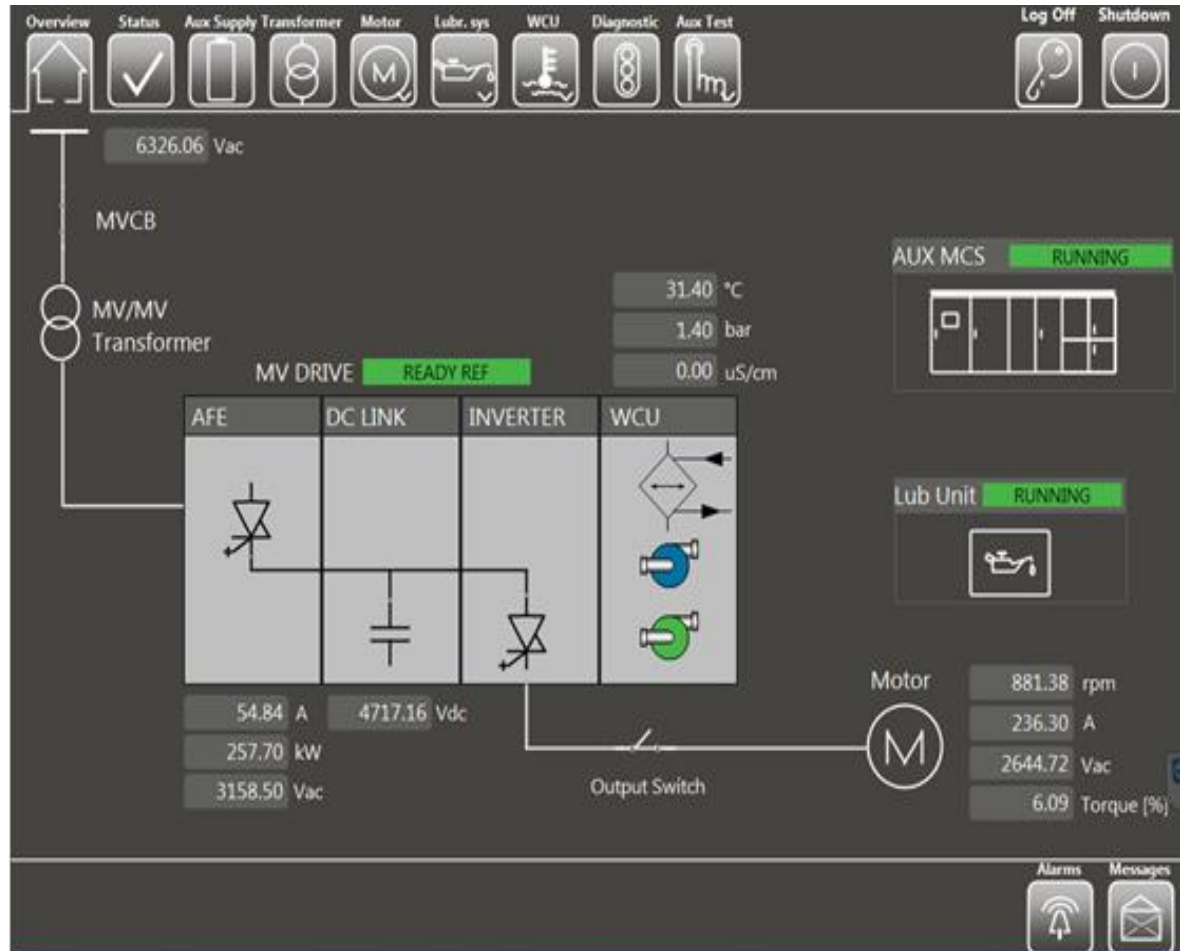
00101 INV\_IF\_lact 0 % 0 100 200  
00152 WCU\_TM02 30.1 °C 0 25 50  
00103 INV\_IF\_Fact 0 % 0 100 200  
00104 INV\_VoltAmpCalcP 0 % 0 75 150  
00105 INV\_VdcMeasCtrl 3.83 V 0 3000 6000

Number	Name	Value	UM	Min	Max
00101	INV_IF_lact	0	%	-10000	10000
00102	INV_IF_lact2	0	%	-10000	10000
00103	INV_IF_Fact	0	%	-10000	10000
00104	INV_VoltAmpCalcP	0	%	-10000	10000
00105	INV_VdcMeasCtrl	3.82505	V	-10000	10000
00107	INV_IF_Ref1_OP	0	%	-10000	10000
00108	INV_IF_Ref2_OP	0	%	-10000	10000
00109	INV_IF_Ref3_OP	0	%	-10000	10000

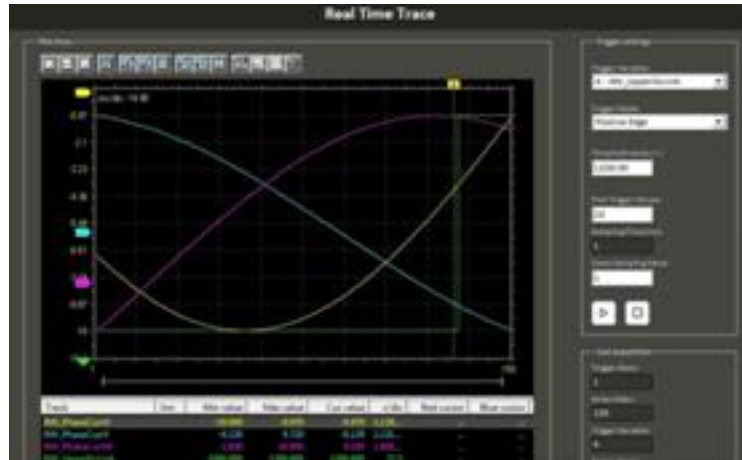


# SECOM Drive MV – Drive system supervision panel on aux MCS

LARGE  
TOUCH  
SCREEN  
OPERATOR  
PANEL



# SECOMDrive MV – Converter cabinet operator panel



INVERTER

Number	Name	Type	Value	Unit	Backup	Min	Max	Start	Stop
0001	IN_V_Limit	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0002	IN_V_Alt	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0003	IN_V_Min	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0004	IN_V_Max	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0005	IN_V_Min2	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0006	IN_V_Max2	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0007	IN_V_Min3	REAL	33.00	%	33.00	-10000.00	10000.00	1	1
0008	IN_V_Max3	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0009	IN_V_Min4	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0010	IN_V_Max4	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0011	IN_V_Min5	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0012	IN_V_Max5	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0013	IN_V_Min6	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0014	IN_V_Max6	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0015	IN_V_Min7	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0016	IN_V_Max7	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0017	IN_V_Min8	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0018	IN_V_Max8	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0019	IN_V_Min9	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0020	IN_V_Max9	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0021	IN_V_Min10	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0022	IN_V_Max10	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0023	IN_V_Min11	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0024	IN_V_Max11	REAL	0.00	%	0.00	-10000.00	10000.00	1	1

INVERTER

Number	Name	Type	Value	Unit	Backup	Min	Max	Start	Stop
0001	IN_V_Limit	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0002	IN_V_Alt	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0003	IN_V_Min	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0004	IN_V_Max	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0005	IN_V_Min2	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0006	IN_V_Max2	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0007	IN_V_Min3	REAL	33.00	%	33.00	-10000.00	10000.00	1	1
0008	IN_V_Max3	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0009	IN_V_Min4	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0010	IN_V_Max4	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0011	IN_V_Min5	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0012	IN_V_Max5	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0013	IN_V_Min6	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0014	IN_V_Max6	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0015	IN_V_Min7	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0016	IN_V_Max7	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0017	IN_V_Min8	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0018	IN_V_Max8	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0019	IN_V_Min9	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0020	IN_V_Max9	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0021	IN_V_Min10	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0022	IN_V_Max10	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0023	IN_V_Min11	REAL	0.00	%	0.00	-10000.00	10000.00	1	1
0024	IN_V_Max11	REAL	0.00	%	0.00	-10000.00	10000.00	1	1

CPU

Number	Name	Type	Value	Unit	Backup	Min	Max	Start	Stop
0001	CPU_Benchmark_0%	REAL	0	%	0	-100	100	1	1
0002	CPU_Benchmark_1%	REAL	0	%	0	-100	100	1	1
0003	CPU_Benchmark_2%	REAL	0	%	0	-100	100	1	1
0004	CPU_Benchmark_3%	REAL	0	%	0	-100	100	1	1
0005	CPU_Benchmark_4%	REAL	0	%	0	-100	100	1	1

# SECOMDrive MV – Fast & easy power modules maintenance



FAST & TROUBLE-FREE REPLACEMENT IN ABOUT 30 MIN



*Copyright Danieli Automation SpA, 2021 – Tutti i diritti riservati*

**SECOM**  
Power Electronic Equipment & Components

# SECOMDrive MV – Field exciter cabinet



## EXC

Field exciter converter cabinet for synchronous motor excitation

Unidirectional thyristor LV AC/DC converter with crowbar, incoming line circuit breaker

*Copyright Danieli Automation SpA, 2021 – Tutti i diritti riservati*

# SECOMDrive MV – Field exciter cabinet



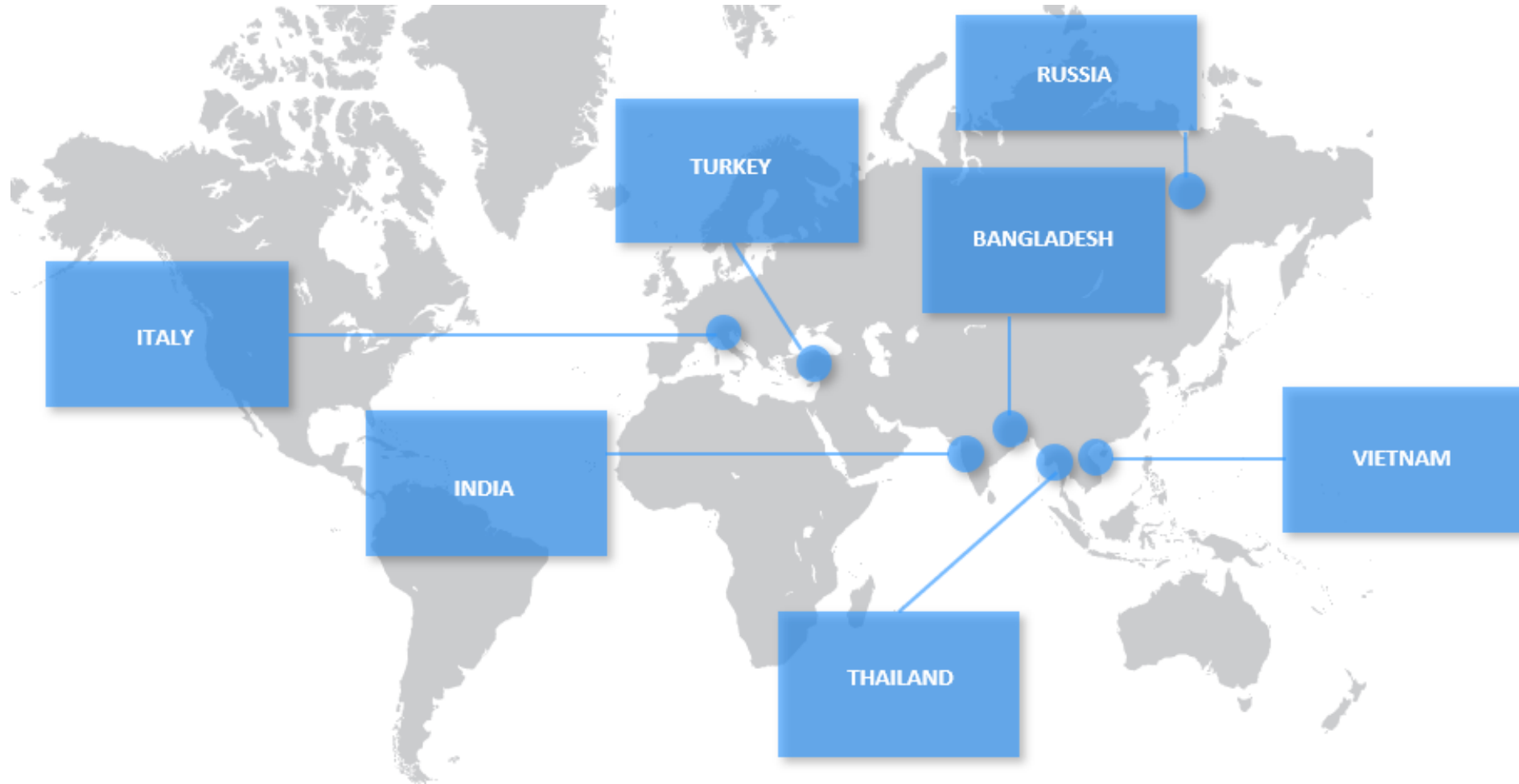
## AUX MCS

Auxiliary system motors control starter cabinets with UPS for control unit

Starters, feeders for aux. Loads & UPS for control unit with OP2 drive system supervision panel

*Copyright Danieli Automation SpA, 2021 – Tutti i diritti riservati*

# SECOMDrive MV – Reference areas



# Contact Us

SECOM S.r.l



## Address

SECOM S.r.l.  
Via Archimede 18  
Sesto San Giovanni (MI), 20099  
Italy

## Phone & Fax

Phone: +39 02.26.22.40.54  
Fax: +39 02.24.06.945  
[info@secompower.it](mailto:info@secompower.it)  
[commerciale@secompower.it](mailto:commerciale@secompower.it)

## Social Media and Website

[secompower.it](http://secompower.it)  
[LinkedIn.com/company/secom-power](https://www.linkedin.com/company/secom-power)