GEFRAN

ADV200 & AFE200

Products Overview

The 2010 Catalogue

System Lines AC Drive ADV200 & AFE200

ADV200	AC / AC Drive 400Vac	from 0,75kW up to 1,2MW
ADV200-DC	DC / AC Drive 400Vac	from 18,5kW up to 1,2MW
ADV200-6	AC / AC Drive 690Vac	from 75kW up to 1,2MW
AFE200	Regen Active Fornt End	from 18,5kW up to 1,2MW

System Lines Servodrive

XVy-EV	High End ServoDrive 400Vac	from 0,75kW up to 500kW
XVy-SR	High End Modular Servodrive	from 1,5kW up to 75kW

Armature DC Converters TPD32

TPD32	High End DC Converter 400Vac…690Vac	from 20A up to 4800A

Basic Lines AC Drive ADV20 & ADV50

ADV20	AC Drive V/F - 1ph & 3ph 110Vac…400Vac	from 0,4kW up to 4kW
ADV50	AC Drive SLS - 1ph & 3ph 230Vac…400Vac	from 0,4kW up to 11kW

Vertical Lines – Elevators ADL & AVRy

ADL	AC / AC Drive 400Vac	from 0,75kW up to 90kW
AVRy	AC / AC Drive & AFE 400Vac	from 11kW up to 27kW
TSM	Gearless PM Lift Motors	

NORMATIVE & MARKS

- LVD EN61800-5-1
- EN954-1 Class 3 (Machines Safety Directive)
- Approved EN61800-3

- UL 508C
  Already available on all the Products

Inverter Lines

MAIN GENERAL CHARACTERISTICS

- AC Mains Supply: **400Vac -15%…480Vac +10% 50/60Hz**
  690Vac -15%…+10% 50/60Hz
- Power Range : from **0,75kW** up to **1,2MW**
- Control mode: **Field Oriented Control**
  - with speed feedback
  - sensorless

  Voltage / Frequency (V/F)
  - with speed feedback
  - sensorless
- Max out frequency: **500 Hz (0,75 kW … 200 kW)**
  200 Hz (250 kW … 1,2 MW)

MAIN GENERAL CHARACTERISTICS

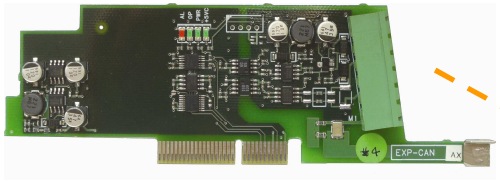
- Double Overload Management
- Encoder feedback: optional **(up to 3 encoders)**
- EMC filter: integrated
- DC choke: integrated
- Development environment IEC61131-3: integrated
- Protection degree: IP20
- Working temperature -10℃…+ 40 ℃ (+ 50 ℃ with 10 % of derating)

CANopen DeviceNet PROFIBUS GDNET Gefran Deterministic Network EtherCAT

Powers & Mechanics

Each power can increase the nominal value of 1 size in Light Duty

OPTIONAL BOARDS



FIELDBUS

PROFI PROCESS FIELD BUS

- Available **EXP-PDP-ADV**
- Profidrive profile

CANopen

- Available **EXP-CAN-ADV**
- DS402 profile

DeviceNet™

GDNET™ Gefran Deterministic Network

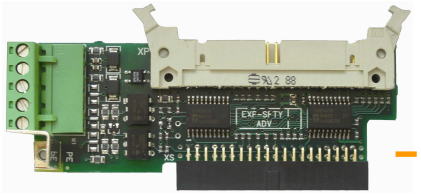
EtherCAT®

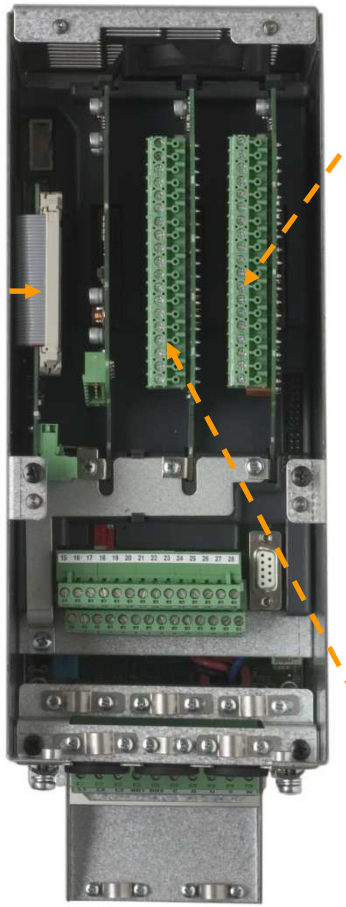
PERFORMANCE

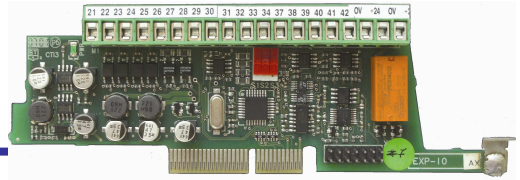
- 16 Channels PDO (16 word)
  AVy = 6
  XVy = 12

- Data exchange speed: 1mS
  AVy = 8 mS
  AGy = 8 mS
  XVy = 1 mS

OPTIONAL BOARDS







ENCODER

- **EXP-DE-I1R1F1-ADV** (single digital incremental)
- **EXP-DE-I2R1F2-ADV** (double digital incremental)
- **EXP-SE-I1R1F2-ADV** (Sinusoidal incremental)
- **EXP-SESC-I1R1F2-ADV** (absolute SinCos)
- **EXP-EN/SSI-I1R1F2-ADV** (absolute SSI/EnDat)
- **EXP-HIP-I1R1F2-ADV** (absolute Hiperface)

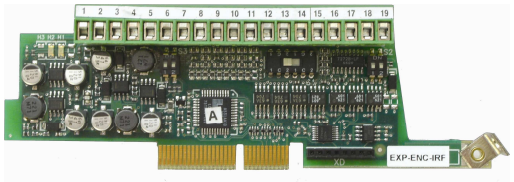
***** Available in February 2010**

SAFETY (factory mounted)

- Available **EXP-SFTY-ADV**
- Implemented on board only in the factory
- Certifies the drive according to EN954-1 Class 4 in conformity to the Safety Machines Directive

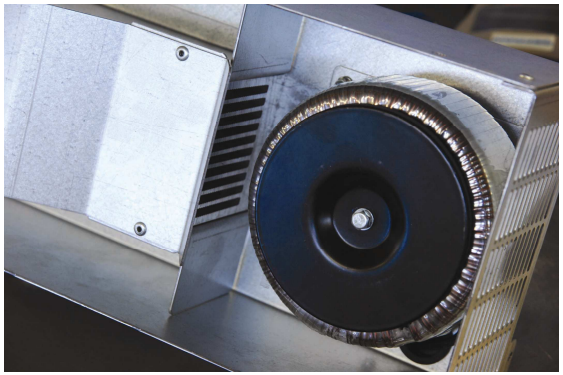
The new reference is category SIL3

***** Available in January 2010**



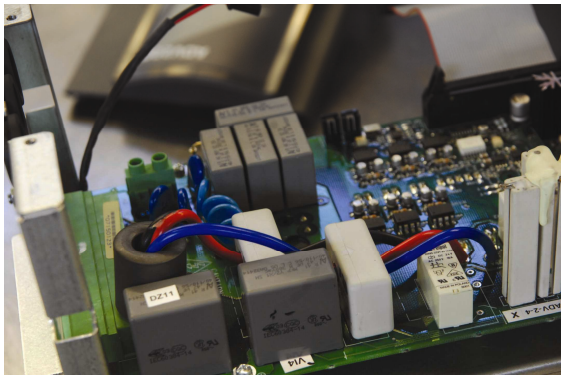
I/O EXPANSION

- Available **EXP-IO-D6A4R1-ADV**
  - 6 Digitals
  - 4 Analogs
  - 1 Relay (double contact)



DC CHOKE (internal up to 132kW)

- Improvement of the THD (harmonic distortion)
- Better reliability and lifetime of the power components
- Better reliability when applied in distorted mains
- **Advantages in space and costs**



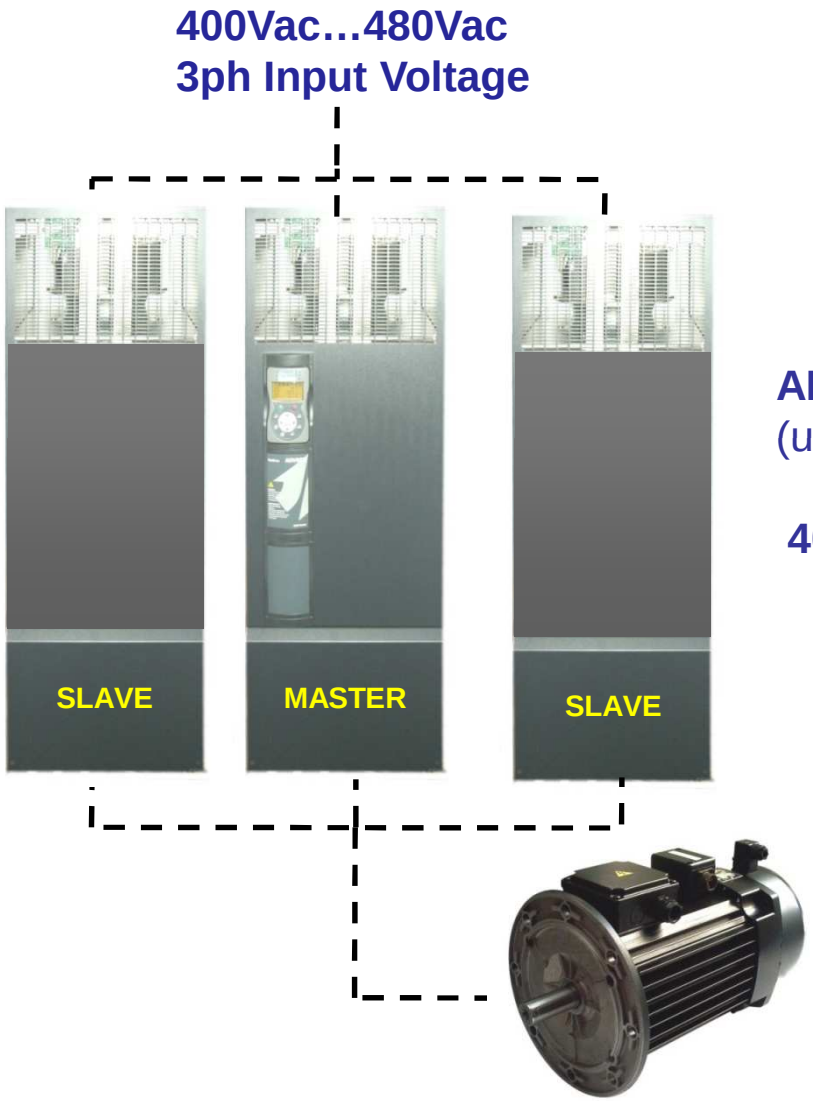
EMC FILTER (internal on all the range)

- In conformity to the normative EN61800-3 / 2° Indust rial Environment (Category 3) with motor cable length max 10m
- **Advantages in space and costs**

- **SIZE 7 Power Range**

160kW – 200kW – 250kW - 315kW – 355kW (400kW)

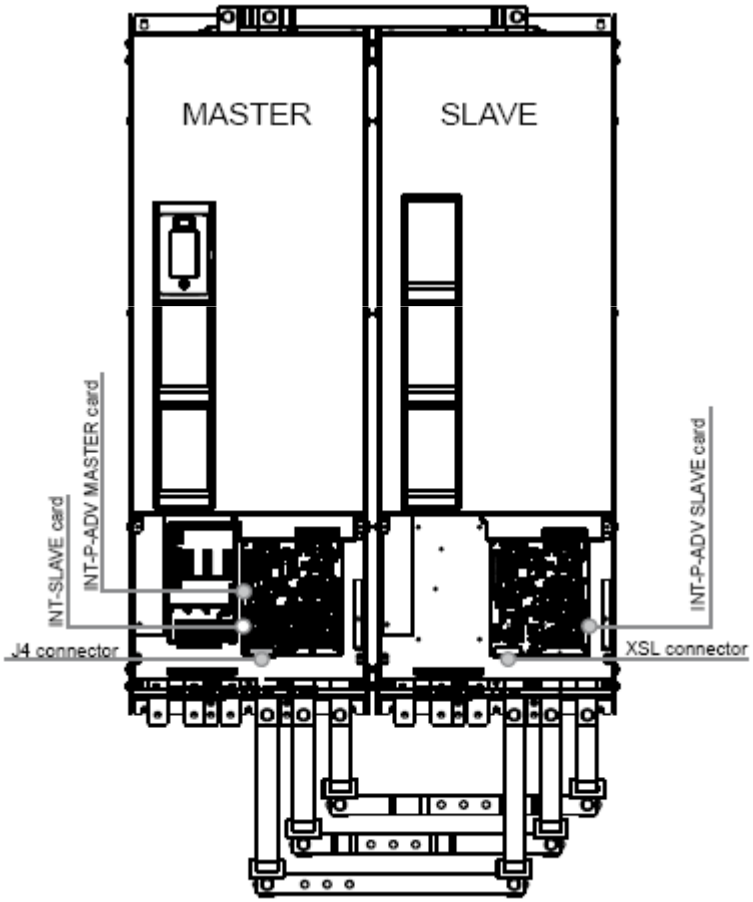
"SIEIDrive ADV200" SIZE 7 - PARALLEL CONFIGURATION



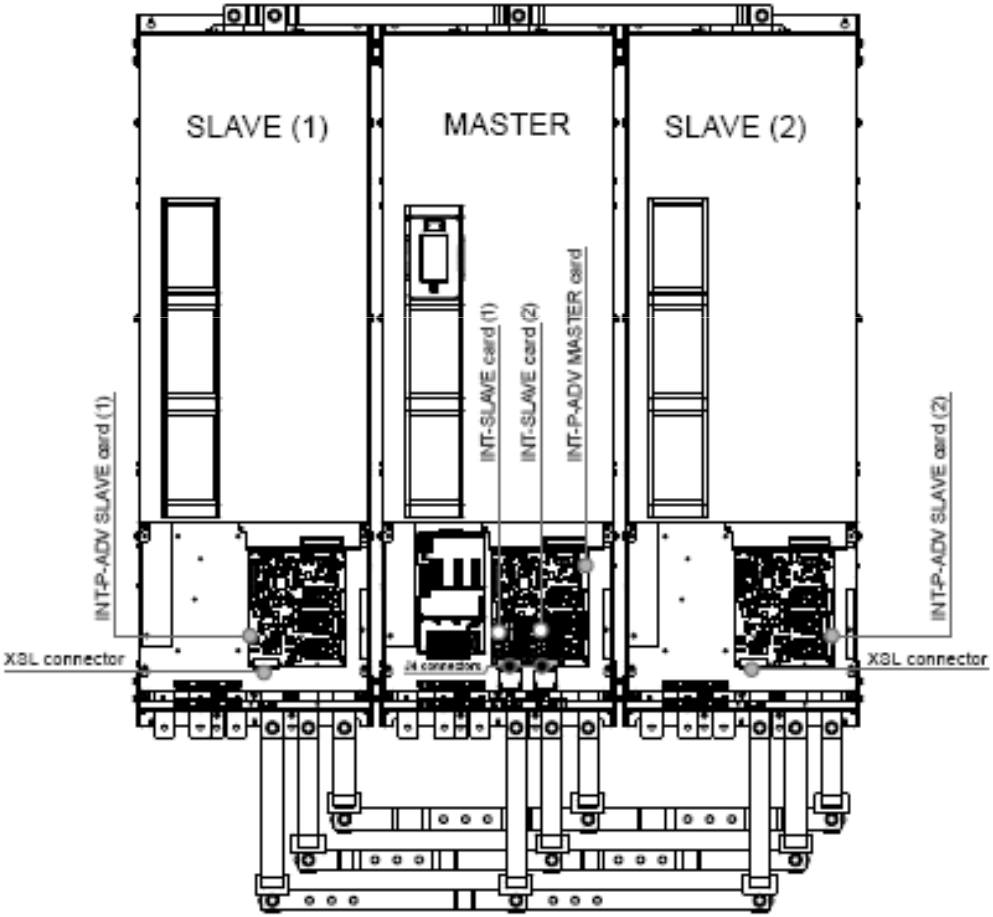
ADV200 Size 7 can be set as parallel configuration (up to 3 power stack) offering ratings from:

400kW up to **1,2 MW** (Light Ovld) @400Vac

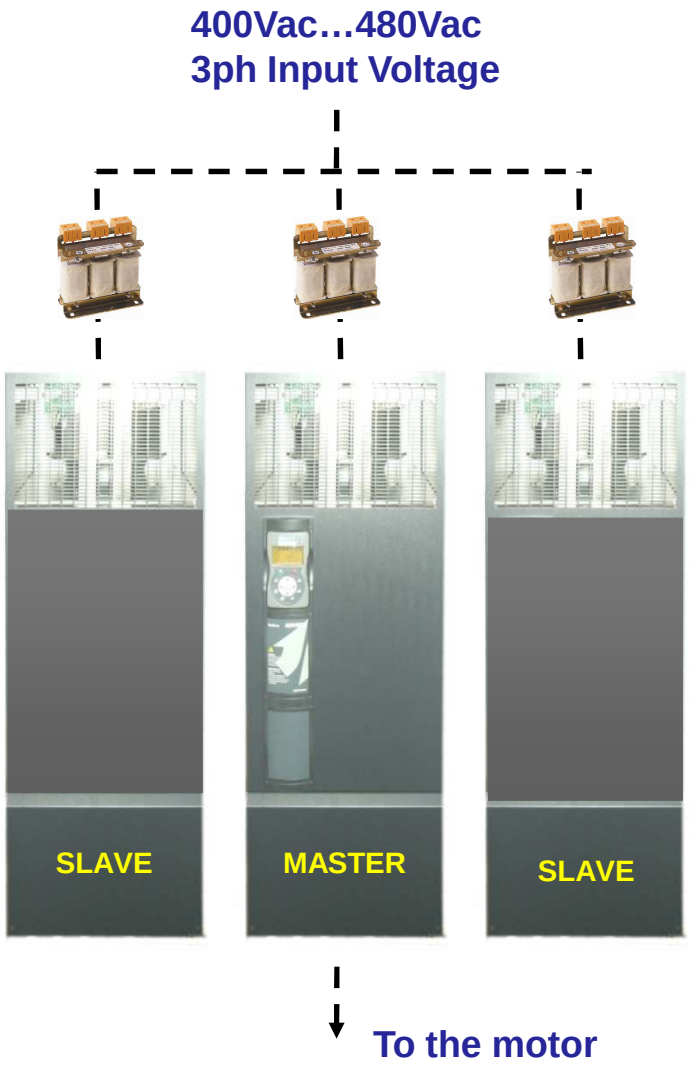
- 2 x 200 kW = 400 kW (550 kW)
- 2 x 250 kW = 500 kW (630 kW)
- 2 x 315 kW = 630 kW (710 kW)
- 2 x 355 kW = 710 kW (800 kW)



- 3 x 315 kW = 900 kW (1000 kW)
- 3 x 355 kW= 1000 kW (1200 kW)



■ "SIEIDrive ADV200" SIZE 7 - PARALLEL CONFIGURATION

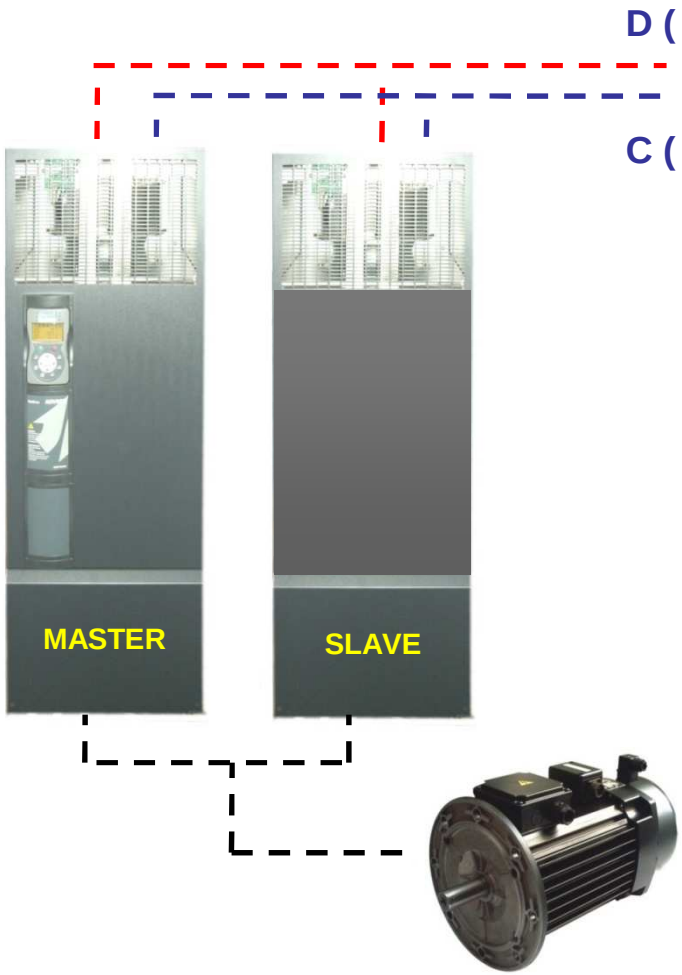


A line choke for **any of the power section** is **mandatory**

ADV200 Basic Version
AC-AC configuration

- Input Rectifier
- Internal EMC filter

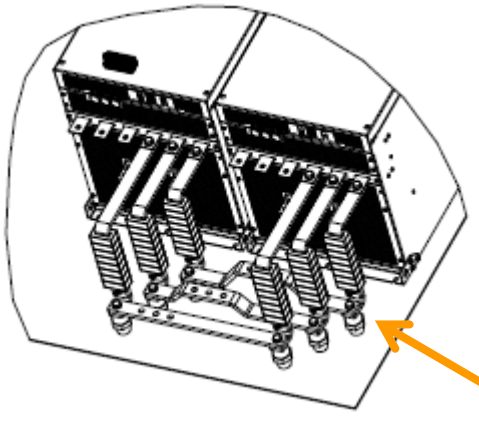
■ "SIEIDrive ADV200" SIZE 7 - PARALLEL CONFIGURATION



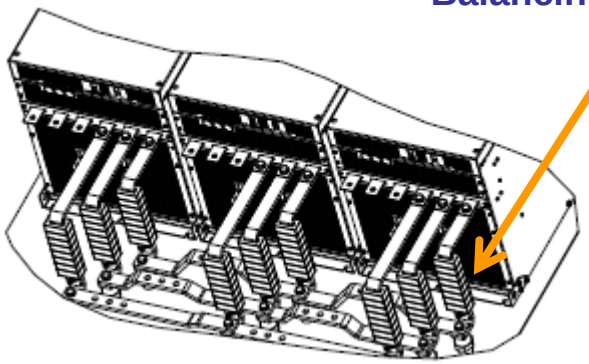
DC Bus supply from AC/DC supplier

ADV200 -DC Version
DC-AC configuration

- No Input rectifier
- Internal EMC Filter

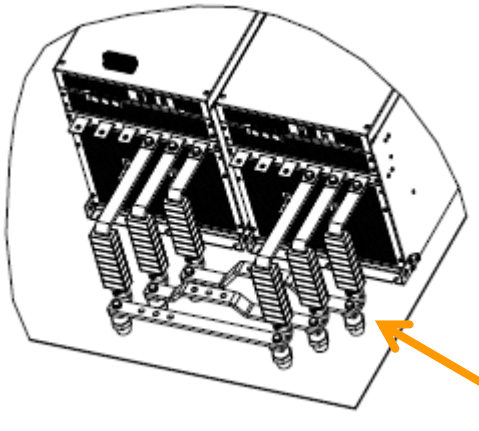


Output Power Bars
&
Balancing Ferrites

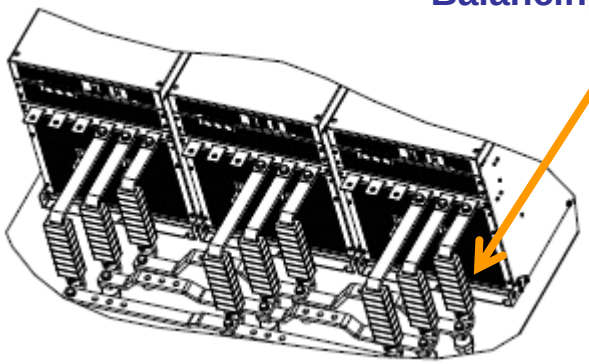


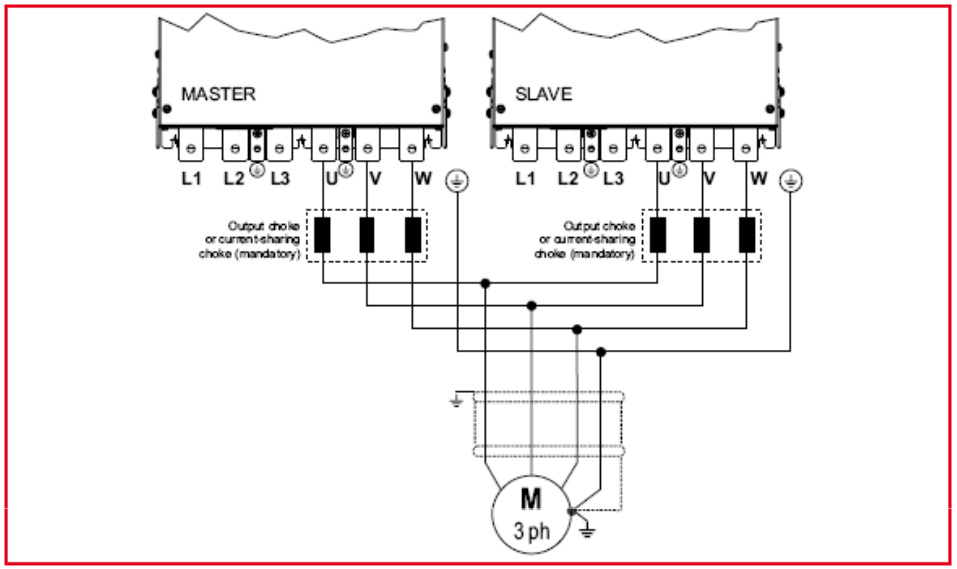
The **output ferrites** integrated on the power bars, are necessary to balance the **power bridge output current** when 2 or more power section are connected together.

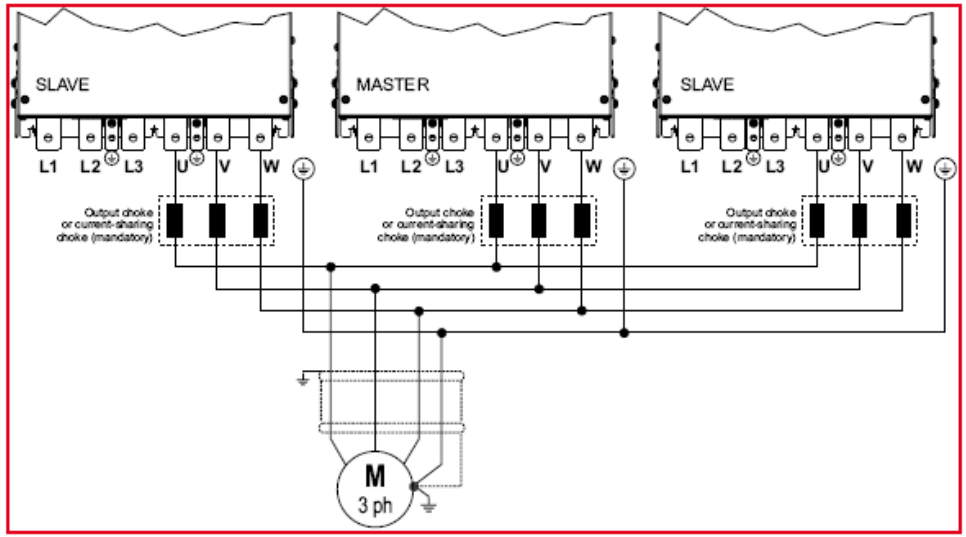
In case of different configuration and setting into the cabinet, the user can work with dedicated **output chokes**



Output Power Bars & Balancing Ferrites







New Line "SIEIDrive ADV200-6"

- The **ADV200** line for AC Mains **690Vac** (and after for 500Vac and 575Vac) is based on the actual powers stack of the AVy range (690Vac)
- These structures will implement the **regulation**, the **keypad** and the **family feeling** of **ADV200**
- The range will include powers from 75kW up to 1,2MW

Next development step are the following:

- Size 7 structure as ADV690Vac replacing the actual one

- Active Front End for 690Vac series *(to be defined)*

AC DRIVE - Competitors

PERFORMANCE

GEFRAN

SYSTEM
High Technology

0,75kW…1,2MW

3 x 400Vac…690Vac

ADV200

CONTROL TECHNIQUES

UNI SP

YASKAWA

G7

Rockwell Automation

PF 700

SIEMENS

S120

vacon

NXP

Schneider Electric

ATV71

KEB

F5

ABB

ACS800

RANGE & SUPPLIES

0,4kW

1,5MW

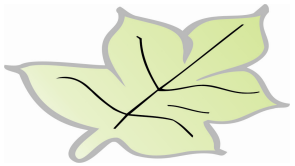
"SIEIDrive ADV200"
"Standard" or "Custom" Cabinet Configurations

- Supply range: 400Vac …690Vac 50/60Hz
- Power Range : from 90kW up to 1,2MW (standard)
- Standard: Plug & Play System
  IP23 – IP54 – IP55

- **It is on development the porting of the standard cabinet from AVy technology to ADV200**
- **It will also be available Standard configuration as Monodrive with Regenerative supplier AFE200**

Active Front End

New Line "SIEIDrive AFE200"



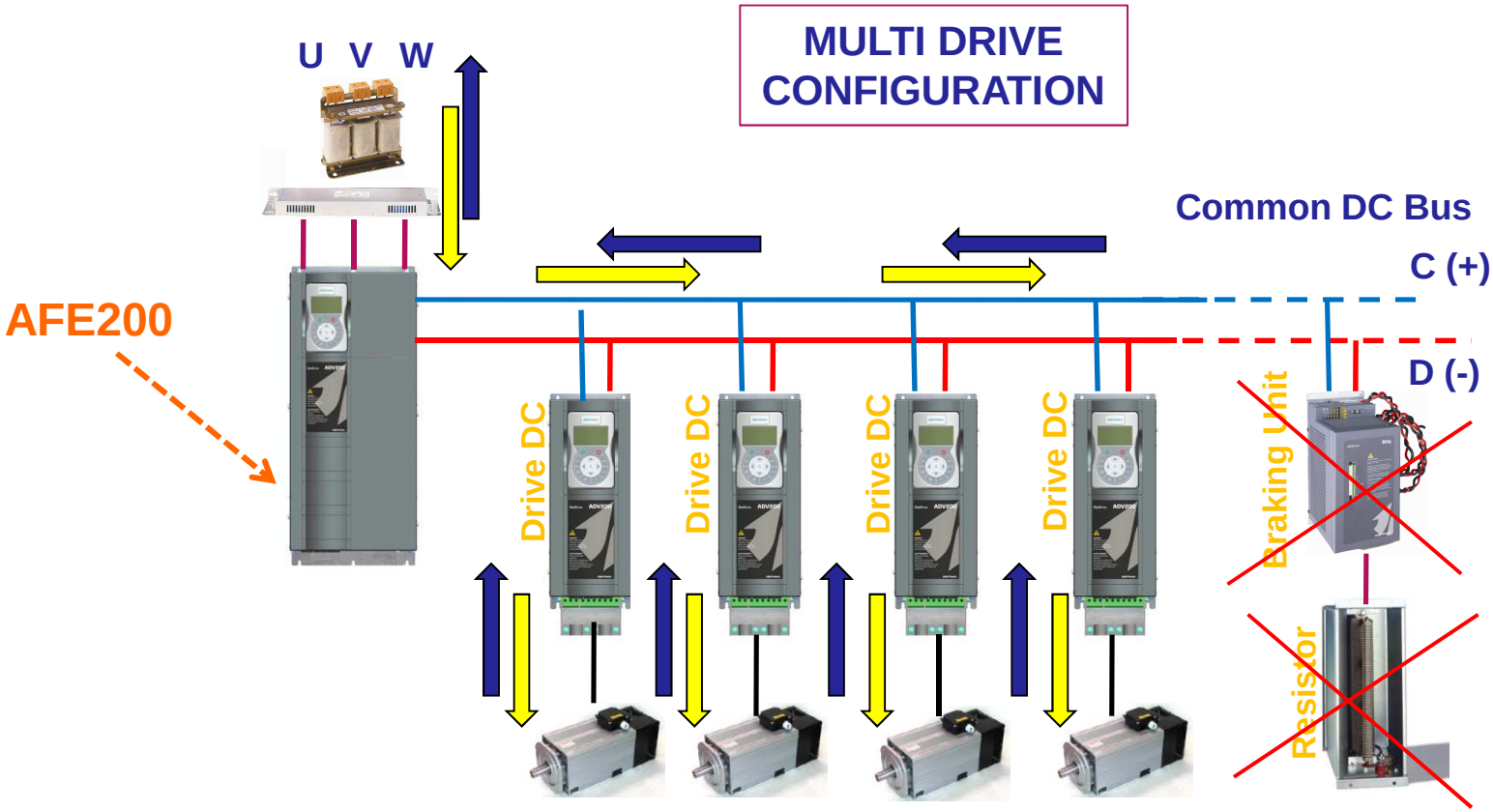
The **AFE200** is the line of **Regenerative Active Front End supplier**

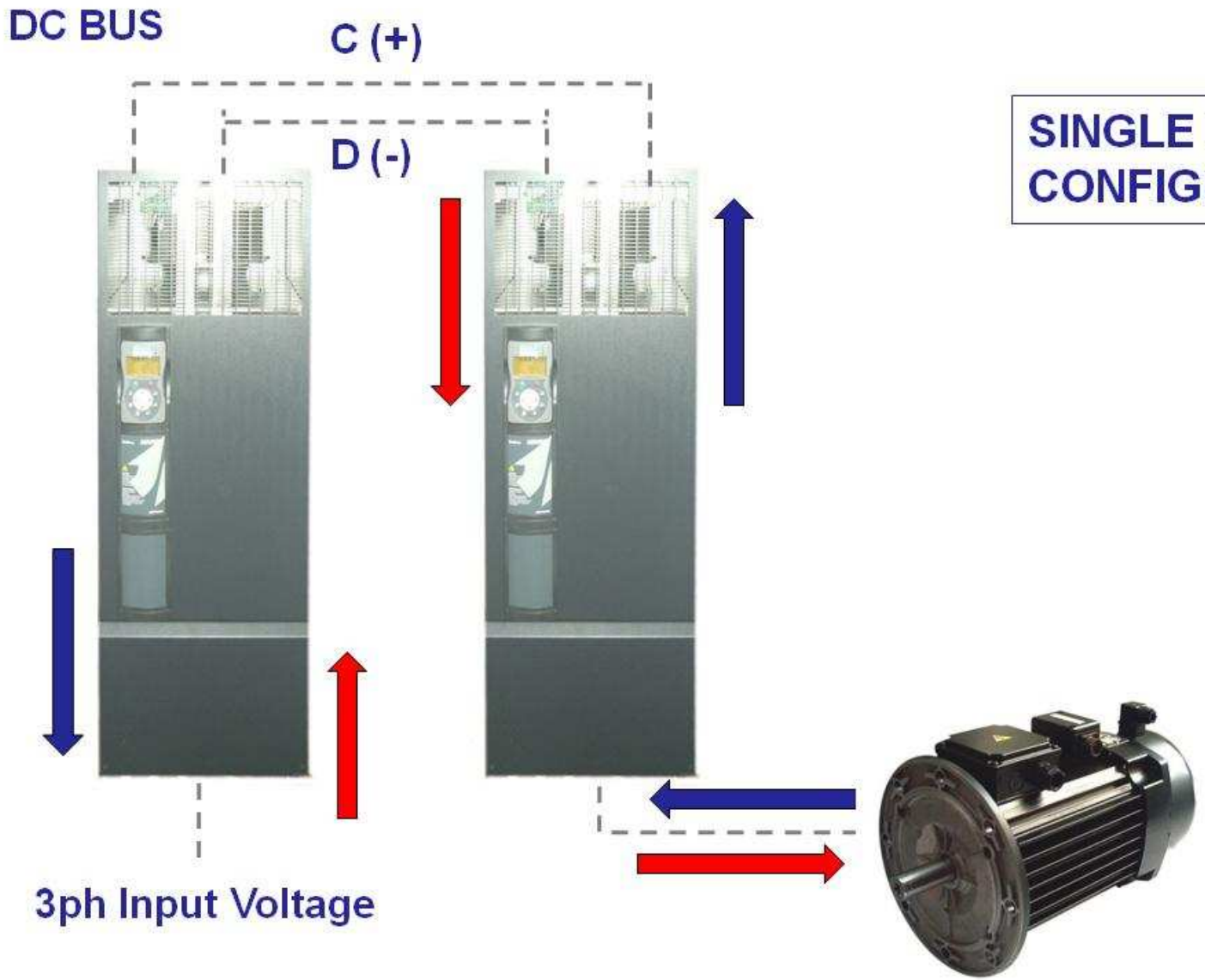
- IGBT technology for high dynamics in regenerating and motorizing
- AFE200 integrated regenerative drive can achieve high energy consumption reduction over standard non-regenerative installations.
- The amount of energy saving due to regeneration depends on various system parameters such as traffic pattern, duty load and speed of the motor.
- This saving translates into lower operating costs.

New Line "SIEIDrive AFE200"

- AFE200 in conjunction with ADV200-DC is dedicated to system applications with common DC bus.
- One unit can feed several drives connected on distributed DC bus.
- It is used in applications where is available kinetic or potential energy and its dissipation in braking resistors is problematic.
- Several drives or Single Drive can exchange the energy on DC bus and excessive energy returned to mains supply.
- AFE200 will use the same structure of the ADV200 – DC

AFE200 will allow optimization of **mono** or **multidrive systems**, in term of energy saving and high dynamic system controls.





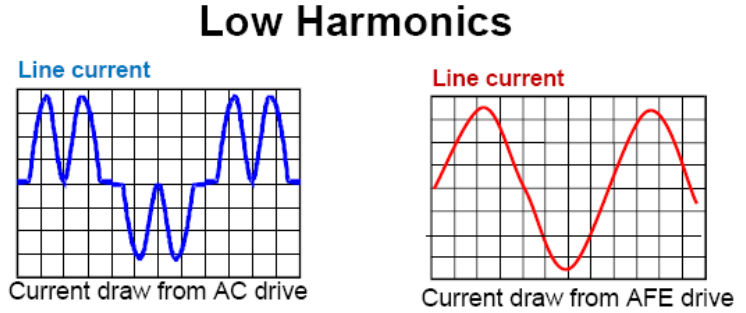
SINGLE DRIVE CONFIGURATION

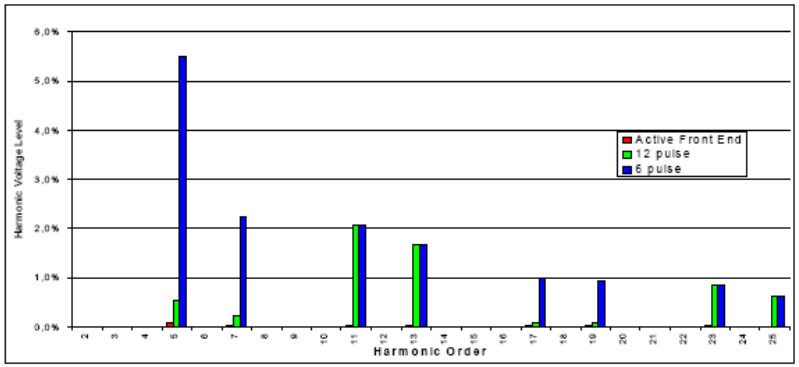
Active Front End Regen Drive - AFE200

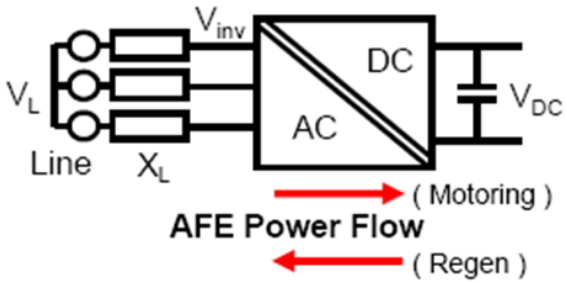
“Clean Power”Technology

The drive incorporates the most advanced technological solutions for the energy control and power supply efficiency.

THD <5% and Unit power factor



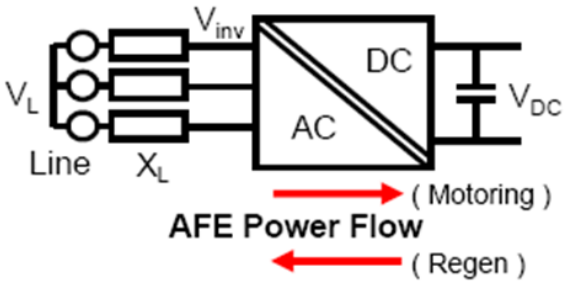




Active Front End Regen Drive - AFE200

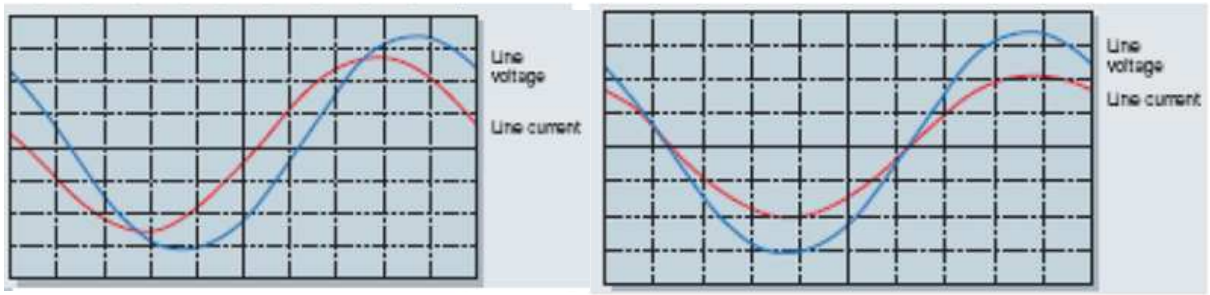
Input line power factor is maintained near to unit Cosφ ≈ 1

The AFE control algorithm adjust the pulse pattern which can be set to leading lagging or unity power factor



With AFE200 the AC current is in phase with voltage: the same as pure resistive load. AFE does not exchange reactive power with the line, but exclusively active power .

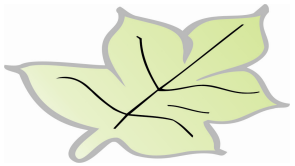
In special cases, with some limits, AFE200 may be used to correct the power factor of other load connected to the same supply line.



Leading power factor

Unity power factor

Active Front End Regen Drive - AFE200



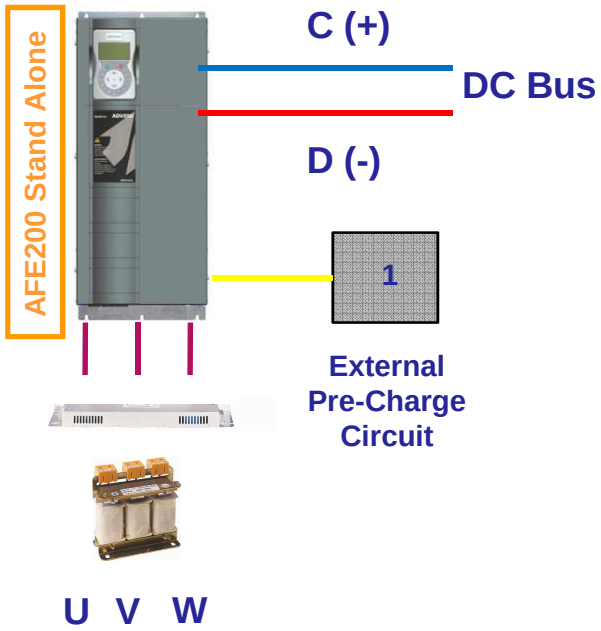
TECHNICAL & ECONOMICAL Advantages

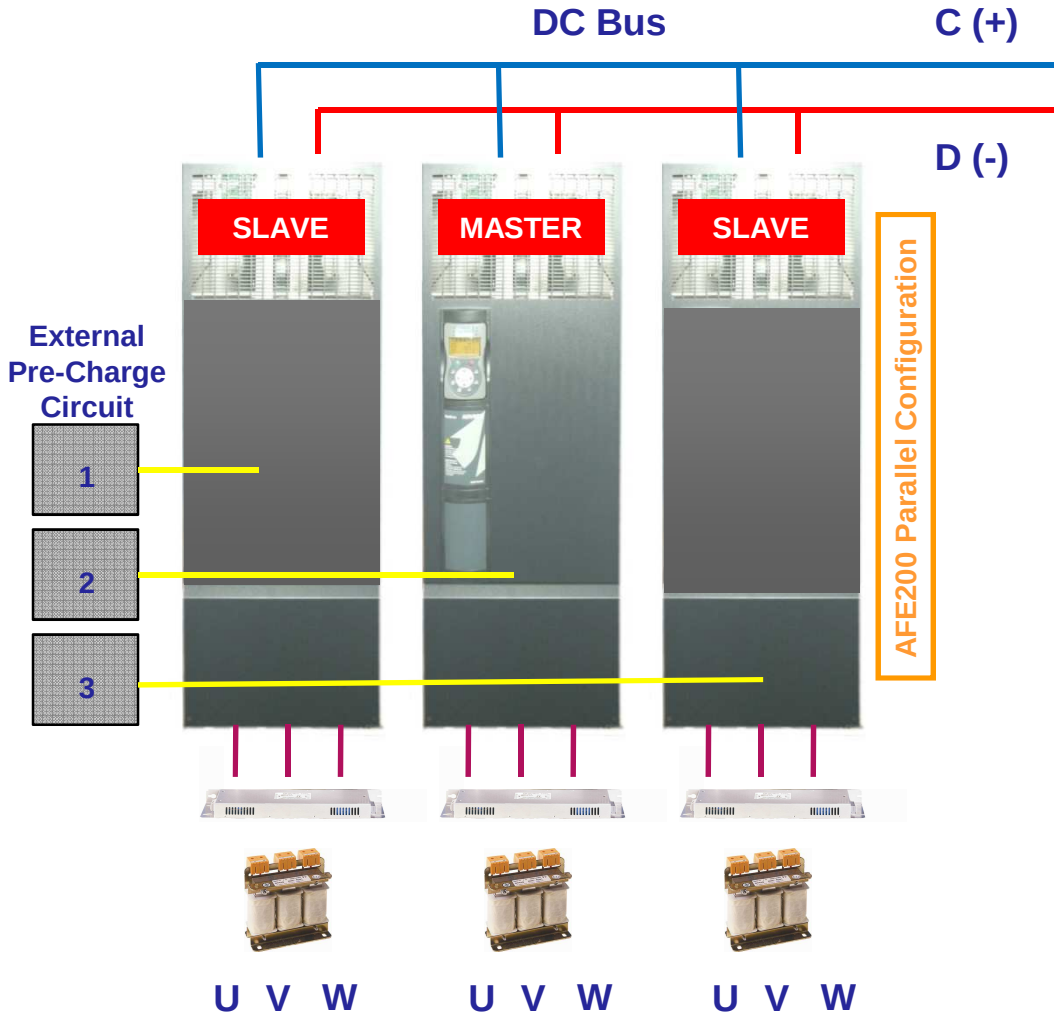
- **Energy savings & Clean Power** with power regeneration (four quadrant)
- Braking resistors are not use, this **save cabinet space and reduce the heat loss**
- **Low input current harmonic distortion** < 5%, clean power
- Input line **power factor** is maintained near to **unit cosfi ≈ 1**
- **Steady inverter-DC link** voltages
- Line voltage **drop tolerant**
- **High dynamic performance** handling motoring and regenerative power transients

Some Application……

- Metal processes
- Hoisting gear
- Storage/retrieval units
- Transporting equipment
- Centrifuges and separators
- Hoisting winches
- Cranes
- Winders
- Presses
- Weaving machines
- ……

AFE200 – CONFIGURATION of the SYSTEM

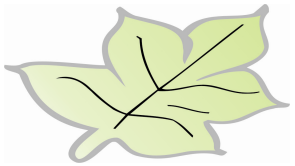




For the use of any AFE200 the following accessories are mandatory

- Line Choke
- EMC Filter
- External Pre-Charging Kit (1 for each power section)

New Line "SIEIDrive AFE200"



The **AFE200** range includes today the following ratings:

- 22kW in Size 3
- 45kW in Size 4
- 90kW in Size 5
- 132kW in Size 6

- 160kW in Size 7
- 200kW in Size 7
- 250kW in Size 7
- 315kW in Size 7
- 355kW in Size 7

- 400kW Parallel configuration
- 500kW Parallel configuration
- 710kW Parallel configuration
- 800kW Parallel configuration
- 1000kW Parallel configuration

Also **AFE200** provide the
DOUBLE OVERLOAD management
allowing advantageous dimensioning of systems

THANKS