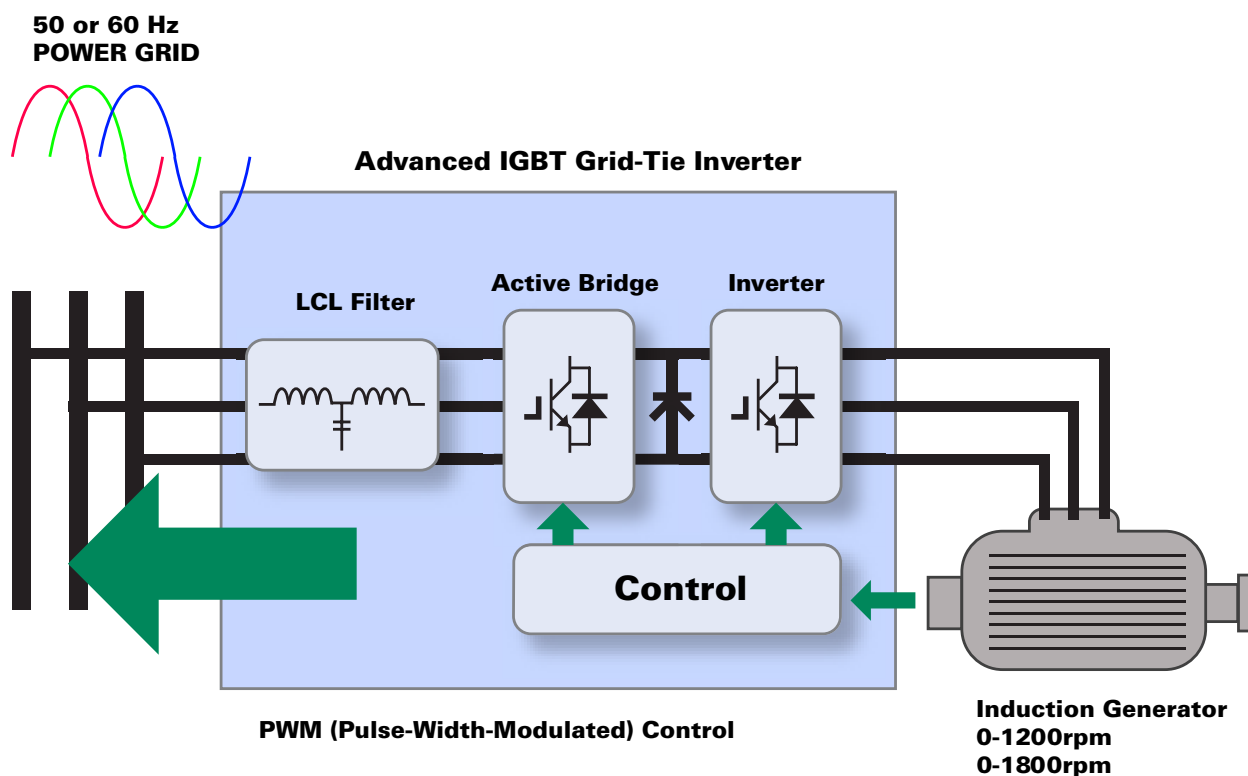


GenTest

Regenerative

Regenerative active loads from 50 kW to 1.5 MW

Active load banks based on a PWM frequency converter in which load regulation is delegated to a PWM converter and power dissipation is based on absorption from the internal or public power grid via the AFE (Active Front End) module. The ALR load is continuously variable in power with a 1% resolution, in cos-phi (from 0 inductive to 1 to 0 capacitive), in frequency (from 40 to 400 Hz), and in voltage (up to 690 V), with a maximum distortion of 3% (IEEE 519 standard guidelines).



The load regulation takes place via a system **PWM frequency converter** appropriately filtered at the input to obtain a distortion level better than that of the public network, **a second PWM converter** for regeneration and synchronization with the public grid (AFE), including a filtration and isolation system for the possible resale of energy to the electricity grid operator

The advantage over a passive load:

- very small dimensions (there are neither dissipative elements nor fans)
- silent (there are no dissipative elements or fans)
- cos-phi variable at will from 0 inductive to 1 and from 0 capacitive to 1
- variable voltage from 0 to 690 V, variable power from 0 to Pmax (resolution 1%), frequency variable between 40 and 400 Hz (special applications for higher frequencies possible)
- waveforms with better distortions than the public network (THD < 3%)
- grid regeneration (the grid acts as the load) with the possibility of reselling the energy to the manager



General characteristics

- Active load banks based on frequency converters, available from 50 kW to 1.5 MW
- Continuously variable power and power factor ($\cos\phi$)
- THD < 3%, 1% resolution
- Includes PLC, filtering, and digital instrumentation
- Three-phase generator connection – star connection, 400 Vac nominal
- Service: 100% continuous – Isolation: 2500 Vac / 1 minute

Dissipative active load – 250 KVA (ALD/275)

- • 250 KW at $\cos\phi = 1$ – Total load power: 275 KVA
- • Power and $\cos\phi$ continuously variable
- • THD < 3%, no reactive passive elements
- • Internal resistive load: 220 KW, stainless steel elements
- • Resistor temp coefficient: 1000 ppm/°C, $\pm 5\%$ tolerance
- • Vertical ventilation with 3 KW axial fan
- • Protections: 1 pressure switch per fan
- • Enclosure: Aluzinc, IP20, dimensions 1600 x 1200 x 2300 mm (incl. electric box)

Control system and instrumentation (ALD/275)

- • Control box in RAL 7035 metal, protected instrumentation panel
- • Auxiliary supply: 400 V, 22 KW via breaker + contactor + motor protector
- • System includes:
 - • LC filter group on generator side
 - • 250 KW AFE (Active Front End)
 - • 10 KVA precharge unit
 - • Braking unit for resistive dissipation
- • Multifunction meter (400 Hz) + 3 x 0.5 class CTs
- • Switchgear includes fuse bases, terminals (bottom-access), IP54 protection
- • Integrated 4 KW cabinet air conditioner

Operator controls (ALD/275)

- • Fixed or remote pushbutton panel
- • Manual potentiometers: resistive, inductive, capacitive loads
- • Start/Stop/Emergency buttons
- • Ventilation ON button
- • Indicator lights: voltage presence, thermal alarms, pressure, thermostat

Measurement instrument – Model A2000

- • Displays: 4 LED indicators for simultaneous parameters
- • Displays 9-digit energy reading across 2 LED fields
- • Measurements: voltage, current, power (P/Q/S), $\cos\phi$, frequency, THD (up to 15th)
- • Serial interfaces: RS485, RS232
- • Analog outputs: 2 programmable (–20 to +20 mA / –10 to +10 V)
- • Digital outputs: 2 SPDT relays
- • Power supply: 115/230 V AC – IP54 front / IP20 rear
- • 144 x 144 x 59.1 mm

PLC Control Module – MCR

- • Siemens S7-313C with:
- • • 3 AO: setpoints (R, L, C) 4–20 mA
- • • 2 DO: Start / Stop commands
- • • 3 AI: feedback (R, L, C loads) 4–20 mA
- • • 3 DI: running status, alarm, emergency stop
- • Communication: Profibus or MPI
- • Memory areas for exchange with external PLCs or operator terminals

Regenerative active load – 275 KVA (ALR/275)

- • 220 KW at $\cos\phi = 1$, same benefits as ALD/275 plus:
- • Energy regeneration to grid with resale option
- • Dual AFE: 1 on generator, 1 on grid side
- • Grid synchronization + transformer for isolation/resale (230 KW)
- • Lower footprint (2000 x 1000 x 2100 mm), IP54, no fans, silent

Smaller variants

- • Dissipative model ALD/150 – 150 KVA (120 KW), dimensions 800 x 1200 x 2100 mm
- • Regenerative model ALR/150 – 150 KVA (120 KW), dimensions 1200 x 500 x 2100 mm