

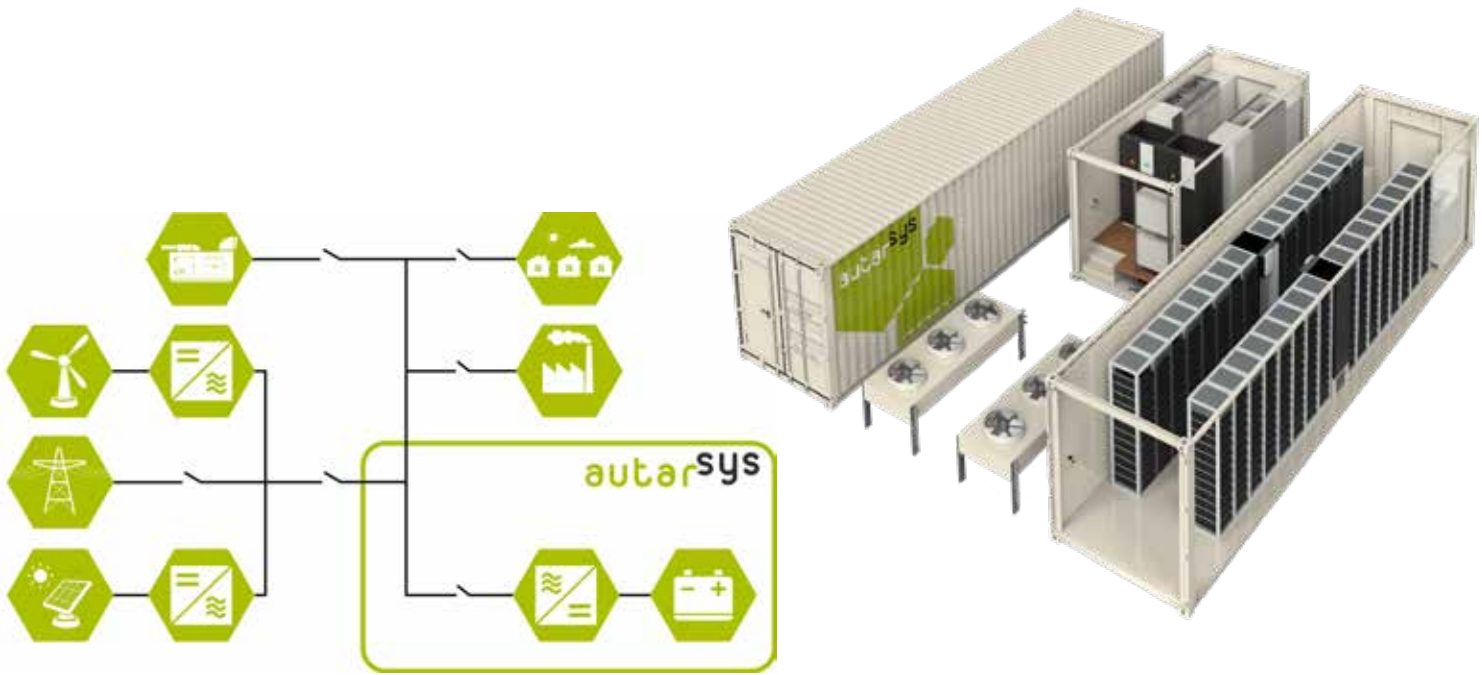
Large Energy Storage Systems



Product Sheet

Making renewables the power supply of the future





The Autarsys Energy Storage System (ESS) Nucleon has modular design and acts as a control and communications unit for one or more containers which include batteries and inverters. Modularity also means the system can work with several power ratings of different energy capacities, optimizing for the most economic and ecological solution for every project.

Like all Autarsys ESS, the Medium:

- Serves a variety of on-grid and off-grid applications, and
- Can operate in three-phase electrical power systems.
- The system’s inverter design allows customers to have a stable supply of voltage with constant frequency.
- Battery and inverter suppliers offer an extended warranty of up to ten years, because Autarsys designs optimal operating conditions for its electronics.
- The air conditioning system operates at temperatures of up to 55 °C to cool the battery system.
- The system integrates energy sources, like renewable (e.g. photovoltaic, wind, biogas) and conventional (e.g. diesel) sources and offers project-specific energy management functions.

The Autarsys ESS Nucleon is designed for large utility scale projects. It is easily scalable on the MW+/MWh+ level with shorter lead times.

CONTROL	ENERGY MANAGEMENT	MONITORING	SERVICE
Frequency control (P(f))	Renewable (e.g. sun, wind), conventional (e.g. diesel) energy sources	Actual/historical operating data	User admin services, including record keeping of interactions
Voltage control (Q(U))	Optimal use of distributed energy sources	Records power data necessary for all component warranties	Alarm chain, with various escalation levels, in cases of faults, fires, etc.
Harmonic compensation	Direct communication between renewable/conventional sources and the ESS	Control and monitoring via HMI, local and per remote access	Record-keeping of all technical events and ESS data



- 1 Heat Exchanger cabinet
- 2 Battery inverter
- 3 AC connections
- 4 Control cabinet
- 5 Air Conditioning system
- 6 UPS

System-Container

Power Specifications

Rated power [kVA]	≤ 3325
AC voltage [V]	≤ 480 ± 10%
Input DC voltage range [V]	655-1450
Phases	3 + N(optional)
Rated current [A]	≤ 4000
Peak current (1s) [A]	≤ 5660
Frequency [Hz]	50/60
Power factor correction (PFC)	-1 to +1 lagging and leading
THD _U [%]	< 2
Inverter efficiency [%]	> 97.5
Operating temperature ¹ [°C]	-10/+50
Dimensions (LxWxH) [m]	12.12x2.44x2.90
Max. weight [t]	up to 17

Application

	Standard	Optional
Off-Grid	✓	
On-Grid	✓	
Black start capability		✓
Islanding		✓
Fuel save		✓
Energy management	✓	
Renewable control mode ²		✓
Arbitrage / Load shifting		✓
Frequency regulation (P(f))		✓
Voltage stabilization (Q(U))		✓
Harmonic compensation up to 5 ^{1st}	✓	
Reactive power compensation		✓
UPS functionality		✓

Interface

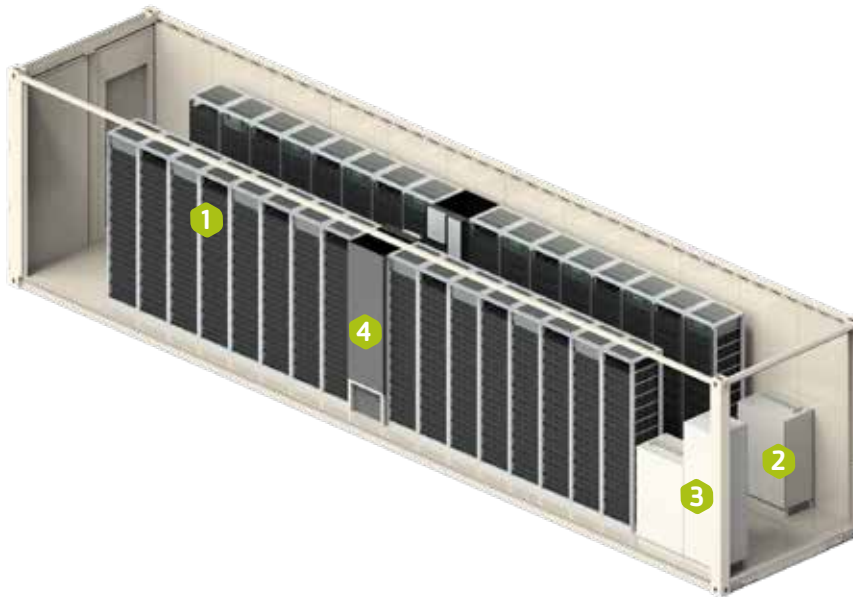
Touch display	✓
Data monitoring (SCADA/HMI)	✓
Ethernet (LWL optional)	✓
Modbus	✓
GMS (GPRS) / Satellite communication	✓

Standard (additional available on request)

EN 61000-6-2, EN 61000-6-4, CE-Conformity

Installation Requirements

Location	Outdoor
Max. altitude above MSL [m]	1000
Noise emission (10m distance) [dB]	<60



- 1 Battery racks
- 2 DC cabinet
- 3 Control Cabinet
- 4 Air Conditioning system

	Energy cell (0.5 C)	Medium cell (1 C)	Power cell (2 C)
Power Specifications			
Nominal capacity [kWh]	≤ 3652	≤ 3652	2620 ≥ ≤ 1572
No. of strings	≤ 40	≤ 40	40 ≥ ≤ 24
Operating temperature [°C]		-10/+50	
Voltage range string [V]	844.8-1095.6	844.8-1095.6	818.4-1082.46
Continuous current string [A]	47	94	170
Dimensions (LxWxH) [m]		12.2x2.44x2.90	
Weight max. (w/o batteries) [t]	≤ 36.5 (11)	≤ 37 (11)	≤ 30.5 (10.5)
Battery			
Cell chemistry		NCM	
Cell manufacturer		Samsung SDI	
String design	264S1P	264S1P	264S1P
Cell capacity	94Ah	94Ah	68Ah
Specified cycles ¹²		6000	
Calendar life ¹²		20	
Operating temperature [°C]		23 ±5	
Efficiency [%]	>96	>95	>93
Standard (additional available on request)			
EN 61000-6-2, EN 61000-6-4, CE-Conformity			
Installation Requirements			
Location		outside	
Max. altitude above MSL [m]		1000	
Noise emission (10m distance) [dB]		<60	
Details:			
<ul style="list-style-type: none"> • ¹ Full cycle per day • ² Depends on the application 			



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