Certificate No:
TAE00004ED

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Low Voltage Switchgear and Control Gear Assemblies

with type designation(s)
SEnergy SOTEC

Issued to
Siemens Energy Co.,Ltd
Shanghai, **China**

is found to comply with
DNV rules for classification – Ships, offshore units, and high speed and light craft

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Rated voltage (V)	**690**
Rated current (A)	**Up to 6300**
Rated frequency (Hz)	**50/60**
Degree of protection	**IP42 / IP54**

Issued at **Hamburg** on **2021-12-08**
This Certificate is valid until **2026-12-07**.
DNV local station: **Shanghai**

Approval Engineer: **Harald Amberger**

for **DNV**

Arne Schaarmann
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.

Product description

SEnergy SOTEC low voltage power switchboard for Circuit breaker/Contactor/Motor starter/Control circuit device.

Rated insulation voltage (Ui):	1000 V
Rated impulse voltage (Uimp):	12 kV
Rated operating voltage (Ue):	690 V
Rated current main busbar (In):	6300 A (4500A IP54)
Rated current busbar PD Board (In):	5500 A (4500A IP54)
Rated current vertical busbar MD/FD Board (In):	2000 A (1540A IP54)
Rated frequency:	50-60 Hz
Short circuit current main busbar	
Rated short time withstand current (Icw):	100 kA/ 1 sec.
Rated peak with stand (Ipk):	220 kA
Short circuit current busbar PD Board	
Rated short time withstand current (Icw):	100 kA/ 1 sec.
Rated peak with stand (Ipk):	220 kA
Short circuit current vertical busbar MD/FD Board	
Rated short time withstand current (Icw):	80 kA/ 1 sec.
Rated peak with stand (Ipk):	176 kA
Rated ingress protection:	IP 42 / IP54
Dimensions (Max.):	Height: 2250 mm
	Width: up to 1200 mm
	Depth: up to 1400 mm
Further ratings acc. manufacturer documentation.	

Manufactured by Siemens Energy Electric Equipment (Changzhou) Ltd.

Application/Limitation

The type approval covers system design principle in accordance with IEC 61439-1 and 2

Equipment's such as circuit breakers etc. are not covered by this type approval.

A DNV product certificate for the specific switchboard is required in each case.

The ingress protection to be selected in accordance with the location as stated in the Rules.

Documents and drawings for the actual application as stated in the Rules Pt.4, Ch.8, Sec. 1, Table 2 except E150, shall be submitted for approval in each case by the end manufacturer.

Vertical bus bars may be rated based on the reduced short-circuit stress occurring on the load side of the respective short circuit productive device as stated in IEC 61439-1 item 8.6.1, but not less than 60 % of the rating for the main bus bar and only for single outgoing consumers protected by a fuse or short-circuit limiting breaker without time delay.

Type Approval documentation

Tests carried out

Type tests in accordance with IEC 61439-1 and 2. Internal arc test, Vibration test.

Marking of product

Makers name plate with type and key data in accordance with the DNV Rules Pt.4, Ch.8, Sec.4 [1.1.7]

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval are complied with and that no alterations are made to the product design or choice of materials.

The main elements of the assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Routine Tests (RT) checked (if not available tests according to RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Periodical assessment is to be performed after 2 years and after 3.5 years. A renewal assessment will be performed at renewal of the certificate.

END OF CERTIFICATE