TECHNO MODULE

MODULAR ELSTEEL ENCLOSURES

www.elsteel.com

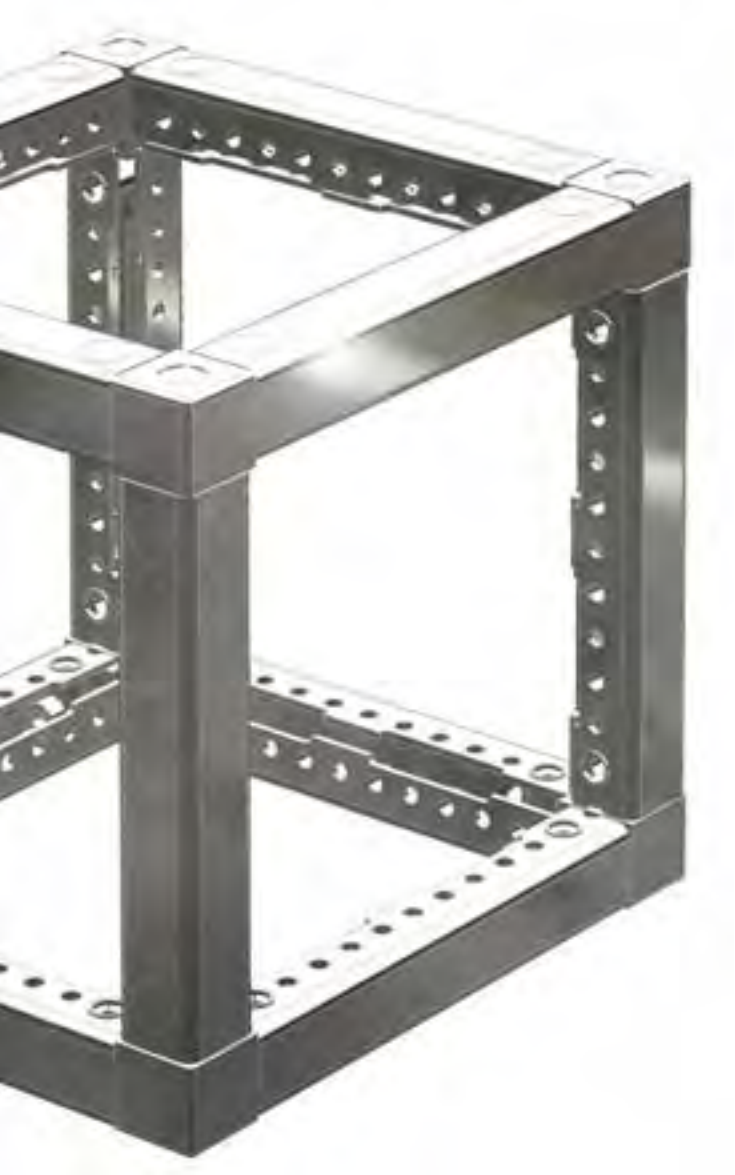
The best technical solution at the best possible price

INTRODUCTION

ELSTEEL is a world leader in the design, development and manufacture of modular panel enclosures.

This is built on a strong foundation of 30+ years of operations supported by continual investment in research and development. Our objective is as simple as our products: To manufacture the world's best enclosures at the best possible price.

ELSTEEL delivers enclosure solutions for every build. Whether it be a small Terminal Box or the largest custom designed distribution panel for an Olympic Size Stadium, ELSTEEL delivers the solution.



TECHNO MODULE

This brochure explains the advantages of Techno Module and how it can be used.

Techno Module is a patented 200mm grid modular system for the switchboard manufacturing industry, successfully tested to IEC 61439-1.

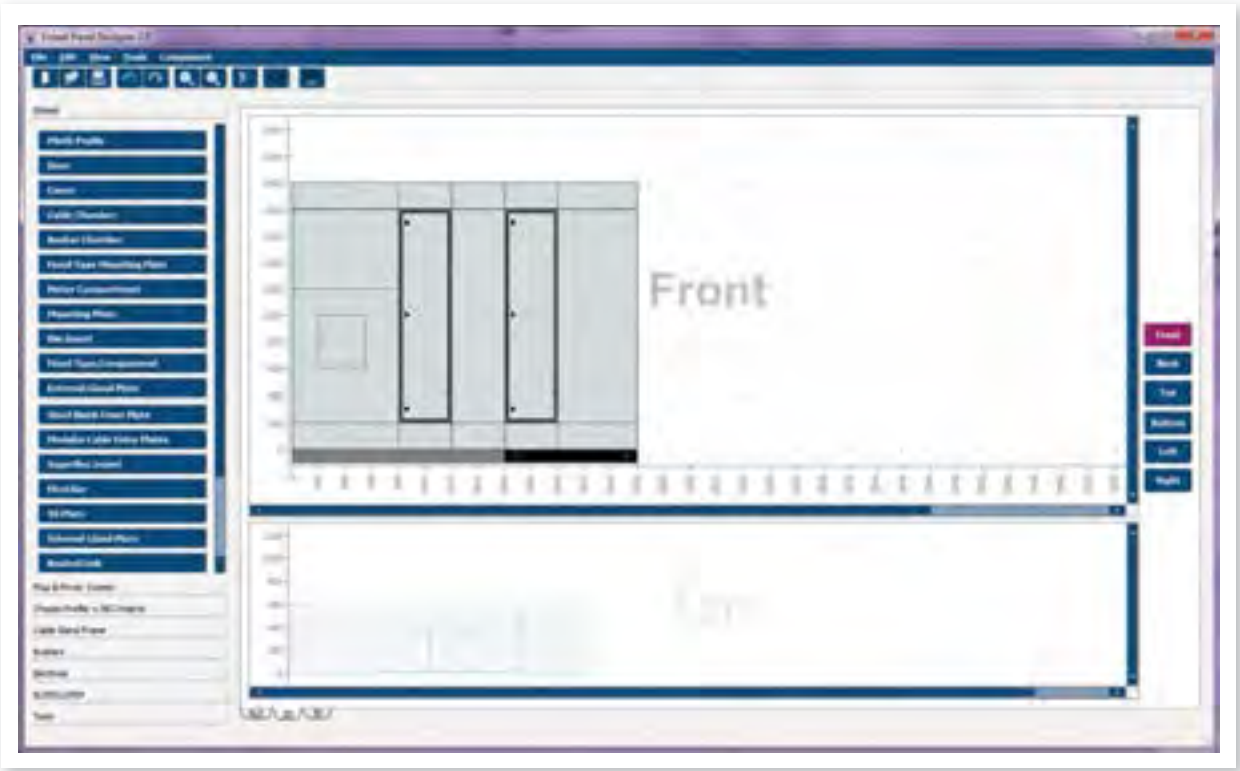
It is the result of many years of work in research and development, and continuous testing at recognised test stations around the world.

Techno Module is an open system that can accomodate all major brands of breakers, contactors, relays etc.

THE ELSTEEL PANEL DEESIGNER

Data Entry

Select and draw



The first step in designing a successful distribution or motor control center is planning with the ELSTEEL Panel Designer (EPD).

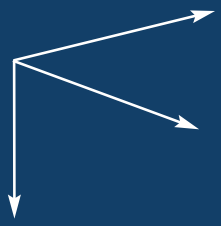
Many panel builders spend a lot of time quoting projects. But in most cases it's only 5-10% of the projects they quote that they actually get. So in order to save time in the office and spend more time with the customer, we have created a free software that allows the sales rep or engineer to design panels quickly! Within 5-15 minutes you can draw a panel board and get a BOM including copper and electrical items.

The program is compatible with both Excel and AutoCad, and you also get temperature rise calculations.

Spend less time calculating and more time selling with EPD!

FRAME WORK

The Techno Module system is modular in steps of 200 mm in all three directions.



That means that there is no limit to the possibilities and positions.

The strong framework is made from 2mm electrogalvanised powder coated steel profile.

It forms a 25mm grid and can be arranged in an unlimited number of ways.

It rests on a modular base frame which incorporates all facilities for dividing and transportation.

Smaller panels up to 1000 Amps can be built in the economical Techno Module Light DB2.

BUSBARS

The busbar system incorporates the use of 10 mm thick flat bars.

Either copper or aluminium.

The holders are made from specially formulated plastics, and can be mounted in any position inside the framework.

The holders are made from specially formulated plastics, and can be mounted in any position inside the framework.

During countless type-testing, up to 7100 Amp 100 kA/ 1sec, the holders have been tested rigorously again and again.

The holders do not incorporate bolts for clamping but allow the bars to slide during heating and cooling. This eliminates the risk of loose bolts and nuts.

PLUG & POWER

Plug & Power is a revolutionary way of making distribution boards and motor control centers.

The panel board can be rearranged indefinitely while still supplying power to your existing equipment.

Both consultants and end-users have to accommodate the rapid development in medical equipment, CNC machines and process plants etc, during new investments in construction.

With Plug & Power, consultants are no longer tied to strict specifications.

Last-minute modifications can be made at any point during assembly, installation and use.

Shut-down and out-of-hour labour costs for modifications are now a thing of the past.

Patented

PLUG & POWER

Removable units - when you need to add or replace a breaker on a live panel !

Incoming connections are plug type.

Outgoing connections are fixed type.

Specifications of Plug-in

Design verified IEC 61439

Arc fault IEC 61641

Any unit size, fitted anywhere in the systaem

No tools needed for insertion or removal of units

New breakers can be added anywhere in the panel

Fastest way of construction due to pre-assembled units

Locked position without screws

Breakers or starters can be replaced

Cable termination left or right

Fully insulated busbar optional

Dual purpose, breaker or motor starter

Plugs directly to the busbar

Any breaker brand can be used

5 pole incoming

DOL or ⅄ Δ

Busbar rating 80kA/ 1 sec.

Delivered as a fully assembled unit

Withdrawable units - make fast replacements in an emergency or save the cost of production stand-still.

Incoming connections are plug type.

Outgoing connections are plug type.

Specifications of Withdrawables

Design verified IEC 61439

Arc fault IEC 61641

Any unit size, fitted anywhere in the system

All cables are terminated in the side cable compartment

No tools needed for insertion or removal of units

A unit is replaced in seconds !

Heavy duty SS handles and mechanism

Pull, plug, release and test functions, all in one handle

All electrical components can be 'lifted' out of the units

Plugs directly to the busbar

Safety lock while removing the unit

Optional shutters

Can have termination left/right or back

Lockable in 'on' and 'service' position

Fully insulated busbar optional

Any breaker brand can be used

5 pole incoming

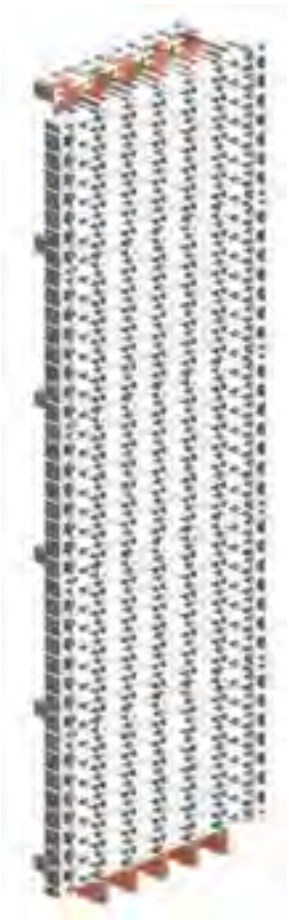
DOL or $\curlywedge\,\Delta$

Busbar rating 80kA/ 1 sec.

MODBUS or PROFIBUS

Delivered as a fully assembled unit

PLUG & POWER



The vertical bus bars are mounted in a flat holder which doubles as a form 4 separation plate and plug-in base. We call it the motherboard. These motherboards are mounted from top to bottom in each section, allowing connections with the bus bars wherever you choose to insert the withdrawable or removable units.

Each section can carry 1250 Amps, allowing plenty of space for extra units once the panel is installed.

When designing your future Plug & Power panel we recommend having at least 30% free extra space for expansion; allowing, for example, that extra scanner at the hospital, the new shop at the mall, ice-cream factory compressors, or even the extra pump on the oil platform.

Now you have the freedom to Plug in and Power up anything you need, anywhere you like in the panel, at any given time.

Plug & Power has furthermore been designed for quick and easy assembly, saving not only the panel builder a considerable amount of time in the workshop by simply ‘plugging-in’, but also the company a huge amount of expense. Breakers/motor starters can be conveniently pre-assembled on a worktable.

* Plug & Power is patented and a registered trade name owned by Elsteel.

FORM 3 + 4

Highest forms of personal safety as well as protection of materials and environment.

With these separation plates installed it is possible to work in one section of the panel board while the rest of the panel is live.

Separation plates prevent foreign objects or particles (resulting from a short circuit in one section) from contaminating the whole panel, thereby preventing the risk of complete panel damage.

ARC FAULTS

Arc Filters have been included in the design of the separation plate. Once you install the standard chimneys your enclosure is arc safe.

This means that no flames or solid objects will explode towards the operator in front of the panel.

TESTING + FINISH

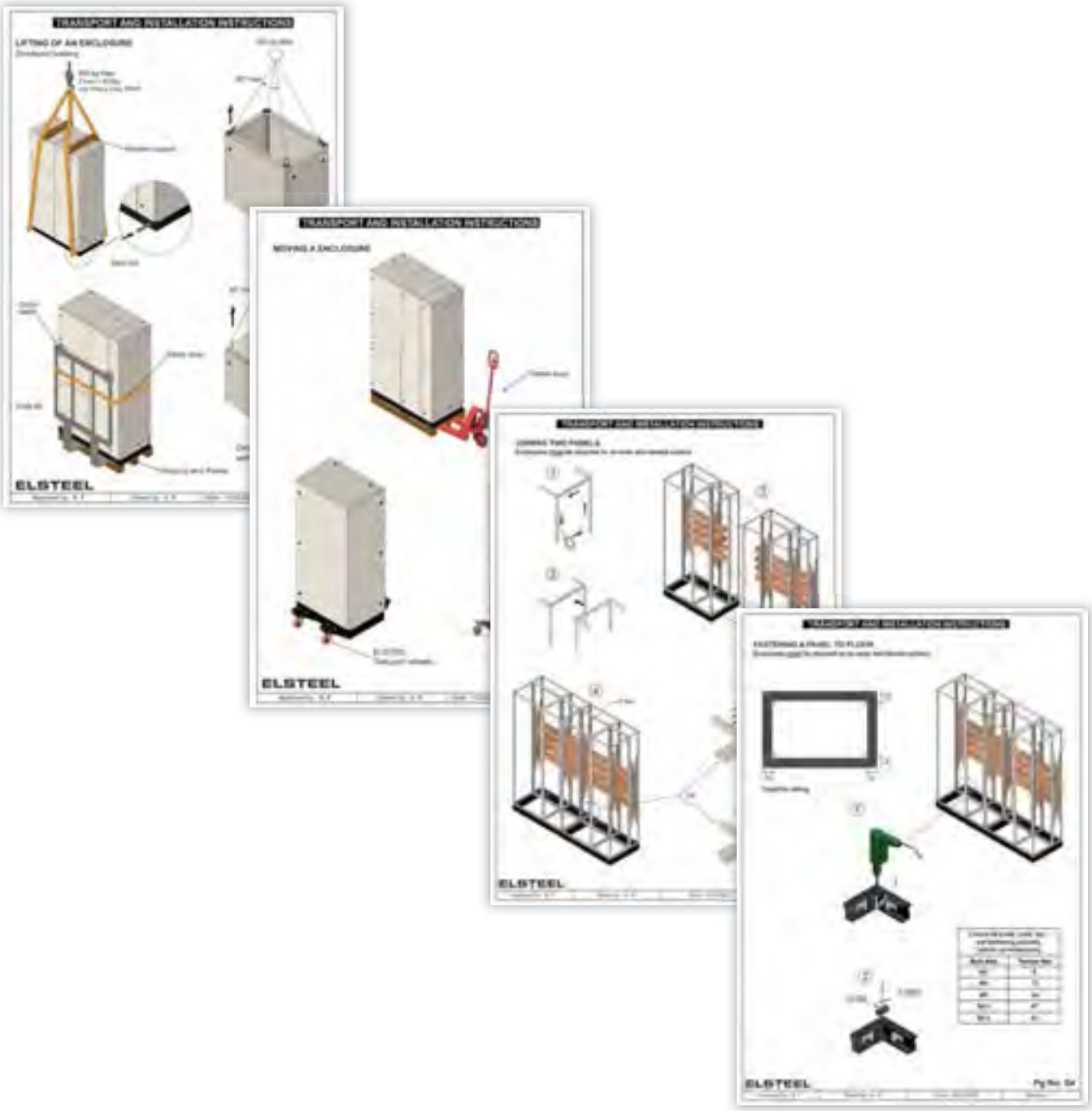
Each and every panel is tested by the panel builder/integrator in accordance with specifications from the Constructors Manual, and the routine test specified in IEC 61439-1, before shipment.

The surface of the panel is powder coated in RAL 7035 fine textured finish. It's easy to maintain and will look 'as new' for many years.

Phosphated and chromepassivated pretreatment makes the panel suitable for tough climates and conditions. Degree of protection up to IP55.

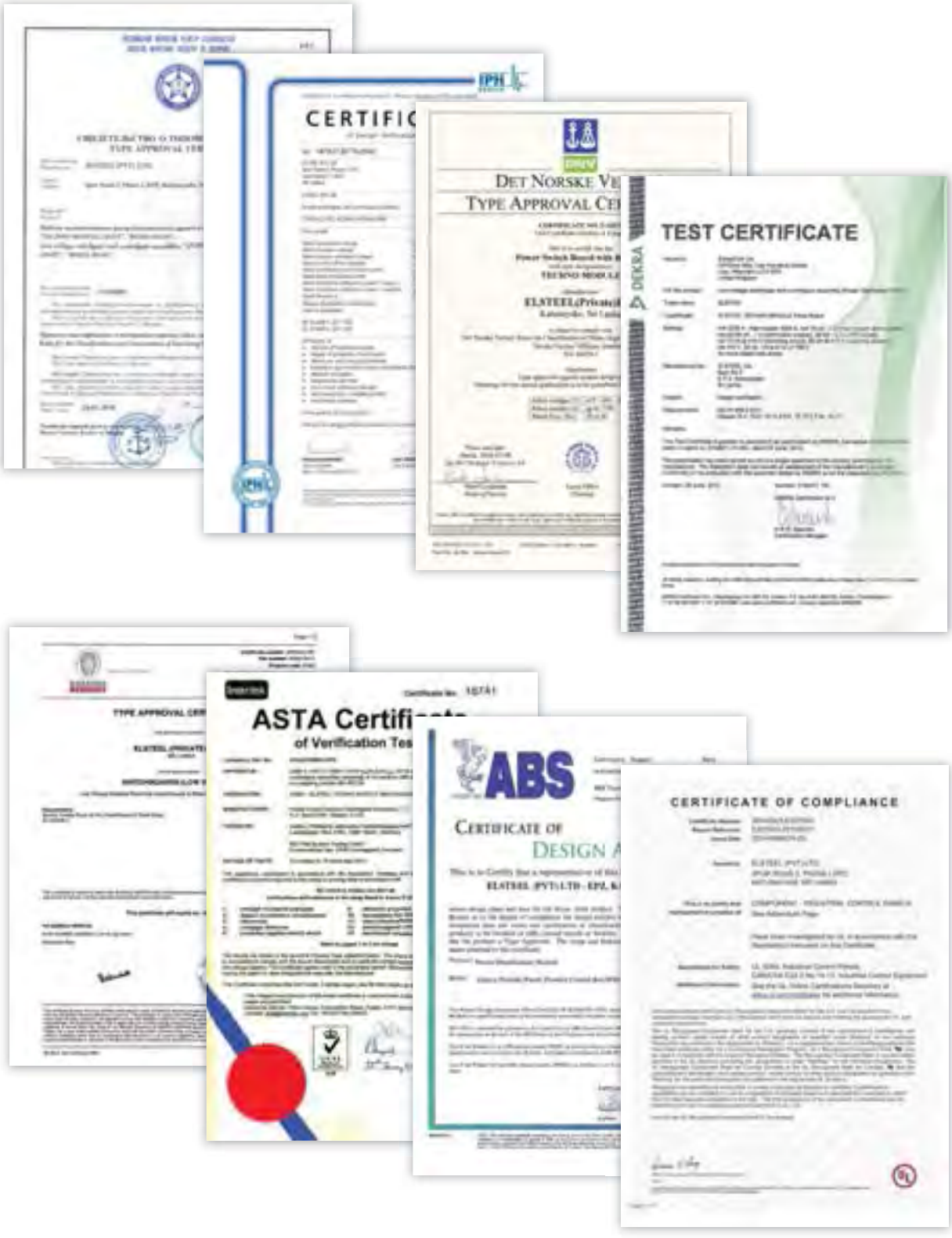
After commissioning, the panel is easily expanded and breakers or motor starters can be removed or fitted while it is live.

INSTALLATION COMMISSIONING



Each and every ELSTEEL enclosure is tested in accordance with IEC 61439-1, not only at the test station but also by the panel builder.
Instructions are delivered with each panel explaining in detail how to transport and start the panel.

CERTIFICATION



TEST PERFORMED	CERTIFICATION AUTHORITY	CERTIFICATE REFERENCE
Techno Module Panels Comply to IEC 60439-1 / IEC 61439-1 & 2		
01. 400A Design Verified with Schneider breakers	ASTA	18361 A
02. 400A Design Verified with Schneider breakers	ASTA	18047
03. 400A type tested with LS breakers (Instant Panel Light)	ASTA	17013
04. 800A Design Verified with Schneider breakers	ASTA	18363 A
05. 800A Design Verified with Schneider breakers	ASTA	18048
06. 800A Design Verified with ABB breakers	ASTA	17545
07. Additional temperature rise test for ASTA-17545 test	IPH	3345.2091256.0969
08. 800A type tested with LS breakers (TM Light Panel)	ASTA	17012
09. 800A type tested with MG breakers (TM Light Panel)	ASTA	16899
10. 1000A Design Verified with GE breakers (TM Light Panel)	IPH	1819.2130777.0451
11. 1600A Design Verified with Schneider breakers	ASTA	18612 A
12. 1600A Design Verified with Schneider breakers	ASTA	17864
13. 1600A Design Verified with ABB breakers	ASTA	17544
14. Additional temperature rise test for ASTA-17544 test	IPH	3345.2091255.0986
15. 1600A type tested with LS breakers	ASTA	17011
16. 1600A type tested with GE breakers	ASTA	16149
17. 2000A type tested with Siemens breakers	ASTA	16783
18. 2000A Design Verified with Terasaki breakers	DEKRA	2148971.101
19. 2500A Design Verified with GE breakers	IPH	1819.2130776.0500
20. 2500A Design Verified with ABB breakers	ASTA	18741
21. 2500A Design Verified with Schneider breakers	ASTA	18362 A
22. 2500A Design Verified with Schneider breakers	ASTA	18613 A
23. 2500A Design Verified with Schneider breakers	ASTA	18046
24. 2500A Design Verified with Schneider breakers	ASTA	17865
25. 2500A Design Verified with ABB breakers	ASTA	18050
26. Additional Temperature rise test for ASTA-18050 test	IPH	3457.2100397.0221
27. Additional Temperature rise test for ASTA-18050 test	IPH	3457.2100397.1032
28. 2500A Design Verified with ABB breakers	ASTA	17543
29. Additional temperature rise test for ASTA-17543 test	IPH	3345.2091254.0982
30. 2500A type tested with LS breakers	ASTA	17010
31. 2500A type tested with GE breakers	ASTA	16150
32. 2500A type tested with MG, ABB, Siemens, Jean Moeller breakers	IPH	513.228.6.384
33. 2500A temperature rise test & short circuit test	IPH	170.265.2.230
34. 3200A Design Verified with ABB breakers	ASTA	18740
35. 3200A Design Verified with MG breakers	ASTA	17615
36. 3200A Design Verified with Terasaki breakers	DEKRA	2148971.100
37. Additional temperature rise test for ASTA-17615 test	IPH	3467.2100399.0218
38. 3200A type tested (Al Busbar) with ABB breakers	CPRI	S2060728
39. 3200A Short circuit test (Al Busbar) with ABB breakers	CPRI	S2060729
40. 3200A temperature rise test & short circuit test	ASTA	12798
41. 3500A Design Verified with Schneider breakers	ASTA	18868
42. 4000A Design Verified with Schneider breakers	ASTA	18614 A
43. 4000A Design Verified with Schneider breakers	ASTA	17756
44. 4000A Design Verified with ABB breakers	ASTA	17542
45. Addtional temperature rise test for ASTA-17542 test	IPH	3345.2091253.0999
46. 4000A type tested with Terasaki breakers	IPH	1819.1206.5.668
47. 5000A type tested with ABB & Jean Moeller breakers	IPH	1513.832.0.468
48. 5000A temperature rise test & short circuit test	ASTA	12890
49. 6300A Design Verified with ABB breakers	ASTA	17541
50. Additional temperature rise test for ASTA-17541 test	IPH	3345.2091252.1010
51. 6300A type tested with ABB breakers	IPH	1819.1061.3.431
52. 7100A type tested with ABB breakers	IPH	1819.1061.3.434
53. Short circuit test 80kA/1sec Fully Withdrawable busbar holder (new)	IPH	1819.2130089.0040
54. Short circuit test 80kA/1sec Plug & Power rear busbar holder	IPH	1819.2121286.0680
55. Short circuit test 50kA/3sec for OMH4 busbar holder with 2×10×40 Cu	IPH	1819.209103
56. Short circuit test 65kA/1sec for UBH busbar holder with 1×50×10 Cu	TÜV	19300462 001
57. Short circuit test 63kA for Power Cassette, FTM & Flexi Cu	TÜV	19300462 004, 005
58. Short circuit test 100kA/1sec for 4×10×150 Cu	ASTA	15216
59. Degree of protection IP55 for TM panels	TESTSAFE	29539
60. 12kV impulse test for OMH4, BH, MAB busbar holders	IPH	1819.2130089.0218

TEST PERFORMED	CERTIFICATION AUTHORITY	CERTIFICATE REFERENCE
Techno Module Panels with insulated busbar Comply to IEC60439-1 / IEC61439-1&2		
01. Selected Verif. test for Insulated busbar 2×10×40 Cu with OMH4/ MAB	IPH	1819.2120714.0861
02. Selected Verif. test for Insulated busbar 2×10×80 Cu with OMH6	IPH	1819.2120714.0836
03. Selected Verif. test for Insulated busbar 3×10×100 Cu with OMH6	IPH	1819.2120714.0574
04. Selected Verif. test for Insulated busbar 6×10×80 Cu with OMH8	IPH	1819.2120714.0573
05. 12kV impulse test for OMHI4 & MABI busbar holders	IPH	1819.2130089.0218

TEST PERFORMED	CERTIFICATION AUTHORITY	CERTIFICATE REFERENCE
Techno Module Panels Comply to other Standards		
01. 400KVAr Capacitor bank with EPCOS according to IEC 61921/ IEC 61489-1	ASTA	18738
02. Internal Arc fault test according to IEC 61641 & AS/NZS 3439.1 : 2002	TCA	102601 102380/ 102378
03. Internal Arc fault test according to AS/NZS 3439.1 : 2002	TÜV	19300462 002 19300462 003 19300462 006 19300462 007
04. Cold & Damp Heat tests according to IEC 60068-2-1 & 60068-2-30 respectively	RST	P50-11-0101e
05. Vibrations test according to IEC 68-2-6 & IEC 68-2-36	VIPAC	302649-01
06. Seismic test according IEC 68-3-3	VIPAC	302649-02
07. Lloyd's Register type approval certificate for marine, offshore and industrial applications of stainless steel enclosure & 19"cabinets	LR	02/70003 (E2)
08. ABS type approval certificate for shipboard and associated marine & offshore installation	ABS	08-SG366750-PDA
09. Russian Maritime Register of Shipping (RS) Type approval certificate for Marine use	RS	10.00001.270
10. Bureau Veritas (BV) Type Approval Certificate for Marine use	BV	22875/A0 BV
11. Det Norske Veritas (DNV) Type Approval Certificate for offshore use	DNV	E-10273
12. Germanischer Lloyd (GL) Type Approval Certificate for offshore use	GL	19479-11 HH
12. Mark for selected TM Panel components	UL	20130305-E 207550

Also by ELSTEEL

Box

TM Light

19" Super Frame

For more certifications and latest updates please see www.elsteel.com

MATERIAL SPECIFICATION

Techno Module	
Base Frame	2mm mild steel powder coated in black (RAL 9005)
Corners	Aluminium die casted powder coated in Light grey (RAL 7035) Fine tex.
Corner Bar / Cross Bar	Electro galvanized 2mm powder coated in Light grey (RAL 7035) Fine tex.
Doors / Covers	Mild steel 1.5mm powder coated in Light grey (RAL 7035) Fine tex.
Doors with window	Mild steel 1.5mm powder coated in Light grey (RAL 7035) Fine tex. & 4mm Tempered Tinted glass
Door Stabilisor	Mild steel 20×20×1.5 square pipe powder coated in Light grey (RAL 7035) Fine tex.
Door with cable glands	Mild steel 1.5mm powder coated in Light grey (RAL 7035) Fine tex.
Mounting Plate	Mild steel 2mm powder coated white (RAL 9010) / 2mm Alu-zinc
Separation Plates	Mild steel (2×2, 2×4, 2×6, 4×4, 4×6,) 1 mm painted white (RAL 9010)
Flat Cover	Mild steel 1.5mm painted in Light grey (RAL 7035) Fine tex.
Panel Assembly Kit	Mild steel 3mm zinc plated
Cable Holder	Mild steel 1.5mm painted white (RAL 9010) for up to 600mm and Mild steel 2mm painted white (RAL 9010) for 600mm & above
Lifting Eyes (14380)	Mild steel 3mm powder coated in black (RAL 9005)
Lifting Eyes (14390)	Mild steel 3mm zinc plated
Wall Mounting Brackets	Mild steel 3mm powder coated in Light grey (RAL 7035) Fine tex.
Transport Wheel Holder	Mild steel 3mm powder coated in black (RAL 9005)
Busbar Holder	Self extinguishing fibre material / reinforced PC
Fish Plate	Copper 10mm
H to V connectors	Copper 10mm
Busbar tap off - 21000	Dia 10mm zinc plated
- 21010 & 21020	Copper 5mm
- 21030	Mild steel 3mm zinc plated
Bracket for earth conductor	Mild steel 3mm zinc plated
Copper Spacer	Copper Dia 30
Instant Pane - Casing	Mild steel 1.5mm powder coated in Light grey (RAL 7035) Fine tex.
- Doors	Mild steel 1.5mm powder coated in Light grey (RAL 7035) Fine tex.
- Mounting Plate	Mild steel 2mm powder coated in white (RAL 9010) / Alu-zinc 2mm

Techno Module Light	
- Base frame Light	Mild steel 1.5 mm powder coated in black (RAL 9005)
- Corner bar/ Cross bar Light	Electro galvanized 1mm powder coated in Light grey (RAL 7035) Fine tex.
- Doors / Covers Light	Mild steel 1mm powder coated in Light grey (RAL 7035) Fine tex.
- Instant plate Light	Mild steel 1mm powder coated in Light grey (RAL 7035) Fine tex.
- Gland plate Light	Mild steel 1.5mm powder coated in Light grey (RAL 7035) Fine tex.

REFERENCES

Customer	Product	Country
Olympic Stadium	Main Distribution Panel	Australia
British Aerospace	Main Distribution Panel	Australia
Colt Telecom	Techno Module	Belgium
NATO Headquarters	Techno Module MCC	Belgium
Ministry of Defence	Motor Control Center	Dubai
Giga Gold Refinery	2500A LV Panels	Dubai
Jebel Ali Air Port	Main Distribution	Dubai
Nordbahnhof Berlin	NSHV and GHV	Germany
Alcatel Stuttgart	NSHV and GHV	Germany
National Hospital	4000A Switchboard	Iceland
Eskifjord Ltd	2500A Switchboard	Iceland
Hyundai Motor India Ltd	Techno Module	India
Nokia Mobile Phone Fecility Project	Techno Module	India
Toyota Kirloskar Motor Pvt Ltd	PCC Panels - Techno Module	India
Radisson Hotel	Techno Module/ Form 4	Jordan
Amman East Station	Form 4 Motor Control Center D/O	Jordan
Central Bank of Kenya	Main Board/ Sub Boards	Kenya
Commercial Bank of Africa	Main Board/ Sub Boards	Kenya
Multilinx Factory	Distribution Boards	Maldives
SAVANNAH Sugar Estate	Techno Module and MCC	Mauritius
Ulvesund Elektro AS	1600A Main Panels	Norway
Power Plant Mar Kraftverk	Motor Control Center	Norway
Qatar International Stadium	Distribution Panel	Qatar
West Bay Cooling System - Phase 1	Form 4 Panel 7000A	Qatar
SAB Miller Beer Factory	Motor Control Center WWT Plant	Romaina
Hydro Tech Enginering	Motor Control Center WWT Plant	Romaina
Esso Deepwater Ltd	Generator Control Panel	Singapore
Shang Ri La Hotel	Techno Module	Singapore
Greenpoint Stadium (2010 World Cup)	Techno Module	South Africa
Coca Cola Dar Es Salaam	Techno Module	South Africa
Barcelona Air Port	Form 4 Motor Control Center	Spain
Jerez Air Port	Form 4 Motor Control Center	Spain
Manchester Air Port	Form 4 Motor Control Center	UK
Nokia	Main Switchboard	UK
International Air Port Doha	Techno Module MCC	UAE
Fujairah	Techno Module MCC	UAE
Brodosplit Shipyard	Marine Panel 6300A	Croatia

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