FAQ'S

Are you AS/NZS 61439 Ready?

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Are you AS/NZS 61439 Ready?

Q: What is the current standard for switchboards in Australia?

- With the new switchboard standard published in May 2016 both AS/NZS 3439:2002, derived from IEC 60439, and AS/NZS 61439, derived from IEC 61439, are considered the current switchboard standard until 2021 when AS/NZS 61439 will supersede the older standard AS/NZS 3439

Q: Why change?

- Designs and market needs for switchboards have evolved over the years with changing technology in circuit breakers and a lot of new circuit breaker brands in the market.

- It is not practical to fully type test every conceivable configuration of assembly produced. Where type testing is not feasible there must be alternative ways of ensuring an assembly meets the minimum required safety and performance criteria. The methods for proving the design of a 'partially type tested assembly' in accordance with AS/NZS 3439.1 are weak and rely entirely on the capability of the metal work fabricator. There is also no standard for assemblies that do not fit within the categories of type tested or partially type tested assemblies.

- The current standard has grey areas leading to subjective interpretations and does not add any value or help to the end customer in specifying the requirements of the assembly that the board builder must follow.

Q: If tests on the assembly have been conducted in accordance with AS/NZS 3439 (IEC60439), is it necessary to repeat them in accordance with the new AS/NZS 61439 (IEC 61439)?

• No, if the conducted test results fulfil the requirements of the new AS/NZS 61439 (IEC 61439) it is not necessary to repeat them. It is necessary to test only the additional verification that has been introduced by the new standard.

Q: When will the new standard be applicable?

The new switchboard standard AS/NZS 61439 is applicable from May 2016 while construction using the old standard AS/NZS 3439 is allowed until 2021. However, the specifiers and end clients may request that board builders comply with the new standard before it supersedes the old standard.

Q: What's changed?

• The categories of TTA and PTTA have been discarded in favour of a 'design verified assembly'.

• One of the most significant differences was the introduction of 'alternative and equivalent' methods of design verification. This initially appeared to reduce the requirements for actual testing, however this was not the case, as the alternative methods of verification detailed in the standards could only be applied using the basis of a 'reference' design that had been tested.

Q: How do we verify the design?

• Design verification is a prerequisite for all assemblies provided. It is fundamental to ensuring every assembly meets its defined design requirements.

• The three verification options are:

Testing the check

A test is performed on a sample of an assembly or on parts of assemblies to check that the design satisfies the requirements of the applicable assembly standard (performed by the original manufacturer i.e., CUBIC, Elsteel, Legrand, etc.)

Comparing the check (Derivations)

Structured comparison of a design proposal for an assembly, or parts of an assembly, with a benchmark design that has been subjected to the test (performed by original manufacturer i.e., CUBIC, Elsteel, Legrand, etc.)

Evaluating the check (Assessment)

Check of the design rules or strict calculations applied to a sample of an assembly or to assembly parts to demonstrate that the design satisfies the requirements of the applicable assembly standard (performed by the assembly manufacturer or the original manufacturer).

NO	CHARACTERISTIC TO BE CHECKED	ITEM	TEST	VERIFCATION OPTION	
				COMPARISON	EVALUTION
1	Strength of materials and parts	10.2	YES	NO	-
2	Degree of protection (IP)	10.3	YES	NO	YES
3	Clearance	10.4	YES	NO	YES
4	Creepage distance	10.4	YES	NO	
5	Electric shock protection and integrity of protection circuits	10.5	YES	-	NO
6	Integration of connection devices and components	10.6		NO	NO
7	Internal electrical circuits and connections	10.7		NO	YES
8	Terminals for external conductors	10.8		NO	YES
9	Dielectric properties	10.9	YES	NO	-
10	Temperature rise	10.10	YES	YES	YES/NO*
11	Short-circuit resistance	10.11	YES	YES/NO^	NO
12	Electromagnetic compatibility	10.12	YES	NO	YES
13	Mechanical operation	10.13	YES	NO	NO

* For InA > 1600A temperature-rise verifications according to IEC 61439 must be provided by testing and derivations; assessments via calculation are only allowed for assemblies up to 1600A.

^ The short-circuit withstand strength according to IEC 61439 can be certificated by derivation for parts of an assembly if the worst variant was tested before.

Table - 01

Q: Is it possible to manufacture an assembly in compliance with IEC 61439 using enclosure, busbar and circuit breakers from different manufacturers?

- Yes, it is possible but not easy and it is expensive. The panel builder that decides to mix 'elements' from different manufacturers is not only the assembly manufacturer, but becomes the original manufacturer and must perform both the first and the second stage verification (design verification and routine verification). The routine verification is similar to the present routine test and is relatively straightforward. The design verification however includes some characteristics which are easily verified, and others that can only be verified through testing.

Q: Is the verification of the short circuit withstand strength required for all circuits of an assembly?

The new switchboard standard AS/NZS 61439 is applicable from May 2016 while construction using the old standard AS/NZS 3439 is allowed until 2021. However, the specifiers and end clients may request that board builders comply with the new standard before it supersedes the old standard.

Q: What's changed?

No, it is not required for:

• An assembly having a rated short-time withstand current or rated conditional short circuit current not exceeding 10 kA rms.

• An assembly protected by current-limiting devices having a cut-off current not exceeding 17 kA at the maximum permitted prospective short-circuit current at the terminals of the incoming circuit of the assembly.

Q: Who is responsible for what?

The various stakeholders must focus on their responsibilities, whilst working in a team with all the other parties involved in the process.

• Purchasers and specifiers should view an assembly as a 'black box' and specify the inputs and outputs to the assembly and define the interfaces between the assembly and the outside world. To assist in this, the standard includes a check list in annex CC identifying the details that should be provided in a complete specification.

• The original manufacturer (CUBIC, Elsteel, Legrand, etc.) completes design verifications and assumes responsibility for the proper functionality of tested assemblies.

• The assembly manufacturer (e.g., Dara Switchboards) is responsible for the internal configuration and the performance of the assembly relative to the external parameters as defined by the purchaser or specifier. They are also responsible for correctly incorporating the components and ensuring the design meets specification, and is fully verified and fit for purpose.

• The assembly manufacturer, or combination of manufacturers (original manufacturer and assembly manufacturer), is regarded as the expert and they must have sufficient knowledge of assemblies to satisfy this role (accreditations and sufficient switchboard building experience may be considered in evaluating knowledge).

Q: What does this all mean?

• Compliance with the new standard will be compulsory once it supersedes the AS/NZS 3439 series. All assemblies must be shown to meet minimum safety and performance standards by design and routine verification. Many of the alternatives to type testing rely on interpolation from a tested reference design.

Prepared By:

Shanaka Unantenne Bsc. Eng (Hons), MIEAust, MIET, MIEEE,MAICD
Engineering Division - Dara Switchboards

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DARA SWITCHBOARDS *(HEAD OFFICE)*
5 faighstreet
Mulgrave,VIC 3131
Australia

info@dara-switchboards.com.au
1300 DARA SW (1300 327 279)

DARA EXPRESS
PRODUCTION PLANT *(DEPP)*
28 Remount Way
Cranbourne West, VIC 3977

DARA MODULAR SWITCHBOARDS
PRODUCTION PLANT *(DMPP)*
26 Remount Way
Cranbourne West, VIC 3977

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The company provides more than 50 opportunities per year for young engineering and IT graduates to carry out their internship. The company's transformation is in using the latest technology in design and engineering switchboards to our clients special needs in mining, industrial, petrochemical, utility, solar and commercial sectors.

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