

Explosion Protected Machines



TMEIC A WORLD LEADER IN HAZARDOUS AREA APPLICATIONS

TMEIC has Baseefa & other certification to cover the manufacture of the following explosion protected machines.

	Certificate Type	Zone	Certificate	Frame
Baseefa	Exn (Non-sparking) IEC/EN60079-15	2	Series certificate (Constant speed and Variable speed)	Frame 250 to 900
	Exe (Increased safety) IEC/EN60079-7	1	Component certificate	Frame 315 to 1200 Terminal Boxes
		2	Individual electrical certificate for each machine (Constant speed and Variable speed)	No limitation
	Exp (Inner pressurized) IEC/EN60079-2	1 2	Individual certificate for each machine (Constant speed and Variable speed)	No limitation
Exd (Flameproof enclosure) IEC/EN60079-1	1	Series certificate (Constant speed and Variable speed)	Frame 250 to 400	
	2			
TestSafe	Exn (Non-sparking) AS2380.9	2	Series certificate (Constant speed and Variable speed)	Frame 250 to 900
CQST	Exn (Non-sparking) GB3836.8	2	Series certificate (Constant speed and Variable speed)	Frame 250 to 900
		Exd (Flameproof enclosure) GB3836.2	1	Series certificate (Constant speed and Variable speed)
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Notes: ① Zone 1 or Class I, Div. 1:

Zone in which an explosive atmosphere is likely to occur in normal operation.

Zone 2 or Class I, Div. 2 :

Zone in which an explosive atmosphere is not likely to occur in normal operation, and if it occurs it will exist only for a short time.

② Other machines not listed such as large induction machine, wound rotor induction machine, brush-less synchronous machine, can be manufactured based on individually certified design.

③ TMEIC has an Exe certificate for a neutral terminal box in which Current Transformers are installed.

The Current Transformers carry Exe certification, therefore air purging is not necessary for the terminal box.



Related authorities

Authority	Country	Certificates
Baseefa	UK	Exn, Exe, Exp & Exd certification has been issued to TMEIC for machines to be used all over the world.
TestSafe	Australia	Exn certification has been issued to TMEIC for machines to be used in Australia.
CQST	China	Exn, Exe, Exp & Exd certification has been issued to TMEIC for machines to be used in China.
CSA	Canada	Exn certification has been issued to TMEIC for machines to be used in Canada.
KOSHA	Korea	Exn, Exe, Exp & Exd certification has been issued to TMEIC for machines to be used in Korea.
Nanio CCVE	Russia	Exp certification has been issued to TMEIC for machines to be used in Russia.
TIIS	Japan	Increased safety, Inner pressurized & Flameproof enclosure certification has been issued to TMEIC for machines used in Japan.
CESI	Italy	Hydrogen gas test for a prototype machine was carried out according to IEC/EN60079-7&15

Baseefa, TestSafe and CQST Exn certification for variable speed machines

TMEIC currently holds Exn certification for both constant and variable speed application induction machines. Series certification is held for complete ranges of machine designs. Adopting Baseefa and others Exn series certification brings many advantages to our customers.



- ➔ Cost saving through the elimination of individual approval tests
- ➔ Reduced delivery periods by the removal of individual tests
- ➔ Elimination of expensive full load combined testing with inverter saving further time & money
- ➔ Reduced machine costs through use of simpler Exn designs (when compared to alternative inner pressurized or flammable enclosures)
- ➔ Minimized maintenance and operating cost through eradication of the air supply system required for inner pressurized machine designs

TMEIC has obtained Baseefa certification according to ATEX requirements.

- ➔ ATEX is the term used for European Union's Directive 94/9/EC which concerns equipment and protective systems intended for use in potentially explosive atmospheres.
- ➔ Our Baseefa certified machines conform to ATEX requirements.



Special features of the machines

- ➔ Excellent efficiency and energy saving
- ➔ Low vibration and noise
- ➔ High reliability
- ➔ Meet international standards such as IEC, EN, BS
- ➔ Easy installation
- ➔ Quick delivery
- ➔ Excellent data service



TMEIC has successfully passed IEC/EN standard special gas tests eliminating the need for pre-start air purging on all Exn machines up to 11kV and Exe machines up to 6.6kV

Recently it has been recognized that under extreme conditions electrical rotating machinery may present an explosion risk. This is well documented in the “Assessment and representative testing of high voltage machines” article ENV50269 issued in 1997.

Progressively the requirements outlined in ENV50269 are being incorporated into new revisions of standards (IEC/EN60079-7&15) for explosion protected machines. These standards adopt a risk assessment and management approach. High risk situations (extreme conditions) can occur when the machine is subjected to frequent starting or adverse environmental or poor maintenance conditions. Assessment must be made considering the specific machine design characteristics and site conditions. In high risk situations, additional techniques should be applied to the machine to reduce the risk of explosion.

TMEIC is a market leader in the research, development and practical application of risk mitigation techniques. General risk mitigation techniques available include;

- IP56 enclosure protection
- Partial discharge monitoring systems
- Purging systems for Exn or Exe machines

If the special ‘hydrogen gas’ test specified in IEC/EN60079, is carried out and the result is good, the requirement for air purging can be omitted.

TMEIC has been adopting the air purge philosophy until quite recently for a machine which is judged as ‘with risk’. Having great confidence in its own products, however, TMEIC decided to carry out the special ‘hydrogen gas’ test in CESI (Italian authority) for rotors and Baseefa (U.K.) for stators. The results of both tests were positive (as expected) and resultantly TMEIC has eliminated the need for pre-start air purging for machines up to 11kV (Exn) and 6.6kV (Exe).



Hydrogen gas test



Exp test



Exe test

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