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TMEIC Launches Pressure-Resistant Explosion-Proof Motors for Hydrogen Environments in Global Markets

– First Japanese Electrical Equipment Manufacturer to Obtain International Certification, Contributing to a Global Hydrogen Society –

TMEIC Corporation (President & CEO: Akira Kawaguchi; hereinafter “TMEIC”) obtained IECEx international certification in July 2025 for its pressure-resistant explosion-proof motors designed for hydrogen gas environments—making it the first Japanese electrical equipment manufacturer to receive this certification*1. From September 2025, TMEIC began full-scale sales of these motors to 79 countries and regions worldwide*2.

With the goal of achieving carbon neutrality by 2050, hydrogen energy initiatives are progressing across power generation, transportation and industrial sectors in Japan and overseas. However, since hydrogen has the highest explosion pressure among flammable gases, motors that are used at facilities handling hydrogen gas are expected to have high pressure-resistant explosion-proof performance to withstand the pressure.

To address such needs, TMEIC obtained IECEx certification for its pressure-resistant explosion-proof motors for driving pumps and compressors used in hydrogen-handling facilities and equipment. The key features of these motors are as follows:

1. Capability to operate safely in hydrogen gas environments in 79 countries and regions

Hydrogen exhibits the highest explosion pressure among flammable gases, and motors used in hydrogen-handling facilities must possess exceptional pressure-resistant explosion-proof performance to withstand this pressure. TMEIC’s motors comply with the international explosion-proof standard IEC 60079-1*3 and are engineered to operate safely in hydrogen gas environments. The IECEx certification is recognized in 79 countries and regions, including Japan, Europe, Asia and Oceania*4.

2. Expanded explosion-proof range with extended motor lineup

Current international explosion-proof certification is obtained for pressure-resistant explosion-proof motors with output ranging from 37kW–185kW. Additionally, current certification enables domestic explosion-proof certification, which was previously certified for frame size 280: 160kW–185kW models, to address small capacities of 37kW–160kW, thereby expanding the product lineup from small to medium capacities. In addition to the 160 kW–185 kW models (frame size 280) for which explosion-proof certification was first obtained in Japan, TMEIC has now secured international explosion-proof certification for lower-output models starting from 37 kW (frame size 250), expanding the product’s explosion-proof coverage. By extending the lineup of pressure-

resistant explosion-proof motors from small to medium capacity, TMEIC can meet the needs of a wider range of customers. Furthermore, the certification includes inverter-driven operation, enabling compatibility with both fixed-speed commercial power supply and variable-speed inverter drives.

3. Achieves IE3-level efficiency to reduce energy use and operating costs

Although explosion-proof motors are not subject to high-efficiency regulations*5, TMEIC leveraged its design expertise from high-efficiency motors to achieve efficiency equivalent to the IE3 standard in this product. This contributes to energy savings and lower operating costs for facilities that handle hydrogen, such as hydrogen stations.

Comments by Hideki Iwanaga, Executive Officer and General Manager, Rotating Machinery Systems Division:

“With a view toward accelerating the realization of a carbon-neutral society, we have expanded our lineup of explosion-proof motors that can be applied not only to domestic but also overseas hydrogen-handling facilities. Going forward, we will continue to deliver products and services that lead the way in energy efficiency.”

*1 Based on TMEIC research as of October 2025.
*2 This product obtained domestic explosion-proof certification in April 2023.
Press release: https://www.tmeic.co.jp/news_event/pressrelease/2025/20251031.pdf (Japanese)
*3 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
*4 Use of this product (frame size 250) in Japan requires a procedure to switch to domestic explosion-proof certification. Please contact your sales representative for details.
*5 In Japan, the Top Runner Program mandating high-efficiency motors began in April 2015. Not all motors are subject to these standards; only those meeting the criteria specified under JIS C 4034-30: Rotating electrical machines – Part 30: Efficiency classes of single-speed, three-phase, cage induction motors (IE code) are covered.

■ Basic Specifications of the Hydrogen Explosion-Proof Motor Series (Pressure-Resistant Type)

Item		Standard Specification
Poles Rated voltage / frequency		4, 6, 8 poles Low voltage, 3 kV, 6 kV; 50 Hz or 60 Hz
Output		37 kW–185 kW
Insulation class		155 (F)
Duty rating		S1 (continuous)
Frame / enclosure type	Cooling method	Totally enclosed, fan-cooled (IC411)
	Protection class	IP44 (optional: IP54, IP55)
Installation environment	Atmosphere	Hazardous location Zone 1, 2 / Gas group IIC (hydrogen) / Temperature class T4
	Explosion-proof type	Pressure-resistant explosion-proof (Ex db)
Mounting method		Foot-mounted horizontal (IMB3)
Rotation direction		Counterclockwise (viewed from load side; bi-directional optional)
Coupling with load		Direct drive (optional: belt drive)
Bearings	Type	Rolling element bearings
	Grease	RAREMAX SUPER / SKF LGHP2
Finished color		Munsell 2.5PB 6/2
Instrumentation		Options: Winding temperature sensor, bearing temperature sensor, space heater
Standards compliance		IEC 60034-1

1) For specifications other than those listed above standard, please contact your sales representative.

Pressure-resistant explosion-proof motor

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In order to respond to the needs of manufacturing sites that serve as a foundation for supporting society, TMEIC always sets its eyes on the future of industry, society and the environment as an industrial systems integrator striking a balance between the sustainable development of society and the global environment. TMEIC will contribute to manufacturing and environmental management through leading-edge technologies based on its core technologies of rotating machinery, power electronics and engineering.