VERDE HYDROGEN’s World-First 5,000 Nm³/h Asymmetric 'Five-to-One' Water Electrolysis System Runs Safely for 760+ Days



BOSTON, MA, UNITED STATES, September 21, 2026 / EINPresswire.com/ -- On September 9, 2026, the Yongli Hydrogen Plant at the Ningdong Energy and Chemical Industry Base achieved full-load hydrogen production of 5,000 Nm³/h, with all hydrogen produced supplied to external customers, setting a new record for daily hydrogen sales. This milestone marks the transition of China’s first large-scale asymmetric “Five-to-One” water electrolysis hydrogen production system from demonstration operation to sustained commercial operation.

The core hydrogen production system was supplied by VERDE HYDROGEN, including system architecture, alkaline electrolyzers, gas-liquid separation, hydrogen purification, balance-of-plant integration, and multi-electrolyzer intelligent control. The plant is equipped with five 1,000 Nm³/h-class alkaline electrolyzers, providing a total hydrogen production capacity of 5,000 Nm³/h and a designed annual output of approximately 1,428.6 tonnes of high-purity green hydrogen. During operation, hydrogen purity has remained stable at above 99.999%. Following optimization and full-capacity operation, overall production capacity increased by approximately 70%, while overall energy consumption decreased by approximately 16%. The complete hydrogen production system has now operated safely and stably for more than 760 days.
A key feature of the project is VERDE HYDROGEN’s innovative “Five-to-One” architecture, in which five large-scale electrolyzers share one centralized auxiliary system. Compared with conventional “one electrolyzer, one auxiliary system” configurations, this architecture reduces redundant equipment, plant footprint, infrastructure investment, and long-term O&M requirements, while enabling stable 5,000 Nm³/h hydrogen production. The system is also designed for renewable-powered hydrogen production, supporting flexible load adjustment, intelligent start-up and shutdown, multi-electrolyzer coordination, and dynamic response to fluctuating wind and solar power.

More importantly, this project has moved beyond short-term demonstration. After more than 760 days of real industrial operation, it has now achieved full production, stable supply, and regular commercial hydrogen sales. The results provide strong field validation of VERDE HYDROGEN’s large-scale alkaline electrolysis technology and demonstrate the commercial viability of centralized multi-electrolyzer systems for future hundreds-of-megawatts and gigawatt-scale green hydrogen projects.

VERDE HYDROGEN will continue advancing large-scale water electrolysis, intelligent multi-electrolyzer integration, and renewable hydrogen solutions to support the global transition from green hydrogen demonstration projects to commercial deployment.

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