

FIRST INDUSTRIAL SCALE HYDROGEN PLANT IN THE WORLD

# ENEL: AT FUSINA (VENICE), INAUGURATION OF FIRST INDUSTRIAL-SCALE HYDROGEN PLANT IN THE WORLD

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**- The plant will generate sufficient clean electricity to meet the annual needs of 20,000 households, avoiding more than 17,000 metric tons of CO2 emissions a year**

**Venice, July 12th, 2010** - Enel CEO and General Manager Fulvio Conti, the President of the Veneto Region Luca Zaia, the Mayor of Venice Giorgio Orsoni and the President of the Province of Venice Francesca Zaccariotto, today inaugurated the innovative hydrogen-fuelled combined cycle power plant at Fusina (Venice).

The plant, which is the first industrial-scale facility of its kind in the world, has an overall capacity of 16 MW. It comprises a hydrogen-fuelled combined cycle plant, which generates both electricity and heat, and has an output of 12 megawatts (MW). The efficiency of the process is increased by taking the heat from the emissions in order to generate high-temperature steam, which is sent to the nearby coal-fired plant to generate an additional 4 MW of power capacity.

The plant, which uses 1.3 metric tons of hydrogen per hour, has an overall efficiency of about 42%, is essentially free of emissions of any kind. The electricity generated, equal to about 60 million kWh a year, will be sufficient to meet the needs of 20,000 households, avoiding more than 17,000 metric tons of CO2 emissions a year.

The plant, which required an overall investment for construction of some 50 million euros, is located on the site of Enel's "Andrea Palladio" plant at Fusina, next to the petrochemical facility of Porto Marghera (Venice), from which it will receive the hydrogen produced as a by-product in the manufacturing process. The very high efficiency experimental plant is one of the projects of Hydrogen Park, the consortium formed in 2003 at the initiative of the Venice Industrial Union with about 4 million euros in support from the Region of Veneto and the Ministry for the Environment. The consortium seeks to promote the development and application of hydrogen technologies in transportation and power generation in the Porto Marghera area.

The Fusina plant is the best suited to host this world-beating initiative. It has a long tradition of environmentally sensitive research and innovation, thanks to Enel's technology skills and the support of local and regional institutions. The new facility places Enel and Italy at the forefront of the development of advanced systems for the use of hydrogen.

In 1997 Fusina was the first generation plant in Italy to be equipped with desulphurisation and denitrification systems, while in 1999 it was fitted with sleeve filters to reduce particulate emissions. Since 2008, it has been upgraded with new environmental systems. In addition, Fusina is a leader in one of the most serious problems facing Italy: waste disposal.

After extensive testing, agreed with the Region of Veneto and the Province and City of Venice, the plant is now able to make safe use of 70,000 metric tons of RDF (refuse-derived fuel), a fuel derived from separated solid waste. That is the equivalent of the waste produced by 300,000 people. Using RDF in place of coal to fuel the plant's boilers, the energy contained in the waste is recovered and it does not occupy space in waste disposal facilities, avoiding about 60,000 metric tons of CO2 emissions a year.