



Press Release

Total and Engie partner to develop France's largest site for the production of green hydrogen from 100% renewable electricity

Paris, January 13, 2021 – Total and Engie have signed a cooperation agreement to design, develop, build and operate the Masshyla project, France's largest renewable hydrogen production site at Châteauneuf-les-Martigues in the Provence-Alpes-Côte d'Azur South region.

Located at the heart of Total's La Mède biorefinery and powered by solar farms with a total capacity of more than 100 MW, the 40 MW electrolyser will produce 5 tonnes of green hydrogen per day to meet the needs of the biofuel production process at Total's La Mède biorefinery, avoiding 15,000 tonnes of CO₂ emissions per year.

An innovative management solution for the production and storage of hydrogen will be implemented to manage the intermittent production of solar electricity and the biorefinery's need for continuous hydrogen supply.

The project thus integrates the implementation of 5 innovations that prefigure the industry's decarbonation solutions, without any precedent in Europe:

- A digital piloting system for the continuous supply of hydrogen with real-time management of solar electricity production,
- Optimising the integration of several photovoltaic farms supplying the electrolyser to minimise energy losses and limit grid congestion,
- Large-scale hydrogen storage to balance intermittent electricity production and continuous hydrogen consumption,
- A direct current connection between a photovoltaic farm and the electrolyser to improve the energy balance,
- Enhanced industrial safety thanks to the use of 3D digital models for each component of the installation

Beyond this first phase, new renewable farms may be developed by the partners for the electrolyser, which has the capacity to produce up to 15 tonnes of green hydrogen per day.

The Masshyla project has been labelled as innovative and of great interest to the region by several regional institutions (Provence-Alpes-Côte d'Azur South Region, Métropole Aix-Marseille-Provence, Capenergies competitiveness cluster). It benefits from the support of local actors for its ability to reduce CO₂ emissions and demonstrate the economic advantages of renewable hydrogen and its integration into the local ecosystem and at the European level.

The two partners aim to begin construction of the facilities in 2022, following the completion of the advanced engineering study, with a view to production in 2024, subject to the necessary financial support and public authorisations. To this end, the project has already applied for subsidies from the French (AMI) and European authorities (IPCEI, Innovation Fund).

" Innovation and sustainability are at the heart of this joint project. As demonstrated by our commitment to the European Clean Hydrogen Alliance, we believe in the future of renewable

hydrogen, and we are working with our partner Engie to make it happen. This renewable hydrogen production facility, combined with our expertise in solar energy, is a further step in our commitment to get to net zero by 2050.." says **Philippe Sauquet, President Gas, Renewables & Power at Total**. "The association of two leading French energy companies will make it possible to develop the hydrogen sector and become its leaders thanks to this joint, industrial and internationally reproducible project".

"The Masshylvia project demonstrates the capacity of Engie to meet the challenges of the energy transition by developing innovative carbon neutral solutions. The partnership between Engie and Total, by its scale and its very ambitious integrated approach, embodies Engie's renewable hydrogen development strategy to reduce our clients CO₂ footprint. It also paves the way for a multi-usage renewable hydrogen hub in the near future, strongly rooted in the region and with an international outreach." says **Gwenaëlle Avice-Huet, Engie's EVP** in charge of renewable energies.



About Total & Hydrogen

Total is looking into the production of clean hydrogen-blue or green-, produced using carbon neutral processes, on a gas basis with carbon capture and storage or based on intermittent renewable electricity. For several years, the Group has been working on the development of concrete use cases, for the decarbonization of industrial processes as well as in mobility and gas. Total is notably involved as industrial user, within its refineries, and as a player in its development as a fuel especially in Germany with H2 Mobility. Total is also an active member of several Hydrogen-dedicated initiatives and professional associations: the Hydrogen Council, Hydrogen Europe, the European Clean Hydrogen Alliance and France Hydrogène. A Business Unit dedicated to Clean Hydrogen has been created in June 2020, within the Gas, Renewables & Power branch of Total.

About Total

Total is a broad energy company that produces and markets fuels, natural gas and electricity. Our 100,000 employees are committed to better energy that is more affordable, more reliable, cleaner and accessible to as many people as possible. Active in more than 130 countries, our ambition is to become the responsible energy major.

About Engie & Hydrogen

Engie believes that hydrogen will play a key role in the energy transition. The Group is a front runner in the development of an industrial-scale hydrogen economy with more than 30 projects underway in 10 countries. Engie is present along the entire hydrogen value chain, from renewable electricity production, renewable hydrogen production to developing various end uses. Engie is investing in, designing, building, and operating renewable hydrogen-based solutions for industries and regions around the world. Engie is an active member of several Hydrogen-dedicated initiatives and professional associations: the Hydrogen Council, Hydrogen Europe, the European Clean Hydrogen Alliance and France Hydrogène.

In 2018, Engie created a dedicated business unit for renewable hydrogen development. With more than 200 hydrogen experts within the Group, Engie is a leader in decarbonizing industrial processes and heavy-duty mobility.

About Engie

Our group is a global reference in low-carbon energy and services. Our purpose (“raison d’être”) is to act to accelerate the transition towards a carbon-neutral world, through reduced energy consumption and more environmentally-friendly solutions, reconciling economic performance with a positive impact on people and the planet. We rely on our key businesses (gas, renewable energy, services) to offer competitive solutions to our customers. With our 170,000 employees, our customers, partners and stakeholders, we are a community of Imaginative Builders, committed every day to more harmonious progress.

Turnover in 2019: 60.1 billion Euros. The Group is listed on the Paris and Brussels stock exchanges (ENGI) and is represented in the main financial indices (CAC 40, DJ Euro Stoxx 50, Euronext 100, FTSE Eurotop 100, MSCI Europe) and non-financial indices (DJSI World, DJSI Europe and Euronext Vigeo Eiris - World 120, Eurozone 120, Europe 120, France 20, CAC 40 Governance).

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