

HYDROGEN PRODUCTION



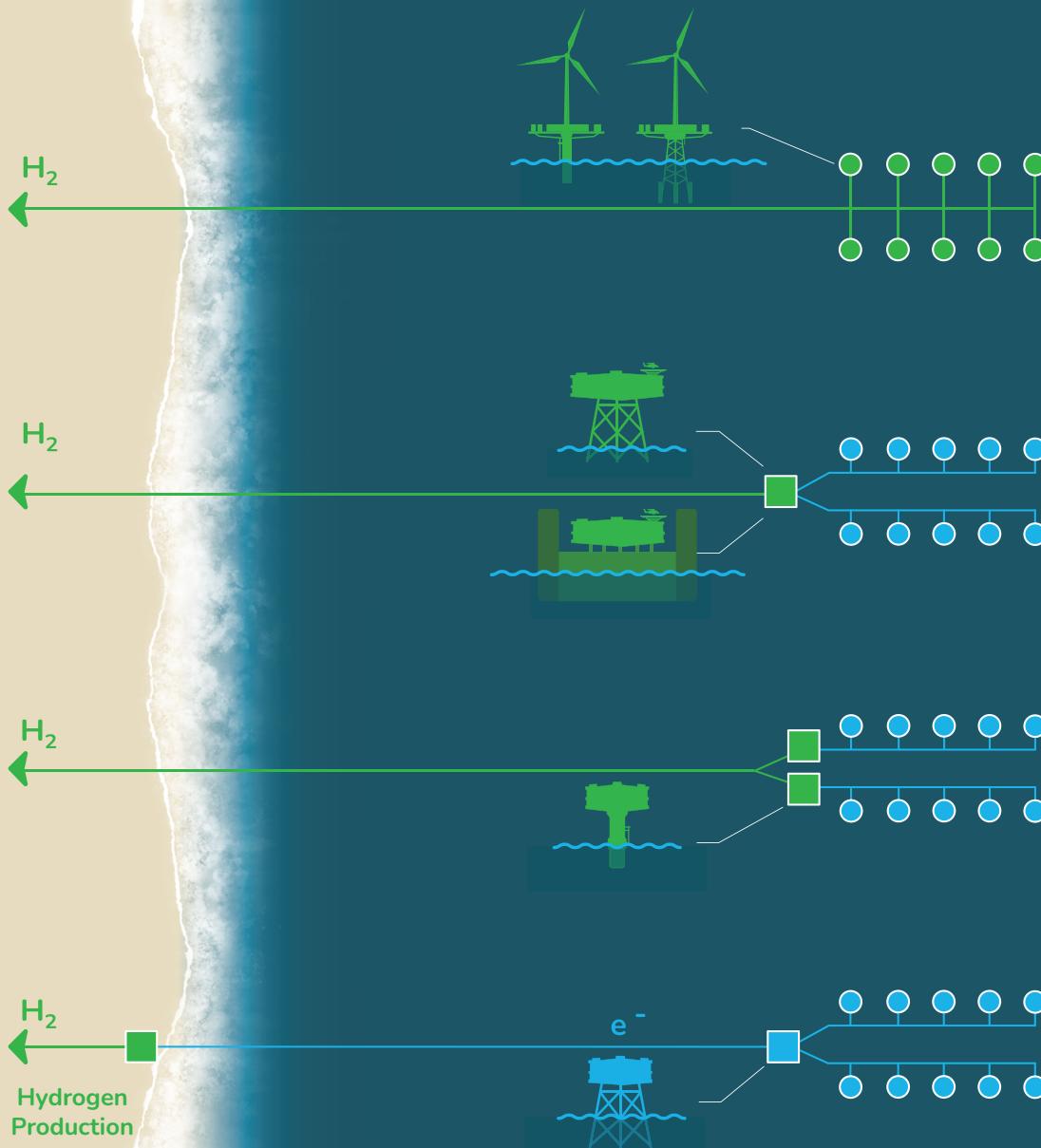
ISC

SHORE

SEA

● WTG

■ PLATFORM

OFFSHORE WIND ENERGY e⁻ TO HYDROGEN H₂

Decentralized hydrogen production

In the decentralized configuration, hydrogen production is integrated with the WTG structure. Electricity is routed directly from the WTG to the hydrogen production unit, eliminating the need for array cables. Hydrogen produced at individual WTGs is exported through flexible array pipes, collected in a seabed hydrogen header, and sent to shore. This setup requires an extended platform structure supported by the WTG monopile or jacket to accommodate hydrogen production and auxiliary systems.

Centralized hydrogen production

In the centralized configuration, all array cables from WTGs connect to a central hydrogen production platform. This setup resembles a conventional offshore wind farm, but instead of connecting to the grid, electricity is converted to hydrogen at the central platform and transported to shore via a single gas pipeline. Alternatively, some investors consider using an artificial island in place of the platform substructure to reduce substructure costs, though this involves island construction expenses.

Hybrid hydrogen production

The hybrid scenario involves smaller, stand-alone platforms scaled to fit hydrogen production, operating like a central platform but with reduced substructure and installation costs by using monopiles instead of jacket substructures.

Onshore hydrogen production

In the onshore hydrogen production concept, offshore-generated electricity from wind farms is transmitted from the offshore substation to onshore hydrogen production facilities.

Our expertise

ISC leverages 20+ years of experience in the offshore wind industry to provide cost-effective, reliable, and safe offshore platform designs and layouts. We excel in feasibility and Front-End Engineering Design studies (FEED), evaluating various concepts for large-scale offshore green hydrogen production from wind energy.

Innovative solutions

We explore a range of innovative concepts, from centralized large-scale hydrogen production platforms and energy island concepts to decentralized, smaller-scale WTG-integrated production platforms.

With capacities from several hundred megawatts to tens of megawatts, ISC's expertise in offshore structural design and layout offers significant benefits to clients in the evolving offshore green hydrogen landscape.

ISC Consulting Engineers

We specialize in driving innovation, pushing boundaries, and exploring new frontiers. In the late 1990s, we pioneered the design and installation of critical offshore substations for the emerging offshore wind industry.

Today, we are dedicated to assisting our clients and partners in the challenging field of offshore green hydrogen production.

Contact

Claus Cornelius Woldbye
Head of Hydrogen and PtX

✉ ccw@isc.dk
☎ +45 27733903

Andreas Laungaard
VP of Renewable Energy

✉ alg@isc.dk
☎ +45 22699058



ISC