Press Release

Shell, innogy and Stiesdal Offshore Technologies to build new floating wind demonstration project

- **Final investment decision taken on €18 million investment to test TetraSpar floating foundation concept off the Norwegian coast**
- **Concept offers significant cost reduction potential for floating wind**
- **Dynamic stability tests underway**

Essen, 13 February 2019

innogy SE, Shell and Stiesdal Offshore Technologies A/S (SOT) are bringing floating wind to the next level: The partners have taken the final investment decision on the 'TetraSpar' floating foundation demonstration project which will be tested off the Norwegian coast in 2020. Its modular layout consists of a tubular steel main structure with a suspended keel. It is expected to offer important competitive advantages over existing floating wind concepts, with the potential for leaner manufacturing, assembly and installation processes with lower material costs. The project has a budget of €18 million.

Shell has increased their share in the project from 33% to 66%. innogy retains 33% in the newly founded project company and SOT is contributing to the project with its modular TetraSpar concept and holds the remaining shares (1%). As technology partner, Siemens Gamesa Renewable Energy (SGRE) will provide the wind turbine and required services. The partners will be part of a project team that will gain detailed, practical insights into the construction, installation and operation of the TetraSpar concept as well as detailed performance data.

James Cotter, Project Manager Shell, said: "Shell is working to grow our renewable power business and sees great promise in floating wind technologies that could change the face of the offshore wind industry over the next decade. We want to help accelerate this change by sharing our offshore expertise with our partners in order to progress innovative solutions such as TetraSpar."

Martin Ferreira, Head of Offshore Investment & Asset Management at innogy SE, said: "innogy is seeking offshore growth opportunities worldwide and we are confident that floating wind is going to be an important growth market in the future. This demonstration project lays the foundation for this by giving us a better understanding of both the technical insights and how the cost of floating wind can be driven down."

Henrik Stiesdal, CEO of Stiesdal Offshore Technologies A/S, said: "Reaching the final investment decision on the deployment and test of our first full-scale demonstration project is a very important milestone for us. We have already benefited greatly from the dialogue with Shell, innogy and Siemens Gamesa Renewable Energy during the project planning, and we look forward to further enhance the dialogue during the project execution. The benefits of our partners' experience combined with the competences of our manufacturing partner, Welcon will put us on the fast-track for rapid commercialisation."

Dynamic stability tests on a true-to-scale model have been running since last December, using the wave-wind channel at the University of Maine, USA, and the wave tank at FORCE in Lyngby, Denmark. This year, the components for the large floating prototype will be manufactured by Welcon A/S in Give, Denmark. The components will be transported to the Port of Grenaa to be assembled. Following launch of the foundation, the wind turbine will be mounted on the foundation at the quayside using a land-based crane.

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From there, the foundation structure including the turbine will be towed to the test site in the northern part of the North Sea, moored to the seabed with three anchor lines and connected to the electrical grid. It will be located approximately 10km from shore in water depths of 200m at the test site of the Marine Energy Test Centre (Metcentre) near Stavanger in Norway. The demonstration project will use a 3.6MW SGRE direct drive offshore wind turbine.

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About innogy SE
innogy SE is a leading German energy company. With its three business segments Renewables, Grid & Infrastructure and Retail, innogy addresses the requirements of a modern, decarbonised, decentralised and digital energy world. Its activities focus on its customers, and on offering them innovative and sustainable products and services which enable them to use energy more efficiently and improve their quality of life. The key markets are Germany, the United Kingdom, the Netherlands and Belgium, as well as several countries in Central Eastern and South Eastern Europe, especially the Czech Republic, Hungary and Poland. In renewable power generation, the company is also active in other regions, e.g. Spain, Italy and the USA, with a total capacity of 3.9 gigawatts. As a leader of innovation in future-oriented fields like eMobility, we are represented in the international hot-spots of the technology industry such as Silicon Valley, Tel Aviv and Berlin. We combine the extensive expertise of our energy technicians and engineers with digital technology partners, from start-ups to major corporates.

About Shell New Energies
Shell established its New Energies division in 2016 and plans to invest in commercial investments that build on our strengths in new and fast-growing segments of the energy industry. Shell New Energies focuses on two main areas: new fuels for transport, such as advanced biofuels and hydrogen; and power, which includes low-carbon sources such as wind and solar, as well as natural gas. We are evaluating a variety of opportunities in new and fast-growing segments of the energy industry and see great potential in offshore wind, including floating wind, where we can use our offshore expertise to progress the industry. Shell first entered the wind business in 2001, in the USA. Today Shell has six wind farms in operation and three in development. Five of our operational onshore wind farms are in the USA, and we have an offshore wind farm in operation in the Netherlands. We also have interests in three wind projects under development - two in the USA and one in the Netherlands. Once built, these projects will have a total installed capacity of more than 5 gigawatts.

About Stiesdal Offshore Technologies A/S
Stiesdal Offshore Technologies specializes in the development and supply of innovative, industrialized solutions for offshore wind power. The company is an affiliate of Stiesdal A/S, a company developing climate solutions, including offshore foundations, energy storage and carbon-negative fuels.
The two first products developed by Stiesdal Offshore Technologies are the TetraSpar floating offshore foundation and the TetraBase fixed offshore foundation. Both are manufactured using industrial processes, and both can be deployed from any ordinary port using only land-based cranes. No offshore installation vessels are needed.
Stiesdal Offshore Technologies carries out its projects in cooperation with Welcon A/S, the world's leading manufacturer of offshore wind towers. Following successful testing of the two foundation concepts, Stiesdal Offshore Technologies will offer the foundations on a worldwide scale.