Press kit

Key figures

1 specialty: floating foundations for offshore wind industry

A public limited company created in 2010 located in La Ciotat (13)

Staff: 60+ people of which 49 specialist engineers with extensive experience in the offshore oil & gas and renewables industries

Our company has received 8 awards: 2011’s France’s Research Ministry’s national competition for start-ups in innovative technologies, Tremplin PME Innov’Eco (Cleantech innovation hub contest for SMEs), Cleantech Republic 2012 edition grand prize, 2013 EY Award for Green Business, 2015 “Coup de Coeur” prize by Engie, 2015 “Fight against climate change” Grand Prize and “Eco-designed product” Grand Prize of Business & Environnement competition, Energy Transition Price 2017 (Usine Nouvelle)

Over 30 million euros of capital raised

1 demonstrator already built in France (Floatgen) and 1 demonstrator under construction in Japan

The equipment of Mediterranean’s 1st floating offshore wind farm
“Deepwater Horizon, Fukushima... The planet has inherited an energy policy dating back to the post-war boom years and its challenges are becoming more apparent by the day. Since 2010, from the very moment we founded the company, we have considered that offshore wind power is one of the solutions of the future. However, it is clear that this option will involve using floating technologies, within a context in which offshore bottom-fixed solutions will rapidly encounter many constraints. The potential was obvious, but the challenge enormous.

Our partner engineers and experts used their great experience in the field of offshore and renewable energy to develop a new floating technology dedicated to offshore wind power. Our highly-competitive solution is transforming the floating wind power market, especially in economic terms, and even impacting the entire offshore wind power industry. Benefiting from the financial support of a wide range of investors, Ideol has already entered a marketing phase thanks to the signature of commercial contracts in Japan, the attribution of a call for project in France and the signature of partnerships for a multi-GW pipeline of projects. And we have inaugurated last 13rd of October France’s first offshore wind turbine equipped with our technology."

Ideol’s adventure is just beginning!”

Paul de la Guériverie, founder and Chief Executive Officer of Ideol
1. Offshore wind power: markers

At a time when offshore wind power is undergoing major developments it is also confronted, in many countries, with a shortage of appropriate sites. As a result, floating wind power is slowly but surely establishing itself as a viable alternative to bottom-fixed wind power.

Offshore bottom-fixed wind power, offshore floating wind power: what is the difference?

Just like onshore wind power, offshore wind power, whether bottom-fixed or floating, is used to convert wind into electricity.

Although both options rely on the same energy source, offshore wind power can use bottom-fixed or floating structures. When the structure is bottom-fixed, the wind turbine is installed on a foundation which is, itself, dug into the seabed. With a floating structure, the wind turbine is installed on a floater that is simply attached to the seabed by mooring lines to hold the assembly in position.

Beyond a depth of 35 to 40 metres, bottom-fixed wind structures become economically uncompetitive. On the other hand, floating wind structures is applicable to deep waters (starting at depths of 30 metres when using Ideol’s technology) and therefore do not involve any restrictions. In such a context, floating wind power offers several major advantages:

- The structures are installed further from the shore than bottom-fixed structures, therefore their visual impact on coastal landscape is minimal.
- With stronger and more constant open-sea wind, they offer – for the same installed capacity – a more regular and greater production of electricity, and therefore a reduction in production costs.
- The installation of floating wind turbines is simplified compared to that of bottom-fixed wind turbines with, in particular in the case of the Ideol solution, the assembly of the structure on the quay before it is towed to the installation site. This approach reduces costs and risks. Decommissioning is also easier and no component is left on-site.

Offshore wind power in Europe and worldwide: the current situation

Europe is the leader in offshore wind power with a worldwide installed capacity exceeding 90%. In 2016, on the continent, offshore wind power represented 12 GW, generated exclusively by bottom-fixed technology sources. Although, for the time being, floating wind power does not include commercial active wind farms, a 5-units pre-commercial wind farm (in Scotland) and 5 demonstration structures have been installed throughout the world (1 in Norway, 1 in Portugal and 3 in Japan). Ideol has recently inaugurated the 6th demonstrator in Saint-Nazaire (see datasheet 5). This floating wind turbine is the first offshore wind turbine in France, preceding even bottom-fixed wind power projects.
New opportunities created through floating wind power
The sea offers a limitless potential for the production of renewable electricity. Some public authorities made no mistake when they set ambitious objectives for offshore wind power. For example, for 2030, the United Kingdom has set a target installed capacity threshold of 33 GW, and Germany has targeted 25 GW\(^1\). In Japan, according to the estimations of the Ministry of the Environment, 90% of the renewable energy potential comes from the wind and, more specifically, from offshore wind power.

Yet, in the Mediterranean area, Brittany, Scotland and along the Japanese coastline, the areas with the best average wind speeds have water depths that rapidly exceed 50 metres. In European seas, 80% of all the offshore wind resource is located in waters 60 metres and deeper, where traditional bottom-fixed offshore wind is not economically attractive. **Floating wind farms are therefore the most suitable, the most cost-effective and the least constraining solution offering the lowest impact on coastal landscapes and other marine activities.**

As noticed in the [Floating offshore wind statement](#) published by Wind Europe (the European association promoting the wind industry), while floating offshore wind technology was previously confined to R&D, the technology has developed significantly in recent years, and **floating offshore wind is now ready to be integrated into the energy market.**

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\(^1\) Source: France Energie Eolienne (France Wind Energy Association)
2. The technological breakthrough of Ideol’s floating foundation

Recognizing the huge potential that renewable energy offers, and in particular marine energy, Ideol’s experienced teams designed, developed and patented a state-of-the-art technical floating foundation solution for offshore wind turbines.

What inspired the Ideol team-imagined innovation

The initial equation was highly-explicit: how can offshore wind turbines take advantage of the strongest winds of the open sea and, at the same time, withstand currents and swells, all without breaking the bank? Drawing on tried-and-tested offshore oil & gas-related technologies, Ideol figured this out and developed a floating foundation that can host all commercially-available offshore wind turbines, regardless of their type, size or power, at optimized cost.

The Damping Pool® patented concept

Ideol’s foundation features a patented concept known as “Damping Pool®”.

The square-shaped foundation comprises a central opening (Damping Pool®) used for optimizing foundation + wind turbine stability. As such, the sloshing water contained in this central opening counteracts the swell-induced floater oscillations. Foundation-fastened mooring lines are simply attached to the seabed to hold the assembly in position. This system can be implemented, without any major modification, with “standard” offshore wind turbines used for bottom-fixed wind industry, and as such to take advantage of the extensive experience gained in these technologies.

The multidisciplinary nature of its teams (structural design, mechanical engineering, naval architecture, hydrodynamics, etc.) along with rigorous processes and an organization inspired by the world of offshore oil & gas enabled the Company to develop this revolutionary solution. This integrated expertise has already led to other patent registrations, such as a mobility solution that reduces the wake effect.

A designed-to-last, compact-sized foundation

The distinctiveness of Ideol’s foundation, compatible with the smallest to the largest wind turbines on the market, is also thanks to its highly-compact size, substantially smaller than any other rival floating solution. With draught of 7 m only and square size of 35 to 55 metres², this compactness keeps costs under control – raw material costs as well as construction logistics costs – and thus to support market trends towards increasingly-larger wind turbines.

Finally, opting for concrete, a material used in naval construction since the middle of the 19th century, which features in many floating dykes and ports as well as in oil & gas platforms, means that safety and reliability is fully ensured in highly-challenging marine environments. Consequently, Ideol’s floating structure is designed for a minimum lifespan of 25 years, but all the foundation components are scaled for extreme events with return periods – i.e. analysed time intervals – of between 50 to 200 years.

² for 2 to 8 MW wind turbines.
3. Reduce costs to sustainably change the offshore wind turbine market

Ideol’s foundation was designed with a dual purpose: firstly, technological, with the aim of providing perfectly reliable solution; secondly, financial, with the aim of offering the most competitive price. The challenge has now been met as the solution can even compete with bottom-fixed wind power.

Concrete, an option that ensures premium price competitiveness

The construction material chosen for this type of product is of course crucial when determining the price. In light of this, concrete rapidly proved to be the optimal solution, for several reasons:

- The price of concrete is considerably less volatile than that of steel, used in rival solutions, and offers long-term price visibility;
- The foundation construction methods are proven and multifarious as they adapt perfectly to site conditions and to local procurement opportunities. As such, construction can be undertaken as close as possible to the future wind farms, thus limiting offshore towing costs for the floating foundations;
- Once operational, the Ideol foundation requires very little servicing, thus reducing maintenance costs substantially.

This preference for concrete does not prevent Ideol from proposing steel solutions to markets, contrary to Europe and the United States, where logistical constraints and costs incurred by the use of this material are less significant.

Streamlined installation

The floating wind turbine is assembled on the foundation at quayside, using an onshore crane, and not offshore as is the case for bottom-fixed wind turbines. As such, costly installation vessels (over €250,000 per day), which are largely unavailable and highly-dependent on weather windows, are not required for this operation. The wind turbine + floater construction is then towed to its destination by readily available, cost-effective and safe vessels. Costs and risks are substantially reduced.

Ideol’s floating solution at the price of bottom-fixed technologies, from a depth of 35 metres

Thanks to the forementioned characteristics, Ideol’s solution is extremely competitive in comparison with floating wind foundation rivals which employ steel. Consequently, Ideol’s solution is less than half the cost of any other competitive floating concept.

Moreover, and in spite of its higher energy delivery costs as a result of sea-to-coast distance, floating wind turbines benefit from stronger and more regular open-sea wind – thus more constant power production– than bottom-fixed wind turbines. The cost of floating wind farms, equipped with Ideol’s solution, is on a par with that of bottom-fixed wind farms, from a depth of 35 metres. And it is also therein that the Ideol-developed technology is revolutionary: provide a floating solution for the price of a bottom-fixed solution, at a depth of 35 metres, without the visual impact.

Ideol’s teams have no intention of stopping there and have now pooled together all their R&D expertise to continue to optimize costs. Important work is also underway with key suppliers to identify new components and new construction and installation methods that could lead to further savings.
4. A winning solution in relation to socio-economic, landscape-related and environmental issues

In addition to making floating wind power economically viable, the Ideol solution also provides considerable socio-economic, environmental and landscape advantages based on its technology.

Hundreds of local jobs

Unlike rival steel-based solutions that are mainly manufactured in low-cost countries, **concrete constructions can be implemented as close as possible to the installation locations**. Construction methods are proven yet highly-flexible and easily-adaptable to the constraints of hosting port.

Such as current-day concrete frame constructions for floating breakwater structures, Ideol’s foundations are mass-produced, on-site, in three different ways: directly on the quay (image 1), in a dry dock (image 2) or on a floating barge (image 3 and 4). This last option has been chosen for the construction of the Ideol floating foundation dedicated to Floatgen at Saint-Nazaire harbor (see datasheet 5).

Moreover, the foundation’s shallow draught is compatible with most port facilities and enables constraint-free towing. As **Ideol’s foundations are built and assembled directly on the quay**, whether this involves just a few units for experimental wind farms or greater numbers for commercial wind farms, **direct and indirect local jobs are created**. For instance, the construction of the floating foundation which equips the Floatgen demonstrator has employed 70 people at the peak of activity. Ideol has also given -and will give priority to local manufacturers when procuring the main components, which contributes to creating indirect jobs. Within the frame of Floatgen, 80% of tier 1 suppliers were French.

This fact confirms that with Ideol’s solution, **local production – and, as such, national employment – is perfectly compatible with price competitiveness**.
A reduced environmental impact
Due to its numerous socio-economic assets, concrete also contributes to reducing environmental “costs”. Consequently, the overall environmental impact on the foundation’s complete lifecycle is considerably reduced. Our solution’s carbon content is more than 50% lower than that of rival steel-based solutions. During the decommissioning phase, the anchoring system is raised, and the floater and wind turbine are towed back to the quay. Absolutely nothing is left on-site, which is restored to its initial state. All the components are then recycled onshore.

A Landscape-friendly technology
As floating wind farms do not depend on water depth, they may be installed far out at sea and, as such, do not affect the visual integrity of the coastal landscapes. The viewing distance combined with the earth rotundity effect significantly reduces and then prevents, as from around 20 kilometres, all visibility.
5. Our projects, our partners, our international outlook

Although Ideol’s Research & Development teams are constantly working towards optimising this solution, and will continue to do so in the future, a new phase, the marketing phase, is now underway. Ideol can already count on a demonstrator recently inaugurated and a second one under construction as well as pre-commercial projects, the first steps towards mass deployment.

The first offshore wind turbine off the coast of France, equipped with Ideol’s solution

Ideol is a stakeholder in Floatgen, a consortium that brings together 7 European partners, established to demonstrate the technical and economic feasibility of floating wind power. Its aim is to extend the development potential of offshore wind farms to deeper waters with more optimal average wind speeds.

This involves the construction – by Bouygues Travaux Publics at Saint-Nazaire harbour – of a floating foundation designed by Ideol and its equipment with a 2-MW wind turbine. Floatgen has been inaugurated last 13rd of October 2017 before its towing towards the Ecole Centrale de Nantes’ SEM-REV test site off the coast of Le Croisic in early 2018. To find out more about this project, download the dedicated press kit.

Floatgen is France’s first offshore wind turbine and is to confirm the outstanding performance of Ideol’s solution in real conditions.
Ideol’s technology selected by the Japanese government

Accelerating the construction and installation of floating offshore wind farms is a strategic necessity for Japan’s energy mix and dramatically reducing the LCOE of such farms before the end of this decade has become one of the METI’s (Ministry of Economy, Trade and Industry) top priorities. In this respect, Ideol sealed its first commercial contract in June 2015 (2,8 M €) with the Japanese offshore wind leader Hitachi Zosen (HITZ) for the design of both a concrete and a steel version of Ideol’s patented floating foundation adapted to Japanese sea conditions. Ideol has signed, less than one year after, its second contract (in June 2016 for about 4 M €) with Hitachi Zosen launching the construction phase of one demonstrator in steel. This steel version is currently under construction and will be commissioned by 2018 off Kitakyūshū.

Taiwan: a partnership with a major industrial company, China Steel Corporation

Ideol Is recently entered into a partnership with the Taiwanese Group China Steel Corporation (CSC) aiming at designing, engineering and constructing floating offshore wind turbines using Ideol’s patented “Damping Pool” technology.

Ideol’s foundation being the only floating technology buildable in steel or concrete and operable at depths starting 30 meters shows tremendous potential given Taiwan’s specific industrial and environmental conditions. This collaboration will lead to the construction and installation of Ideol’s floater in a third country after 2019.

In France, Ideol will equip Mediterranean’s first floating offshore wind farm

Following the two calls for tenders initiated in 2011 and 2013 for offshore bottom-fixed wind power, the French government (through its Environnement agency, ADEME) launched last August a call for interest for experimental floating wind farm projects off the coast of France. A consultation phase was initiated in the relevant coastal regions to identify the most appropriate sites for such projects. This phase highlighted, in particular, a demonstrable potential of more than 3 GW by 2030 for commercial floating wind farms along the Mediterranean coast. Ideol has been selected to equip Mediterranean’s first floating offshore wind farm off Gruissan (Languedoc-Roussillon) within the frame of a consortium led by French developer Quadran. The wind farm will be equipped with SENVION’s wind turbines (6,15 MW) and Ideol’s foundations will be manufactured by Bouygues Travaux Publics.

Prominent partners

Ideol has developed long-term partnerships with major groups, such as the civil engineering and construction company Bouygues Travaux Publics, a Japanese offshore wind leader Hitachi Zosen (Hitz), or China Steel Corporation (Taiwan).

A strong partnership has also been concluded with Quadran, a green energy producer, as part of the selected project to install a floating wind farm along the coast of the Languedoc region in France (see below).

Last but not least, Ideol benefits from the support of French and international academic partners: University of Stuttgart, University of Tokyo, Ecole Centrale de Nantes, Ecole Centrale de Marseille, INRIA, NREL...
Ambitious international projects

Energy providers and project leaders, Ideol’s clients, as well as international public decision-makers are already highly aware of the benefits of this solution, in particular in terms of cost-effectiveness.

With its demonstration structure to be implemented off the coast of France by the end of 2017 and its project in Japan, Ideol intends to gradually position itself as the most competitive technology provider around and has, as such, the mid-term objective of becoming the leader in floating foundations for offshore wind power.
6. Our funding data

Since its creation, Ideol has raised over 30 million euros with contributions from renowned private investors and reference public organisation. This confirms the company’s exceptional expertise, the relevance of the technology it has developed and its ability to fund its development programme.

Successive fundraising

Five successive financial meetings were organised in 2011, 2013, 2014, 2016 and 2017 with prominent institutional investors such as SIEM offshore, Hitachi Zosen, Amundi Capital, Demeter Partners and Sofimac and Soridec as well as with private investors such as Dominique Michel, former Chief Executive of DORIS ENGINEERING, former Chairman of GEP, associate professor of Total, and Guy Fleury, former Chief Executive of STOLT COMEX SEAWAY (today known as SubSea7).

At the end of 2014, a capital increase was underwritten via three new investment funds (HPC Capital, Paca Investissement, a PACA Region investment vehicle, and CPG) and via three historic company shareholders (Demeter 3 Amorçage Fund, Emergence Innovation 1 Fund and the IO Group).

The BNP Paribas and the Caisse d’Epargne banks provided additional bank funding amounting to €1.2M.

In 2016, a new capital increase has been underwritten via Tertium and several other historic company shareholders (PACA investissement, FCPR Emergence Innovation 1 & Demeter 3 Amorçage, FIP Entrepreneurs Capital 3).

In 2017, Ideol has announced it has raised over 8 million euros in new funding, welcoming in particular two major industrial players as additional shareholders: the German company Siemens Offshore Contractors and the Japanese company Hitachi Zosen. This latest financing round also includes Amundi Private Equity Funds, subsidiary of Amundi Group, the European leader in asset management, with over €1.1 trillion under management worldwide and some of Ideol’s existing shareholders (Tertium, PACA Investissement and Conseil Plus Gestion).

Public authority support

7.3 million euros were contributed by ADEME (the French Environment and Energy Management Agency) in 2014 as part of the ‘Investments for the Future’ programme within the context of the “Renewable marine energy: technological building blocks and demonstration structures” call for interest for the Oceagen project conducted by Ideol in partnership with BOUYGUES TP and IFSTTAR, a Floatgen offshore project (see datasheet 5).

The European Union is also supporting the Floatgen project through FP7, the 7th Framework Programmes for Research and Technological Development, and granted a total of around 10 million euros in 2013.

Finally, the company received funding on several occasions from BPI Innovation in the form of repayable advances.
Our contact details
Paul de la Guérie – Chief Executive Officer – gueriviere@ideol-offshore.com
Bruno Geschier – Chief Sales & Marketing Officer – bruno.geschier@ideol-offshore.com
Marie Bayard-Lenoir – Communication Officer – marie.bayard@ideol-offshore.com –
DL : +33 (0)486 835 413 – Mob : +33 (0)609 778 115

ideol-offshore.com