

It was only in the sixties/seventies that legislation concerning noise was established. We then had to assess noise levels and if regulations were exceeded, measures had to be taken. Besides ships this also applied to accommodation platforms and other types of offshore installations. And gradually we proceeded to actively participating in maritime design processes. Knowledge we have gained on land based projects, we also use for applications at sea. This synergy of land to water works great." Peutz advises companies on the increasingly stringent regulations for working conditions and safety.

The culture is changing. In the past no notice was taken of the phenomenon noise. Ferry Koopmans: "Noise was inherent to sailing on a ship or working on a drilling rig or production platform. The importance of speech intelligibility was not recognized yet.



When the crew can't hear each other clearly, whereas understanding the orders is very important, you naturally also look to the background noise levels. If you're on the bridge and say something which is unintelligible on the rest of the ship or platform, then there is a problem. Peutz designs and advises about (emergency) broadcasting systems and speaker systems on board of ships and platforms. " Niels Moonen adds: "Noise on board of an offshore unit can also cause sleep disorders to the crew. If the crew doesn't get enough sleep mental alertness diminishes and therefore can become less productive, and even safety is at stake. For this purpose Peutz does a lot of research on the vibration and sound-insulation of crew quarters in the acoustic lab"

The angled vanes guide the wind in the right direction and attenuate the fan sound so a clean and silent air flow is created in the wind tunnel.

Close cooperation

Ulstein Sea of Solutions is now at the point of turning to Peutz right from the start of a design project. Since their introduction to Peutz the designer from Vlaardingen has already turned to Peutz for three projects. It was optimizing a DP-system and the investigation of sound and vibration levels of an accommodation unit. Wessels: "We kind of explored each other's knowledge and skills". As designers we don't have all specialities in house. We are specialist in developing of specialist offshore construction vessels, such as, the Seven Borealis of Subsea 7, the 211.5 meters long DP3 Heerema vessel Aegir, and both DP3 construction vessels SapuraKencana 1200 and 3500. In that capacity, we work in a highly practical way. Our solutions have to work immediately. To us Peutz emerged as a company with pragmatic scientists with the same attitude and flexibility that characterizes Ulstein Sea of Solutions. Where we look at first is if the first draft is to client's desire regarding functionality. A customer wants to be able to lift 5,000 tons to 40 meters. Then it is up to us to translate that desire into a technically viable design that also is economically feasible (the concept design). Then we go to work on a basic design. During both design stages the broad knowledge and skills of Peutz adds great value to our services. Their specialists can already show us at the preliminary stages certain steps that should be taken. As Ulstein we can, of course, design good ships but a credible prediction for example, how much sound a ship produces under water or which wind forces act on the ship, we cannot give. That is unbelievably difficult matter. Peutz has that expertise and is also able to further substantiate a particular choice or design with decisive arguments. Hence, we use their expertise as a welcome addition to ours. Moreover, as Ulstein we also get to increase our knowledge of the disciplines in which Peutz excels. Together, we are stronger. Peutz because they get involved with challenging, highly innovative designs, and because we increase our own knowledge. As a result we are able to serve our customers even better and more detailed on certain aspects. And that is precisely the partnership that we were looking for.

peutz maritime and offshore

wind tunnel research

dynamic positioning

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gas dispersion

noise assessment

underwater acoustics

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CLOSE COOPERATION BETWEEN PEUTZ AND ULSTEIN SEA OF SOLUTIONS

Peutz research facilities provide a valuable contribution to ship design



From left to right: Project Manager Offshore Niels Moonen of Peutz, Marketing & Sales Manager Nick Wessels of Ulstein Sea of Solutions and ir Ferry Koopmans, CEO of Peutz

"We are nerds" according to Ferry Koopmans CEO of Peutz as I (Han Heilig ed.) ask him to introduce Peutz. I wondered if he meant this but he was serious. The use of the pejorative term struck me. Especially if you look at the stereotypical image of a nerd. Glasses, good with computers, hardly any social life and prefers to communicate through the internet. Ferry Koopmans absolutely does not comply with these characteristics. He characterizes himself as a nerd, but heads an internationally operating consultancy in acoustics, noise control, wind-technology, vibration technology, building physics, environmental technology and fire-safety. Each specialities where commercialization and being a nerd hardly go together.

Once back at the editorial office in IJmuiden, I immediately did a literature research on the concept. I came to the conclusion that a nerd creates a certain distance in which he may engage in matters that interest him excessively. Therefore they are often successful in life. With this description I was able to understand Koopmans introduction and a number of statements that followed, from a more realistic perspective and combine it with elements such as modesty, discretion, subdued and openness.

Service oriented

The greatest strength is that Peutz has many disciplines in-house. It is therefore able to switch quickly. The engineering consultancy has offices in the Netherlands (Mook, Zoetermeer and Groningen) Germany, France and Belgium with over 200 employees and consists of teams of quality-conscious senior consultants with years of experience, who all have created their own speciality. The combination of all specialisms adds great value. Koopmans: "We measure observe, advise and design solutions. In addition, we make use of our own research facilities. We advise our clients to conduct thorough research to solve a problem, however we are aware of the fact that we cannot investigate indefinitely, we need to provide sound advice within a reasonable budget. If necessary we go on day and night to serve the customer on time.

No entry

While preparing for the interview I discovered that on the Peutz website there isn't any reference to projects for the offshore industry. Strange, because I already knew from Nick Wessels, marketing and sales manager at Ulstein Sea of Solutions, that Peutz is a very serious company with an attractive scope of services for the upstream oil and gas

industry. So the question seemed justified why the site only refers to buildings like the Amsterdam Arena, the ING headquarters along the A-10, the World Port Center in Rotterdam or Publicis Department Store in Paris, but no mention is made of all kinds of interesting projects for the international offshore industry.

Koopmans: "In itself it is a legitimate observation. Failure to report these projects has everything to do with trust and strict confidentiality. We perform a lot of research and test lots of products which we are contractually obliged not to talk about. Hence the agreement within Peutz that all offshore projects are confidential, unless the customer approves publication. We will not go public. On the website, our work within our disciplines is explained. Noise control, vibration technology, and wind tunnel studies. In our communication we focus less on specific target groups and individual players. There is therefore indeed an idea behind our modesty. But we may need to adapt that philosophy to the requirements of this modern era with all its forms of social media. Profiling ourselves more prominently through more transparency without compromising the client. Especially if this has a positive effect on the decision to work with Peutz. As a matter of fact we are working on this: our recently published book "Wind Technology by Peutz" is an example of this, and we also attend more trade fairs than previously to profile ourselves."



The Aegir of Heerema is one of the specialized ships on which both Ulstein Sea of Solutions and Peutz worked (foto: Ulstein Sea of Solutions / Aerolin).

Wind tunnel

All the laboratories of Peutz are located in Mook. There is an acoustic laboratory for all possible forms of noise and vibration research. There is a laboratory for building physics for climate control issues, a laboratory for wind technology and a new laboratory for fire safety which is under construction. On shore as well as offshore projects can be tested here. Special attention can be given to the coherence between aspects such as escape, fire and smoke compartmentalization, flash-over time, smoke and heat dissipation and resistance to flash-over. Peutz is unique in having its own wind tunnel, especially for an independent consultancy in Europe.

With the wind tunnel, the wind conditions in the lower layer of the atmosphere are simulated. In the wind tunnel scale model research is conducted for wind climate, wind loads, dispersion of pollutants and air quality. The wind tunnel is a closed tunnel in which wind circulates without air entering or leaving. This is called a 'closed-circuit atmospheric boundary layer' wind tunnel. Large fans provide the flow of air in the tunnel and can raise the wind speed to approximately one hundred kilometres per hour. The wind flows over a rough surface for a dozen or so meters (fetch) to the region where the measurements are conducted. The tunnel has a cross section of approximately two by three meters. The measuring section contains a turntable with a diameter of over two meters, containing, in the case of the offshore industry, the model on which research is being done. By revolving the turntable the wind direction changes so that the flow properties at different wind directions are examined.

At the beginning of the Peutz wind tunnel there are large vertical elements (spires and trip boards) that cause a significant turbulence and ensure that at the top the wind speeds are higher than at the bottom. Then follows the fetch, where the roughness of the floor determines how strong the wind speed at the bottom decreases. With a flush floor there is hardly any deceleration, a carpet or grid already gives a stronger deceleration, and largest deceleration is obtained by a pattern of blocks on the floor.

By varying materials and shapes the wind-profile and wind speed variations can be adapted to the requirements for specific tests. The result is that the wind at model scale contains all of the characteristics of the wind at full scale. Most properties of the wind remain the same to the scale of the model study. The values indicated by wind statistics, can therefore be used in the wind tunnel, they do not need to be adapted. Once the wind has been scaled, it's just a matter of placing the offshore ship model on the turntable, programming the different wind speeds and directions and let it run. The main question beforehand is: to which scale should the model be built? The answer is, as large as possible. There are however some limitations, the wind tunnel must remain 'open', the model should not block more than five to ten percent of the air flow and must keep sufficient distance from the walls of the tunnel. If it is a ship or an oil rig a model scale of 1:200 is typical, for specific parts thereof, a larger scale is possible. If the model is made to the correct scale, the research can begin. Almost everything that happens in the lower layer of the atmosphere and where wind plays a major role, can be tested in the wind tunnel. Peutz has already tested a wide range of equipment, and various constructions. Offshore vessels, pipe laying vessels, helicopter decks and exhaust systems.

Dangerous

For helicopter decks wind tunnel research is an issue of safety. Oil rigs and production platforms cause unpredictable swirls. Near a helipad this can cause danger. Hence, turbulence measurements are carried out in the wind tunnel at the design stage to identify any unsafe situations for. Safety first. However, there is more. A helicopter is susceptible to temperature changes. If it's hot, the air density is lower, a helicopter has less lift and also less engine power. A sudden increase in the temperature can therefore be extremely dangerous, especially during take-off and landing. In the past few years, several accidents and hazardous situations with helicopters have occurred on platforms. So there is every reason to be aware of heat sources near a helipad. The gases released during flaring or the exhaust of a combustion engine on a ship can reach temperatures of several hundred degrees, and may under no circumstance come near the helipad. The helicopter itself may cause nuisance, such as when its exhaust gases are blown directly into the ventilation system of a drilling rig. In the wind tunnel solutions can be found by altering the landing location or adjusting the ventilation.

Knowledge

One of the Dutch companies that uses the services of Peutz is Ulstein Sea of Solutions, founded in March 2001 and part of the Ulstein Group since March 2008. Nick Wessels, marketing & sales manager, who is also present at this interview: "As independent ship architects of complex innovative offshore vessels we try as much as possible to work with Dutch partners, increasing added value towards our customers. Especially when it comes to knowledge-specific issues. We're not looking for a subcontractor that performs an activity for a certain fee. But seek long term cooperation. Ulstein is strong in conceptual and basic design but principally does not do detailed design. Marin in Wageningen is also a partner of ours. Most of our model tests take place there. And the funny thing is that what Marin does underwater, Peutz does above water. Two years ago I met their offshore project manager, Niels Moonen, for the first time. He visited our booth at the Offshore Energy exhibition. Up to that time Peutz was a completely unknown phenomenon to me. I was therefore surprised to hear that they already carried out projects for Heerema, Allseas, Shell, Hertel and Huisman. And some oil companies. Moonen's pitch was impressive. Especially the many years of experience in the field of wind tunnel tests and wind force coefficients quickly struck a chord with me and it was clear to me that the Peutz specialities joined very well with the Ulstein ambition to broaden our knowledge, preferably with Dutch partners. There is a lot of knowledge in our own country. But the right parties have to find each other and be willing to cooperate."

Legislation

When did Peutz actually come into contact with 'water' for the first time? CEO Ferry Koopmans explains. "Our discipline acoustics began on land. In 1954. And the maritime area actually joined us automatically. The basic knowledge is exactly the same. During the reconstruction of the Dutch merchant fleet after the Second World War II the emphasis was initially mainly on ships that could sail as fast as possible and could carry as much cargo as possible. The level of noise on board played no role at all. Even though it could be harmful.