

BROCHURE

DeRegt

A SERCEL COMPANY

Working as a Design Engineer at DeRegt

Discover more about the projects, colleagues and growth opportunities you encounter in this job

Introduction

As an engineer searching for a new job, making the right choice can often be challenging. You are probably looking for a place where you can find new challenges and develop yourself but at the same time feel comfortable.

Of course, you are more than welcome to apply for a job interview; we will gladly tell you what the role of a Design Engineer and your opportunities look like at DeRegt.

However, we thought it would be better to give you the opportunity to discover more about this yourself. That is why we have compiled several insights in this brochure.

You will read in **Chapter 1** about one of our most exciting projects, in which our engineers excelled and learned a lot on an international level. Next, we interviewed two of our employees about their experiences at DeRegt. You can read this duo interview in **Chapter 2**. For all substantive questions about growth opportunities and options at DeRegt, please see **Chapter 3**.

Does this all sound interesting, and do you think the role of Design Engineer at DeRegt is the right fit for you? Then we would love to meet you soon!

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Blue Nodules

Designing a trailblazing subsea cable

Insight into one of DeRegt's most exciting projects

Summary

In short, Blue Nodules is a research and innovation project to develop a system for harvesting polymetallic nodules from the sea floor with minimum environmental impact. For this so-called Deep Sea Mining project, the European Union deployed a large team of various specialists.

For DeRegt's design engineers, this challenging project involved a lot. Dealing with different requirements and interfaces is one thing, but the commercial side is also fascinating. After all, the result has to be profitable.

The Blue Nodules project resulted in a patented invention by our design engineers, which they can be very proud of. Besides the technical aspect, working closely together with other parties and engineers was very important.

The future of Deep Sea Mining is still unclear, but DeRegt and the other Blue Nodules members have made a great start. In this Case Story, we dive deeper into the challenges, processes and results. Team leader Sander van Leeuwen also looks back on the project and explains why this was “the perfect project” for his team members.

Origins of the **Blue Nodules Project**

The Blue Nodules project is an interesting case for several reasons. Like any project, it started with a client challenge. In this case, that client is a big one: the European Union. It called for a creative, custom cable solution to solve the customer's challenges, like all of DeRegt's projects. However, in this case, the challenges were not only technical but also geopolitical.

The world is in a significant transition, where we want to move away from fossil fuels and go fully electric. Electric driving is a notable example of this. However, electric batteries require raw materials, such as cobalt. A lot of cobalt is needed for the electric transition. Certain countries control most of the cobalt

mines, but the European Union wants to secure this supply chain without being dependent on others.

Fortunately, cobalt can also be found in other places. There are so-called polymetallic nodules on the ocean floor (up to depths of 5 kilometres), which contain many different materials. One of them is cobalt. The European Union needed a way to extract these polymetallic nodules without damaging the seabed's ecosystem too much. That challenge to mine polymetallic nodules at great depth on a commercial scale led to the Blue Nodules project.

Challenging yet exciting for the team

For this reason, the European Union deployed a large team of various specialists. This broad team included industrial parties, universities, research institutes and environmental specialists. A unique alliance, with a total of 14 “team members”. DeRegt was invited to the project team as subsea cable expert; a wonderful challenge for our Design Engineers!

To extract polymetallic nodules at a depth of 5 kilometres, there was a need for a giant vacuum cleaner (called a crawler) and a hose of 5km in length. The construction had to be capable of sucking nodules from the seabed to the surface. This required a huge amount of suction power. By comparison, the Eiffel tower (300m) fits in there more than 16 times. Working on a project like this, you realize you are working on something enormous.

For design engineers, there is a lot involved in such a challenging request. You have to deal with a lot of different requirements and interfaces. The “crawler” and each of the five pumps, distributed

along the 5km hose, must be connected with cables. The cables must provide a lot of power and allow data to be transferred. The cables must also be suitable for 500 bar pressure. Launching the system into the water and lifting it back onto the ship conveniently and safely must also be possible. In addition, the commercial side is very interesting: how can we create a system that will be profitable in the end, despite the big investment that’s required?

Working towards a solution

As a cable developer, DeRegt always makes custom solutions, which means that each product is yet another completely new invention. This is especially true for special requests like Blue Nodules.

What is important to know is that DeRegt's design engineers do not just create the cable. They build the whole system around it! Maintenance, launching, and what happens if something breaks down must also be carefully considered. How do you make sure downtime is minimal?

We eventually devised a system that allows us to clamp cables to the hose automatically, which makes it possible to launch and recover

the system without human interference. This automatic clamping system has even been patented afterwards. Coming up with new ideas and eventually realizing these designs makes these unique projects unparalleled for engineers.

To outline how to think as a design engineer in such projects, we highlight the three biggest challenges that played a role in this design:

1. Volume and Weight

A major challenge during production was the enormous volume and weight of the required cables. The longest cable had to be as much as 5 kilometres long. How do you produce such a huge cable as efficiently as possible?

2. Pressure in deep waters

Another difficulty is the water pressure at such depths. The cable and connectors must withstand 500 bar of hydrostatic pressure, which is not trivial.

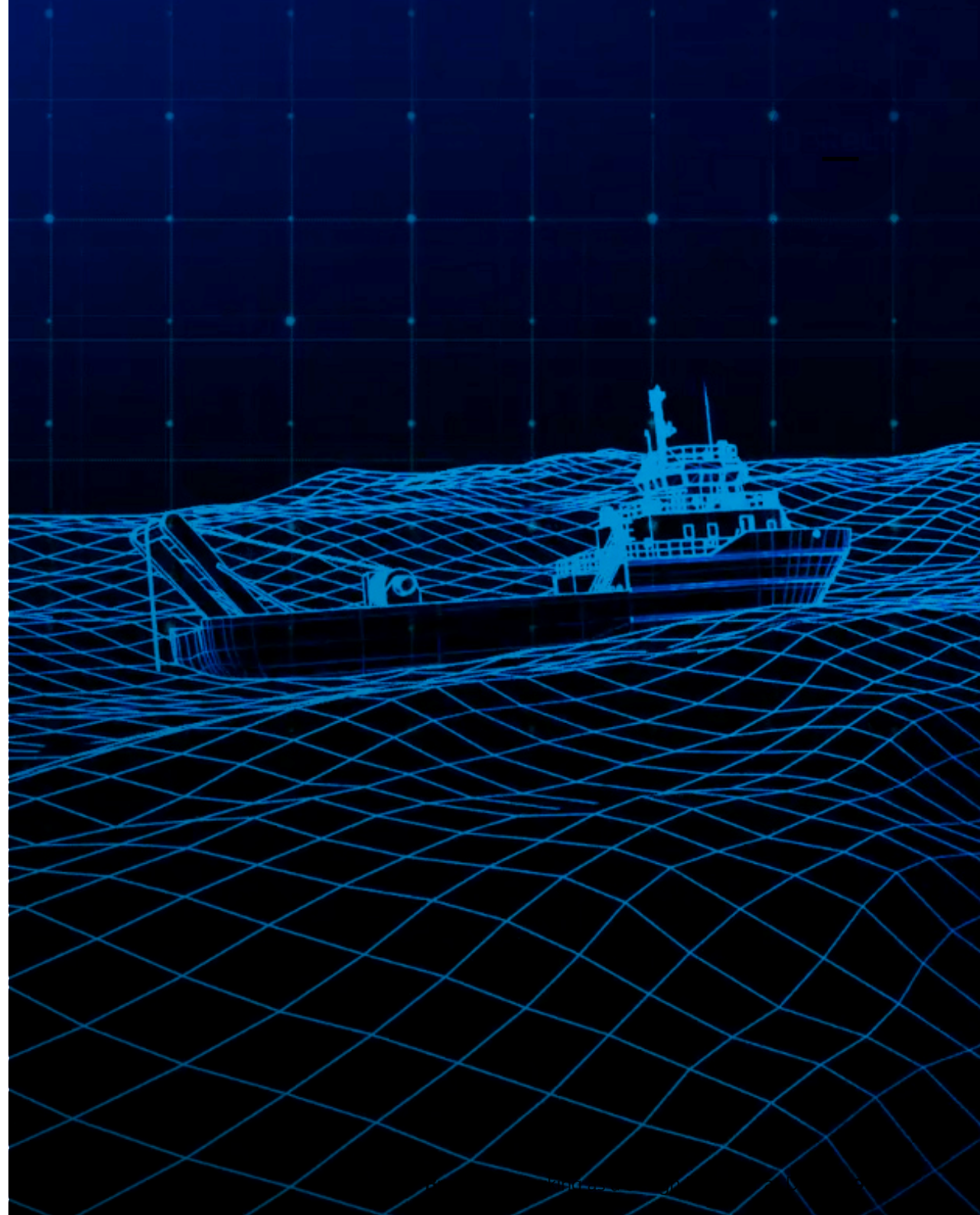
3. Reliability

You can't afford to have a huge device like Blue Nodules launched only to see it fail during operations. How do you make sure the system keeps working if a component fails? And how do you handle spare parts so that repairs can be done efficiently?

Eventually, a so-called "moon pool" was devised for the launch, using a large hole in the middle of the ship (the centre of gravity).

The 5km hose segments will be launched from the top floor, while all cables come from the bottom floor of the ship. They will be attached using the aforementioned automatic clamping system.

To solve the challenge of limiting the number of spares required on the vessel, the same design was used for all cables. Because of this, the baseline design had to be detailed and analyzed concerning its fatigue life for different operational scenarios. To get to such an advanced baseline design, five concept designs were made. Teamwork was vital in this design process.





Teamwork makes the project work

The five concept designs were presented to a project consortium to make the final selection. In the end, crush resistance was the key driver; the design with the highest crush resistance was selected for further development.

This consortium was not an isolated example of teamwork. Throughout the project, “general assembly meetings” were held with all project members. In these meetings, various teams presented progress to each other. In a project with so many components, it is vital that the right requirements are drawn up and that participants coordinate well with each other.

For example, Continental developed the flexible section of the hose, which required DeRegt to partner with them as a cable developer. Other teams looked at environmental impact, while others were responsible for the vessel and deck layout. The crawler design and pumps were also separated into sections. The holistic approach ensures that you discuss these topics with other groups at general assembly meetings (see text box for example). Royal IHC, the main contractor, was the coordinator; they were responsible for tying everything together.

The general assembly meetings were held at a different party's location every time. DeRegt's team got guided tours and got to know other companies from the inside. A win-win situation, as spin-off business can also come from these partnerships!

DeRegt's team lead - Sander van Leeuwen - also gave a general assembly presentation during the project. In it, he shared insights into how subsea cables are made and what is involved in the process. Other parties found this very interesting to see, and DeRegt's production team was very proud to be able to work on this together and show what they had been working on.

Example

The cable's environmental dilemma

How can we organize production in a way that the environmental impact is lower? You can make the cable cheaper by using fewer materials (like copper), but such a cable generates more electrical resistance and - consequently - more heat. A cable with more copper requires more raw materials, but it will generate less heat, which results in lower energy consumption. These kinds of issues should be well thought through within the team.

Looking back at Blue Nodules

"a perfect project for design engineers"

Now the Blue Nodules project is concluded, its members can look back on a very successful project. The Design Engineers worked on this extensive project for four years, during which the periodic general assembly meetings functioned as team building. This resulted in a very close team throughout the project.

The challenging piece was mainly that Deep Sea Mining is still in its infancy, and a follow-up to Blue Nodules requires significant investments. DeRegt could make a name for itself in Deep Sea Mining thanks to this project.

Royal IHC is experiencing the same. As the European Union's main contractor, they have experienced Blue Nodules as an excellent first step and a great project, although this was only the beginning. The research and development project was a success, promising and exciting future!

Team lead **Sander van Leeuwen** even calls Blue Nodules “the perfect project”.
He explains:

“For a design engineer, Blue Nodules is the perfect project. After all, it is risk-free, and you have nothing to lose! The whole project is funded by the European Union, whose main goal is to create a completely new invention. That means you can let your creativity run wild. It is a study/development project in which you, as an engineer, contribute to a more sustainable world. After all, we want to make the transition to all-electric more feasible. In addition, working together with so many other parties ensures you build great new relationships!”



Never stop learning and developing your skillset

Would you thrive in unique projects like Blue Nodules? Are you the creative mastermind that creates the next trailblazing invention of our design engineering team?


Now you've met our colleagues and read about the projects our design engineers contribute to. There is only one important question left: what can your career path look like at DeRegt?

As an engineer, you never want to stop learning new things and developing your skillset - we understand that as no other.

Read more about the growth opportunities at DeRegt on the next page - or work on exciting projects like Blue Nodules with us soon!

Feel free to contact us or apply directly

[Careers page](#)



A Design Engineer's impact at DeRegt

An interview with Manuella Hoogendijk & Auguste Sans

As an engineer looking for a new job, it is often difficult to pinpoint what you are looking for. It might help to gain insight into what motivates others in their work.

This is the reason for an exclusive interview with two of DeRegt's Design Engineers. One has been working at DeRegt for eight months at the time of writing, and the other over 20 years. Together, they talk about development, experiences and the impact they make on their projects every single day.

Introduction

of our Design Engineers

Let's start at the beginning: can you introduce yourself?

Auguste: "Sure! I am Auguste Sans, 32 years old, and I was born in France. I studied Engineering in France and eventually moved to Edinburgh to do a master's in Renewable Engineering. After my studies, I worked in Renewable Energy for three years. When I moved back to France I worked in the woodworking industry. My first experience within the cable industry started in Greece, where I worked in Submarine Cable Manufacturing for a couple of years."

You've seen places! And now you live in Rotterdam?

Auguste: "Yes, I started working at DeRegt eight months ago. That's when I moved to Rotterdam to work in the Netherlands."

And how about you, Manuella? You're working at DeRegt a bit longer, right?

Manuella: "That's right! I am Manuella Hoogendijk, and I've been working at DeRegt for more than 20 years now. In contrast to Auguste I didn't study engineering. I started working at DeRegt as a draftsman and gathered my experience on the job. DeRegt made my education possible

when I wanted to take the step into engineering. Simultaneously with my job at DeRegt I studied for my bachelor's in engineering in Groningen and got my certificate in 4 years and 3 months. Now I am a termination designer."

You made quite some steps in your DeRegt career.

Manuella: "Absolutely, and I am delighted I got that opportunity at DeRegt. As a draftsman, I made the drawings for the engineers, mostly of terminations. At DeRegt, you're working in a niche market. This means you'll learn most of the specifics on the job itself. A study in engineering gives you more understanding and depth."

And you, Auguste? How did you start at DeRegt?

Auguste: "As I said, I started working in cable manufacturing in Greece. The company I worked at was a big one. I worked in Quality Control, but each department was its own island. You didn't see what was happening in other departments, which was really frustrating for me. I thought the cabling industry was exciting, but I wanted to see more of the entire process. That's why I started to look for that in a new job."

First experiences

as a new design engineer

And did you find that at DeRegt?

Auguste: “When DeRegt invited me for an interview, they invited me to a factory tour. I thought it was fascinating. What appealed to me was that the company’s size was much smaller than I was used to. You can walk around and see production, manufacturing, quality control and other departments. As a designer, you can see the cable you designed becoming a reality. That’s what excites me.”

Manuella: “As Auguste mentions, as a design engineer at DeRegt, you really are at the birth of a project, and you can see it developing. You’re involved from inquiry calls to the factory acceptance test. For example, the engineers may discover something is impossible during assembly. The design engineer assists during the problem-solving and testing. You are truly involved in the entire process.”

How did you experience this during your first months at DeRegt, Auguste?

Auguste: “My first eight months at DeRegt were really nice. I immediately saw the human impact you have within projects here, which was what I was missing in my previous job. I also felt very welcome within the team; my new colleagues made me feel welcome and comfortable, which is very important if you’re coming from abroad.”

Great to hear! Can you tell us more about your team?

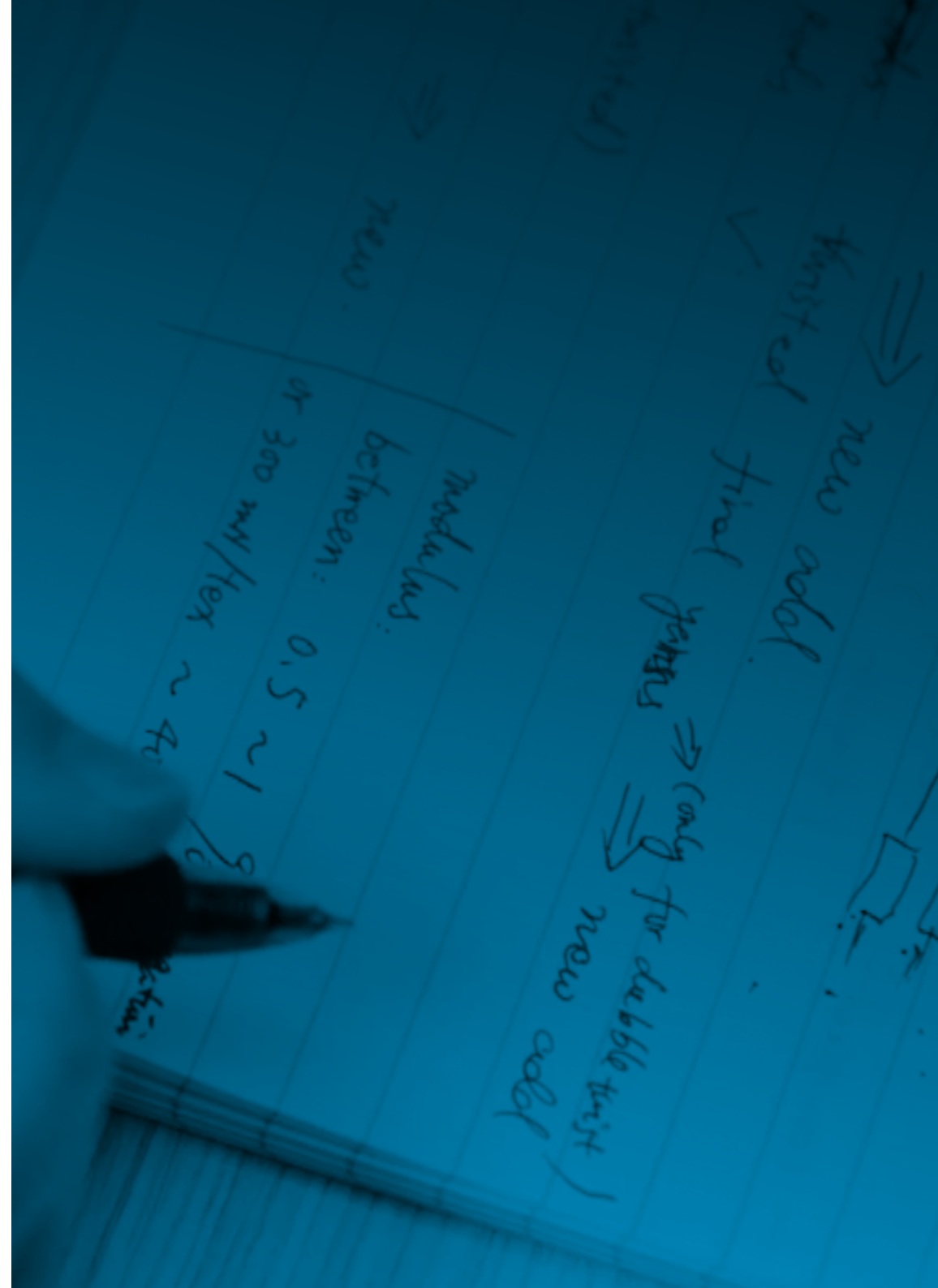
Auguste: “What stood out to me is that people always make time for me as a new team member and colleague. Everyone is busy, but a lot of time is spent on teamwork. Sharing challenges, finding solutions together and helping each other are prioritized. We have a small team in which everyone is important and valued because of their own skills and knowledge. It’s a very constructive way of working together.”

And what about the learning curve as a starting design engineer?

Auguste: “Well, there is a lot to be learned, and the learning curve is steep, but again, the team helps a lot with this. The learning curve is taken step by step. For example, I had to spend a lot of time at the factory to follow the production processes. Sander, the team manager, gives the team a lot of insights and training. After this, I was involved in different phases of various projects to familiarize myself with client contact, the follow-up and technical aspects.”

How do you like that variety?

Auguste: “I like that you learn many different skills and gain tons of knowledge. In projects, there is a lot of going back and forth in finding solutions. It’s all about consulting between design, production and the client. During my workdays, I often think, ‘jeez, already?’ when looking at the time.”



Never a dull moment as an experienced design engineer

Is that variety still there after years of experience, Manuella?

Manuella: “It sure is. As we design custom cables for clients, every project is about creating something new. Of course, you often make a connection with a past project, like ‘we did something like this once’, but it always has to be adapted for the project at hand. Every project is different, which is why there’s never a dull moment!”

And how is that for you, as a design engineer?

Manuella: “Well, I’m glad we don’t have a stock room full of the same stuff. That would make the design process fairly boring. We design everything as new, which is exciting and rewarding. It also means you must be flexible and like working ad hoc as a design engineer. No day is the same as the day before.”

You probably have worked for many different clients already. How is that customer contact for you?

Manuella: “I have seen a lot of different clients. The contact with customers adds to the rewarding experience I mentioned. Brainstorming together and developing a solution that perfectly suits the clients’ needs and wishes is all the more rewarding if you’ve built a relationship of trust. I think the social aspect is vital.”

Auguste: “I already noticed that within my first months at DeRegt and our projects. The client contact and team spirit I mentioned are essential for those rewarding results. You feel your contribution as a part of the team, together with the client and the team of designers. That was what I was hoping to find in my new job, and with DeRegt, I’ve been looking in the right place!”

Providing value for customers

How do you make sure that your relationship with clients works constructively?

Manuella: “I’ve learned that honesty and transparency are key. Whenever something goes wrong, or if certain specifications are not feasible, it’s important to be honest and transparent. It is about providing value to a client, and a design engineer provides the most value when these issues are addressed sincerely and straightforwardly.”

Do you have an example of how this transparency works in a subsea project?

Manuella: “A couple of years ago, we had a project in which we constantly failed a certain test. We kept wondering why - it just didn’t make sense. Of course, we were also worried about what the client would think. In the end, the client was pleased with us, even despite all those failed tests. We made all this effort to fix the problems and were very transparent about it, which was valued by the client.”

Auguste: “Building trust within projects is crucial. The better the relationship, the easier it is to discuss issues like delays or questions about quality. It is important to realize you’re in the process of creating the perfect subsea cable together.”

Manuella: “Some clients even like to witness production phases, and most come to the Factory Acceptance Test in person. I think those are clear examples of transparency. Working closely with clients allows us to become a strategic partner rather than just a cable supplier. I like the social aspect of the work.”

Projects at DeRegt

from project discovery to root cause analysis

What does a typical project at DeRegt look like?

Manuella: “As I mentioned, there’s not such a thing as a typical project. There’s always a lot going on at the same time, so you have to be quite flexible.”

Auguste: “How a project typically starts is that we get an inquiry through sales when something has to be developed. It first comes to one of the other cable designers or me. After the cable design is agreed upon, the project goes to a termination designer, like Manuella. It really is a team job.”

Manuella: “Important to know is that one of the designers is appointed as the project manager. The project manager is responsible for the planning. Is everything created, supplied, checked off and finished in time?”

Is the appointment of a project manager mostly random?

Manuella: “Certainly not! Within the team, we make sure that the project manager is a good fit for the project. For example, another colleague and I are the termination designers in the team. If a project doesn’t have a termination, the two of us will not

become project manager. For projects with a termination, he typically gets the Seismic projects, and I get the Defense projects. ROV projects are assigned to whoever is available. So yes, there is a certain logic to it!”

Coming from a company where you weren’t part of the entire project, how do you experience this, Auguste?

Auguste: “It is a joy to see a finished project at the FAT. As I already mentioned, it is really rewarding to be part of a team and see your design being developed into a custom product. That’s something I missed in my

previous job, and I'm thrilled that I found it here. To be fair, the paperwork is my least favorite part, but it's also an important part of the job."

Manuella, laughing: "Yes, we must also do paperwork. It is important that everything is filed properly. For example, if a designer or the project manager gets ill, or if a repeat order is being placed, it's important that everyone can easily retrieve what has been done before and why certain decisions were made in the design."

Auguste: "Overall, I enjoy the projects that I'm a part of, and I like to have brainstorming sessions with colleagues, customers and my project team. The joint effort leads to a rewarding feeling that is unparalleled."

Manuella: "And after more than 20 years, I still enjoy that same feeling!"

Read more about our projects - or become our new colleague!

Do you want to dive deeper into one of our subsea projects? In "Blue Nodules: designing a trailblazing subsea cable" teamlead Sander van Leeuwen shows you the ins and outs of the Blue Nodules Project.

Be sure to read the previous chapter if you haven't already.

Are you curious if the Design Engineer job fits you just as well as Manuella and Auguste? They would love to welcome you to their team! Feel free to [contact us](#) or [apply directly](#):

[Careers page](#)

The background of the slide features a person in a plaid shirt working at a computer. A large, semi-transparent, stylized letter 'D' is overlaid on the left side of the image. The text is positioned within the right-hand curve of this 'D'.

Growth Opportunities at DeRegt

Reading about your potential new colleagues and the projects you get to work on might've made you curious about DeRegt's possibilities for your career.

The growth opportunities at DeRegt are endless, and the road you take is entirely up to you. What peaks your interest?



Specializing or becoming all-round?


For starters, you can choose to become an all-round engineer and learn more about all aspects, or specialize in the category of your specific field of interest. Mechanical and electrical engineering are subjects you can specialize in, as are Fiber Optics and process technology.

At DeRegt, we will always discuss your next steps based on your wishes, interests and needs. Do you like your job as Design Engineer, and do you want to specialize more in your specific field? Go for it! Do you want to grow further into another division? Go for it!

In short, you can stay in the same position and specialize in your field as long as you want, but you will also get the opportunity to learn and discover other fields. What is your ambition? Let's learn and grow together!

Your ideal **Ecosystem**

Our goal is for each employee to create their own ecosystem in which they can truly thrive. Often, people are better at the things they also enjoy doing. Creating an ecosystem in which you like working and in which you are doing the things that motivate you the most will result in optimal job satisfaction and experiencing the ultimate growth.



Do you want to talk
about your ideal working
ecosystem, or would you
rather apply directly?
We'd love to meet you!

[Careers page](#)

”

For me, the most important thing is that the possibilities are there and you get plenty of opportunities as an employee. I feel really supported by team members and managers in achieving my personal goals.



For example, I started as a Controller at Quality, grew out to be a Quality Engineer and now I am joining the Design team. And that is definitely not my end station!

Tesfina Tiame, Quality Engineer

“

“DeRegt is very strong in offering training, giving employees the space (and budget) always to keep learning. You are in charge of your own career; the employees decide what training is done and in which interests further development takes place.”



“Personally, I feel that ambition truly is seen. If you mention that you are ready for a new challenge, they always consider the possibilities and how these match your interests.”

Jeroen Romijn