

DISMANTLING NAM-PRODUCTION SITES IN GRONINGEN

‘We play Champions League every day’

Even though you are an excellent football player and you are able to score with your eyes closed, you must always stay alert and cannot afford to rely on routine. In that respect, the parties responsible for dismantling 24 NAM gas extraction locations in the north of the Netherlands play in the Champions League every day. Commissioned by and in cooperation with Arcadis, REYM, Van Vliet Demolition Group and Bork are working very carefully on this dismantling. We speak with the parties at location 't Zandt, where it becomes clear that safety comes first everywhere and at all times.

In five reports in Kijk op het Noorden we explain how NAM, Arcadis and other parties are working towards the end of an era: the dismantling of NAM-locations. This is episode 2.



Continuous coordination

Project leader Martijn Hutterd of Arcadis explains, "We prepare our work in such a manner that we can switch from one location to another. We are never idle: if we are finishing up at one location, we are already making the preparations for the following one. We work like a smoothly running train: we make sure that the next party is able to commence without any problems or delays."



REYM is currently working at 't Zandt and will soon be able to continue at the location in Leermens. We are continuously coordinating with each other, ensuring we work as efficiently as possible. Arcadis is responsible for the overall coordination of the work."

Craftsmanship by REYM

REYM has a lot of experience in industrial cleaning, including at NAM-locations. Harry Venema, director of energy transition at Arcadis: "We have worked together in many previous projects, precisely because of that experience. REYM performs craftsmanship." Nick Kappen, commercial director at REYM: "The work we carry out is very specific: we cleanse the installations of hydrocarbons and mercury. These are carcinogenic substances, so you have to know exactly what you are doing. The pollution that is released when gas is extracted, may remain in the installations."

Arcadis:

'Everyone here delivers craftsmanship, each in their own area of expertise. In addition, we prove that our partnership is effective each and every day'

We ensure that this pollution is removed completely before the installations are demolished by Van Vliet Demolition Group. At 't Zandt we have to deal with mercury, which is in the earth's core here. The mercury has come up to the surface during the extraction of the natural gas. We have developed various techniques to remove the mercury from the installations, including through high-pressure cleaning. All the rinse water is collected and taken to an accredited processor."

Working with these substances is certainly not without risk. "The average operator who works for us needs ten to fifteen certificates, which have to be updated and renewed every two to four years. Our people work with the application of independent respiratory protection. Their safety is an absolute top priority for us, for NAM and for Arcadis."



Before Van Vliet Demolition Group can commence their work at 't Zandt, REYM must ensure that the site is entirely free of the aforementioned substances. To test this, samples are taken. The samples are then sent to the laboratory and assessed. By means of applying color coding to the materials on site, Van Vliet Demolition Group can then see how clean the materials are. Subsequently, materials are sorted and removed. Kappen: "We are working at this location for about four months in total." He continues: "We have been working for NAM continuously for seventy years. REYM feels a strong connection to cleaning up the sites that we have helped build back in the days."

Employment

Venema: "REYM has branches in Veendam and Delfzijl. This makes it a truly regional company with employees from the region. NAM and Arcadis consider it paramount to provide employment in the region. Some locations may be redeveloped and given a new purpose. The people from the region that already work here, have experience with the location, have had the right training and are well aware of what working on such an industrial site entails. These are also the kind of people we need within the future energy transition."

Demolition expert Van Vliet Demolition Group

Rico van Noord, project leader at Van Vliet Demolition Group: "We are currently working at the Warffum site. As mentioned before, we work like a 'train' consecutively following one another up. We are expecting to start at

't Zandt at the beginning of May. Two of our work planners are already taking photos of the site today, so that we can make an inventory of what will be needed later. We work very methodically. Arcadis has made the overall project plan and we are making our own implementation plan, which we conform to the overall project plan. It is important to us to keep it as basic as possible: namely, it also serves as a safety plan for our people on site. They must be able to understand it and work with it."

Van Vliet Demolition Group is dismantling all above-ground installations and piping at the sites. "We have a demolition certificate which obliges us to recycle 98.5 percent of the released material. Together with NAM and Arcadis, we are also looking at whether

REYM:

'We cleanse the installations of hydrocarbons and mercury. The Safety of our people is absolute top priority'

certain parts can be reused at existing NAM-sites or elsewhere."

Impressive equipment

Demolition work is often seen by laymen as 'simple work'. Industrial demolition is certainly not. Van Noord: "It's nothing like demolishing an apartment block or an office building. It's a complex process that requires us to be alert constantly. We work with impressively large and high-tech equipment that has been specifically designed for this type of work. Hydraulic 'cold' cutting is our specialty.

Our machines weigh many tons. Thus, before we arrive on site we must conduct various checks. For example, checking the groundwater level to ensure that our equipment does not sink or causes damage to the subsurface."



Roelof Bork from the Bork Group



Harry Venema from Arcadis

Van Vliet Demolition Group works according to the following principle: don't do with human hands what a machine can also do, even if it involves the demolition of smaller parts. "Imagine you are cutting two pipelines and it turns out that these are pressurized and will burst in your hand: as a human being you have nowhere left to go. We like to keep our people in one piece: safety really does come first. This is also the reason why we work so



Arnout Vos van de Bork Groep

closely together in this 'train': we want to leave the location as perfectly as possible for the next party. They too must be able to return to work safely. We feel a high degree of responsibility for this."

Returning home safely

Venema responds: "Everyone here delivers craftsmanship, each in their own area of expertise. In addition, we prove that our partnership is effective each and every day. As well-performing partners, we think along with each other, as if we were direct colleagues. For all of us, safety is paramount. That is what we stand for together. If you make a mistake in terms of safety, you are put off-side." Kappen: "In that respect, we play Champions League every day: continuously alert at the highest possible level and never relying on routine. Above all, we want our people to return home safely to their families every day."

Bork:

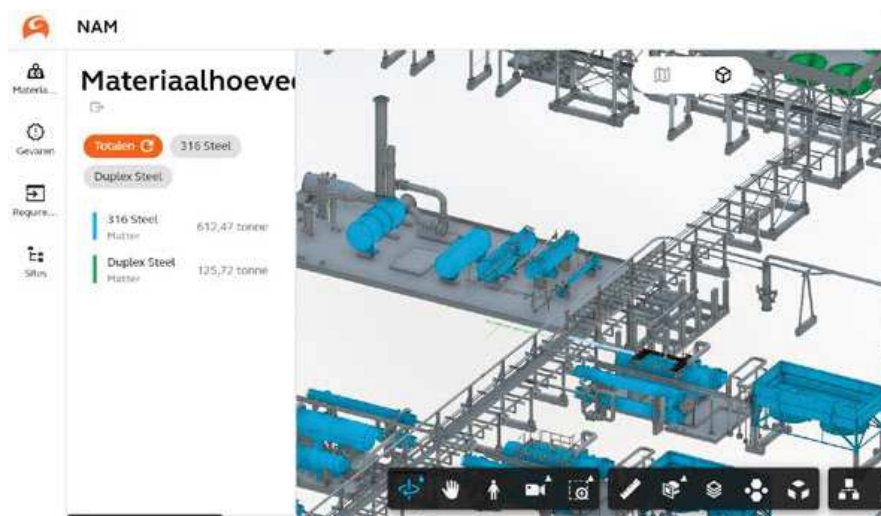
'We are committed to recycling. The repurposing of materials from these sites depends on planning and supply and demand in the market. We can switch very quickly'

Reusal thanks to Bork

The fact that the Bork Group has also joined the partnership, is a logical step if you consider that Arcadis has been working with the demolition, remediation and recycling company for over 25 years. Venema: "To our mutual satisfaction we have always done remediation at NAM-locations together with Bork. We clean the environmental pollution in the subsoil, Bork demolishes the infrastructure and the buildings: all concrete-related work."

Co-owner Roelof Bork and recycling manager Arnout Vos are the ones responsible on behalf of Bork at the 24 NAM-sites. "Among other things, we remove the pavements and the fencing at the site. Asphalt containing bitumen is present at the NAM-sites. We make sure that these bitumen return into the chain and are reused. We have the same certificate as Van Vliet Demolition Group. Therefore, we are also committed to the 98.5 percent recycling rate. We assess the quality of the asphalt: what can we still do with this asphalt in the industry? It is always possible to make surfacing material from asphalt, but some asphalt is of a higher quality than others. We work with certified companies that convert existing asphalt into reusable raw materials for road construction. Asphalt granulate that is free of tar may be used as a valuable raw material in the production of new asphalt: asphalt plants can use this raw material well."

"We also try to separate cement from concrete, by sanding the filler off the grain. There are four grades of concrete, each of which has its own application. We don't make the concrete ourselves, but we act as a supplier for large concrete companies, which all have their own technologies. The repurposing of the materials that we collect from these sites depends very



Digital Twin

"Using drones and laser scanners, we are creating a digital model of this NAM site: a so-called Digital Twin," Venema explains. "That's what we're investing in as companies. We bring together all the information on the assets of these locations into a digital model (such as material, age, quality, degree of pollution, experiences during implementation, etc.). Not merely quantities, but also the risks (such as possible safety issues) and we can link the execution planning to this digital model. The great advantage of the Digital Twin is that we can compare the information from multiple locations and make increasingly better predictions about what we will encounter at subsequent locations, as well as knowing how we can carry out the dismantling and possible reuse as safely and efficiently as possible. The value of this for decommissioning and reuse of future sites is very high."



much on our own planning and the supply and demand in the market at that time. We can switch very quickly in this regard. However, it is not our turn at 't Zandt yet. We are currently working on location Emmen."

Back to the original state

After Bork has completed its work, any environmental cleanup of the subsoil - also known as remediation - begins, and the site is culturally restored. Arcadis restores the ground to its original state, or in the state that the landowner would like it to be. Venema: "If we know in time whether the

landowner is open to redevelopment, we, as collaborating parties, can take this into account. It may then be wise to keep certain materials on site, for example to reuse these materials. However, generally we return the land as it once was. That is the contractual agreement that we have made with NAM, and NAM has made with the landowners."

Henk Huurman, site manager of Arcadis at 't Zandt, tells us that this site was built only seventeen years ago. It's hard to imagine that in a few years time there will be nothing left to see of what has happened here: that

Van Vliet Demolition Group:

'Industrial demolition is absolutely not comparable with 'regular' demolition. We work with impressively large equipment'



Martijn Hutterd from Arcadis



Nick Kappen from REYM



Rico van Noord, van Van Vliet

In the first article, at the end of last year, we outlined in a nutshell the overall process: from decommissioning and cleaning to the opportunities for reuse of the former gas extraction sites. In this second article, we zoom in on the first phase of the decommissioning: what is involved?

- In the third article, we interview BMW's consortium on how they go about closing the gas extraction wells: what does their work and cooperation look like? In what manner do they leave the sites behind?

- In the fourth article, we focus on the final abandonment of the site: what has to happen to hand over the sites cleanly? Who is involved herewith?

- In the fifth article we focus on the redevelopment of sites into Energy Hubs: what ideas and plans exist? And can these actually be started?

natural gas was extracted from the ground here, that everything that was needed for this was shut down, cleaned up and disposed of with the utmost care. That people from several companies roamed around here, collaborating with each other and constantly being alert, 24 hours a day, ensuring that the required work was executed effectively and efficiently, but above all conducted safely. An enormous job. <