World of Royal Eijkelkamp

magazine #3

ROYAL Eijkelkamp
Meet the difference

Meet the difference!

After reading this packed World of Royal Eijkelkamp magazine, you will be fully up to date on everything that is going on at our great company. And there's quite a lot! All of the drilling material has been shipped to Sri Lanka so the first measuring points can now be drilled for the groundwater monitoring network of our client, the Sri Lankan Ministry of Irrigation and Water Resources Management.

In addition to this major project, we have countless other projects that we'd love to tell you more about. We have a special project underway in Norway involving sonic drilling, CPT, and sampling technology, there's the tale of why the MP 1 pump is indispensable in water quality surveys, and a project investigating the extent to which soil in the Netherlands is compacted.

There's also plenty going on at Royal Eijkelkamp itself, alongside our interesting and varied projects. There's the development of the hogweed auger and the first pilot project to be carried out by the NL-FSA. Plus, there's the InnoFields concept emerging at our Royal Eijkelkamp headquarters in Giesbeek. We're also looking back with pride at the extremely successful DemoDay that we organised back in October. If you missed it, I'll let you in a on a little secret – we're arranging another for 2020!

Happy reading.

Huug Eijkelkamp

ROYAL Eijkelkamp
Meet the difference

Content *World of Royal Eijkelkamp*

Colophon

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Tackle the giant hogweed problem at its roots

Effective, ergonomic control of giant hogweed

Giant hogweed is spreading in rural areas and is increasingly seen as a problem, partly due to the harmful effect of the toxic substance in the sap of the plant on the skin and eyes. Other plants are unable to survive under its large canopy. The soil deteriorates in quality and becomes susceptible to erosion. Along watercourses, this is a major problem for embankments, dikes, and flood defences.

The giant hogweed has been on the European Union's list of invasive species since August 2017. Control of giant hogweed is mandatory in all European Union countries.

In order to make the control even more effective, a hand auger was developed in collaboration with Landschapsbeheer Flevoland to remove the roots: the giant hogweed auger.

Order your Giant hogweed auger now online via eijkelkamp.com, email to sales@eijkelkamp.com or call +31 313 880 200.

In order to effectively control the plant, the giant hogweed auger is used in addition to the existing control methods: hoeing, mowing, and grazing. The giant hogweed auger removes the roots of the giant hogweed ergonomically and effectively, preventing the plant from germinating again.

It is also recommended that the giant hogweed not be allowed to flower. This prevents seed dispersal and depletes the seed stock in the soil. The above-ground parts are best removed with a hoe or mower, after which the root is removed with the giant hogweed auger.

The best time to drill out the root is in the spring. In the autumn, the root can be removed from the plants that have not come into bloom. This prevents sprouting the following spring.

The giant hogweed auger is also very suitable for removing roots from places where a single new plant appears, so there is no new source of dispersal.

For a video about the giant hogweed auger, check our official Youtube channel: youtube.com/royaleijkelkamp

Unique soil profiles at the World Soil Museum

Photography – Mike Bink

The World Soil Museum, part of the International Soil Reference and Information Centre, is the only museum that houses a collection of soil profiles from across the globe. The museum has collected over 1,000 of these profiles from around 80 countries and put a selection of them on display. Stephan Mantel, the director of the World Soil Museum, talks passionately about what makes the museum so special.

History of the World Soil Museum

'The World Soil Museum's collection has a long history. In 1960, the project to create the first world soil map was launched on the initiative of the Food and Agriculture Organisation (FAO), the Organisation for Education, Science and Culture (UNESCO), and the World Soil Association (ISSS). The International Soil Museum was established to illustrate the different types of soil on this map, be that for use as reference material and for educational purposes. At the time, the Dutch government assumed responsibility for forming a representative collection. Fast-forward 50 years, and more than 1,000 soil monoliths – specially prepared, undisturbed soil profiles – have been collected from dozens of countries around the world.'

Unique collection

'The World Soil Museum's unique reference collection of soils from around the globe is at the heart of its exhibitions and educational activities. The collection is structured according to important soil-forming factors such as climate, relief, parent material, organisms, time, and human influences. It is also supported by detailed profile descriptions, including physical and chemical characteristics as well as information on landscape and land use. The soil monoliths – soil samples of about 1.5 metres in depth – offer a good picture of the stratification, colours, and structure of the soil. This gives visitors a good idea of the enormous variety of soil types that can be found all over the world. All reference profiles are fully documented with a description and image from the field. They're also analysed, and additional soil samples are available for each profile,' says Stephan.

Education

One of the cornerstones of the World Soil Museum is education. Stephan explains: 'We're not just a place to see fantastic collections; we also give many talks, lectures and practical classes. We also hold an International Spring School once a year, which is an open course that people can sign up for. The museum is open to everyone: soil scientists and others, college and university students, secondary-school students, and the general public'.

Become a sponsor

Unique in the world, the World Soil Museum's collection is also at the service of science and society. It supports research into and awareness of the soil in the interest of sustainable management. The World Soil Museum is partly dependent on sponsors for maintaining the collection and keeping it open to visitors. If you, like Royal Eijkelkamp, wish to make a contribution to the World Soil Museum's collection and activities, please contact the curator Stephan Mantel (stephan.mantel@wur.nl).

Stephan Mantel and Fons Eijkelkamp signing the agreement.

'The museum's unique reference collection of soils from around the globe is at the heart of its exhibitions and educational activities.'

Stephan Mantel – Curator World Soil Museum

Stephan's favourite soil profiles

'It's difficult to make a choice, because I've got so many fantastic soil profiles,' says Stephan. 'But I think two soil profiles are a cut above the rest. One of the most beautiful soils in the world is Chernozem from Russia – a very dark soil, rich in organic matter, which develops into loess. And at two metres, this is the longest soil profile in the museum. My other favourite soil comes from Kalimantan and can be seen in the "Humid Tropics" area. I've worked in Kalimantan for six years and have seen more than 80 pits from this soil. At one point, you know everything there is to know about a soil like this, such as the various barriers to its use, its restrictions, and the smart solutions that people use for it. That's why it's one of my favourites.'

Edelman auger

The museum also covers the history of soil mapping – the making of soil maps – in the Netherlands. For example, it has a beautiful old Edelman hand auger along with a picture of Jan Eijkelkamp making an auger in the forge.

For more information or to go on a virtual tour of the museum, please visit the World Soil Museum's website: http://wsm.isric.org/

Sonic drilling and sampling solution for Vattenfall's dam safety project in Sweden

Vattenfall is conducting geotechnical drilling in Sweden for an ongoing project at the embankment dam of the Messaure power plant in order to investigate the material distribution in the upstream support fill. The samples, taken with sonic drilling technique of Eijkelkamp SonicSampDrill, are being taken to improve the supporting documentation for material data. The data are used for enhanced analyses of the dam's need for monitoring and to assess dam safety.

A short review. When the embankment dam for the Messaure hydro power plant was built, between 1957 and 1963, it was one of Europe's largest. It is still one of Vattenfall's largest nowadays, almost two kilometres long and over 100 metres high. To put the amount of filling material used in the dam into perspective, it can be equated to the amount of material required to fill four Pyramids of Cheops.

The project, led by Sweco, started in 2015 and involves, among other things, an overview of the stability of the embankment dam. In order to improve the basis for calculations for determining the dam's safety factor for stability, sampling of the support fill material has been carried out from the dam crown down to a depth of 45 metres by sonic drilling into the upstream support fill.

A big challenge when taking samples of this kind is being able to take representative soil samples with an actual grading curve in order to determine the internal friction angle of the support fill. That's why Eijkelkamp SonicSampDrill equipment was used during the sonic drilling in the summer of 2018 using a sampling bit with an inner diameter of 178 millimetres, which was deemed satisfactory for taking representative support fill samples in the fraction 0 – 100 millimetres. This fraction was required in order to carry out further investigations.

During the sampling, the sampling device first drilled through boulders in the crown cover on the dam. Thanks to this, the public road on the dam crown did not need to be demolished completely. Traffic was rerouted via a gravel road downstream of the dam. Another requirement for the drilling was that the drilling and sampling had to be carried out at a 45-degree gradient in order to penetrate the support fill outside the dam's seal and filter under saturated conditions.

The sonic drilling and sampling method was ideal for this project as the sampling bit being vibrated down into the ground for its entire length (3 metres). The fill material in front of the bit becomes locally fluid from the high-frequency vibrations, which means that it loses its cohesion and can be pressed into the bit.

Continuous drilling in block moraine turned out to be complicated, as there is marked wear on the drill bit during passage through hard rock types such as gneiss and granite. The support fill generally had a composition that the drilling equipment managed. One drill bit was used on average per 40 metres of drilling.
The sonic drill rig used weighs 51 tonnes and is mounted on a 52-tonne CAT 336-F modified excavator, which was transported by boat from the Netherlands to Sweden. Three rigs of this type are active in Europe and normally work on complicated foundation conditions at great depths. Test drilling was conducted in the Netherlands. Another test drilling was carried out in stored material similar to the material downstream of the dam on location in Messaure. The test included the drilling methodology, sampling, refilling of the borehole with an injection mixture and pulling of feed pipe. Equipment was also installed to record drilling data. An anchor plate was designed as ground protection and to improve the control of the sampling device, as well as to prevent it from pulling obliquely. The ground protection was developed to minimise damage to the roadway from the rig's ground pressure.

The drilling was concluded after slightly more than three weeks when approximately 4.8 tonnes of support fill material in the fraction 0 - 100 millimetres had been collected from just under 200 metres of drilling. A separate study was conducted to design appropriate refill material to use after drilling.

The sampling provided valuable documentation of the material distribution in the cross section of the dam, which markedly reduces the uncertainties in the stability calculations.

Sustainable flow rate measuring point for Renkums Beekdal

The Renkums Beekdal, located at the edge of the Veluwe, a region in the Province of Gelderland, the Netherlands, is a very interesting creek valley from an ecological and hydrological perspective. It is also a challenging area due to the highly complex soil structure with many different soil layers. To properly understand how the water system within this creek valley functions, the Vallei en Veluwe Water Board has asked Eijkelkamp Soil & Water to set up a permanent flow rate measuring point.

Marinus van Dijk, who works in the Water Board's Planning Department, speaks with a great deal of passion about the Renkums Beekdal creek valley and the measures that are being taken to make the valley future-proof. 'It is a beautiful creek valley with many differences in height. The water comes from the Veluwe and runs steeply down towards the Rhine, with much seepage, creeks and cultural history. In the past, water mills were driven by the creeks. These creeks were often raised and coated with loam to retain the water. Quite an amazing system that in the past produced a great deal of water. The groundwater levels generally were somewhat higher and there was virtually no groundwater extraction.'

'The situation in the Veluwe has changed for a number of reasons, including land use. Due to past intensive grazing practices, it has, so to speak, turned into a bare hill covered with heath. When there is bare soil, any precipitation that falls directly soaks into the ground. Due to the wood production that was to follow later on, the area was extensively forested, particularly with pine wood. But a key characteristic of pine wood is that it evaporates a great deal of water. While this is not a reason for reduced groundwater levels as such, after over 100 years it became noticeable and the enormous aquifer on the Veluwe nevertheless started to subside. Not to forget drinking water extraction. There are several extraction points here in this area. While these are of course essential, they ultimately do affect the groundwater system.'

'Nowadays this means that we are confronted with reduced and unpredictable water levels. In summer we are increasingly confronted with stagnant water, as well as dried-out areas. This is why we are currently undertaking repair work together with the Province of Gelderland and the Vitens drinking water company to make the water system more robust, make better use of the available water and to enable the ecology to flourish. However, the Renkums Beekdal is not making things easy for us. It is a difficult area to interpret from a hydrological perspective. The entire Veluwe region is a large push moraine with haphazardly positioned soil layers of clay, loam, sand and gravel. This is almost impossible to map and model. Of course you can conduct many deep drillings, but this comes with a significant price tag.'

'Many years ago we set up a measuring network, also in collaboration with Eijkelkamp Soil & Water. But in hindsight it was not a good configuration. It was a rather technical solution, focused on high accuracy and also designed to measure very low rates of flow. The measuring equipment was excellent, and produced high-quality data, but when there are very few opportunities to measure anything, you ultimately still end up with nothing. At that point we said, let's try something different.'

'We disassembled the measuring sites and at the end of the creek valley, at its discharge point, we created a single measuring channel that is always operational and works well, with high as well as low flow rates, that does not push up the water too much and incorporates fish passages. It has become a robust and really good measuring point that will last us for years. It is not susceptible to blockage and overgrowth. The bottom of the measuring channel is concrete and two metres wide. The vertical walls of the measuring channel are made of wood and are 1 metre high. Four NIVUS Transit Time Sensors have been installed on the vertical walls. These sensors alternately transmit and receive high-frequency ultrasonic signals. The difference in time (Delta T), caused by measuring against the direction and then in the direction of flow, provides a correlation of the entire water volume's rate of flow. In addition, an I-sensor has been installed to measure water height without making contact with it, so that the water's surface area can be measured.'

Vallei and Veluwe Water Board
The Vallei en Veluwe Water Board is responsible for providing safe dikes, clean and sufficient surface water and treated wastewater in the region bordered by the IJssel River, the Lower Rhine River, the Utrecht Hill Ridge and the Bordering Lakes. As such the Water Board oversees an area of 245,644 hectares and serves 1.1 million residents.

'Naturally we hope that over time this measuring point will provide some feedback about the measures we are currently implementing. Because the effect of the measures we are implementing is not going to be evident from one day to the next. It is not a measuring point that we are constantly checking and that we expect to provide us with data by the minute. Currently we are receiving data four times per day and that is perfect. The system has been performing well for several weeks. In December we measured the high flow rates caused by high levels of precipitation. The system is showing a consistent discharge rate without any interruptions. Perfect, in other words.'

For the video, view our official Youtube channel: **youtube.com/royaleijkelkamp**

Royal Eijkelkamp DemoDay 2019

250 people from all over the world came to Royal Eijkelkamp to join the DemoDay 2019 on Thursday 10th October. A big thanks to everyone who joined and made this day fabulous!

Didn't you join the DemoDay? Join our DemoDay in 2020 and check the aftermovie at our Royal Eijkelkamp Youtube page.

MP 1 pump indispensable when measuring water quality

Good surface and groundwater quality means sustainable development of plants, animals, and reliable drinking water. To guarantee this quality, a policy has been formulated in the Water Framework Directive which must be observed by all EU Member States. Due to the integration of various European water quality directives, the European countries are on the same page in terms of water-related issues, and cross-border water problems are tackled jointly. Jean Hacking, Project Manager Groundwater Monitoring within the Nature and Water cluster of the provincial government of Limburg (The Netherlands), explains how he and his colleagues implement these guidelines at provincial level.

‘Under the Water Framework Directive, we are legally obliged to guarantee the quality of groundwater. We have therefore set up a groundwater quality monitoring network consisting of some 70 to 80 locations throughout Limburg. Samples are taken annually at these locations and on the advice of Eijkelkamp Soil & Water, we use Grundfos MP 1 submersible pumps. These Grundfos submersible pumps are ideal for pumping and sampling monitoring wells with a diameter of 55 mm or more.’

‘The pump motor of the Grundfos MP 1 is controlled by a special adjustable frequency converter. Since the frequency is continuously adjustable, the capacity of the MP1 pump can be controlled from 0 to 2 m3/hour, which allows water to be pumped through the monitoring well quickly. A lower frequency is set for the sampling of the monitoring wells.’

Research into the effects of mining

‘In addition to the groundwater quality monitoring network, we also use the Grundfos MP 1 pumps for the mine water monitoring network. After the closure of the mines in South Limburg (late 1960s, early 1970s), the pumping systems that kept the mines dry were stopped. Since then, the mine water has continued to rise,’ says Jean. The Ministry of Economic Affairs has therefore instructed the Province of Limburg to conduct more extensive research into the extent of the increase and quality of this mine water. For these reasons, seven new wells are being drilled. These wells are each fitted with three filters with a filter depth varying from approximately 40 to approximately 400 m below ground level. The hydraulic head of the groundwater is measured, and all filters are sampled. After the first year, the measurement and sampling regime for the coming years will be evaluated and coordinated.’

“In addition to the groundwater quality monitoring network, we also use the Grundfos MP 1 pumps for the mine water monitoring network.’

Jean Hacking - Project Manager Groundwater Monitoring

Advantages of the MP 1 pump

‘There are many advantages to working with the Grundfos MP 1 pumps. The MP 1 pumps deliver an impressive flow rate and have sufficient head. The latter is important because the groundwater in mine water wells is usually located at great depths. In addition, the diameter of the pump is suitable for most monitoring wells. The pumps are easy to install and made of a relatively inert material, so they do not contaminate the samples.

More details?
Please contact the Eijkelkamp Soil & Water Sales Team for more details about the Grundfos MP1 pump. Send an email to sales@eijkelkamp.com, call +31 313 880200 or visit eijkelkamp.com.

Groundwater data essential for nature development in Cortenoever

The Province of Gelderland (The Netherlands) is working with the Directorate-General for Public Works and Water Management (Rijkswaterstaat), the Forestry Commission (Staatsbosbeheer), and the municipality of Brummen on a nature development plan for the Cortenoever hamlet. The current area will be designed in such a way as to create an even more valuable nature conservation area with clean and healthy water. As a result, animal and plant species that are supposed to form part of a 'levende rivier' (living river) return to the floodplains. Kees Buddingh, an Eco-hydrologist employed by the Province of Gelderland, explains the Cortenoever project.

About Cortenoever
Cortenoever is a floodplain managed as naturally as possible. It is one of the best-preserved point-bar landscapes in the Netherlands. Large areas of the floodplain are managed by Staatsbosbeheer.
A point-bar landscape comprises a succession of point-bar channels, levees, and bank walls.

Project Cortenoever

'The province of Gelderland is responsible for the management and creation of new nature areas and the strengthening of existing nature, based on the Gelderland Nature Network and Natura 2000. For the most part, Cortenoever is already a very beautiful nature conservation area. The purpose of this project is therefore to extend this nature network. Among other things, we will lower the floodplains by deepening the original winding channels. This will allow more water to enter the floodplains. The flower-rich grassland will also be expanded.'

'We are achieving the objectives established for the Cortenoever project based on Natura 2000, the Gelderland Nature Network (GNN), and the Water Framework Directive (WFD). One of the objectives is the development of a certain type of water that is suitable for the growth of plants, but also for the growth and living conditions of fish. It is also important that we start retaining water in this area. This mainly concerns the lower parts of the area. After a high tide situation during the spring, the ideal situation would be to retain that water so a large area is always covered with a shallow layer of water. Grassland that was flooded in the spring is a perfect spawning and juvenile habitat for certain fish species.'

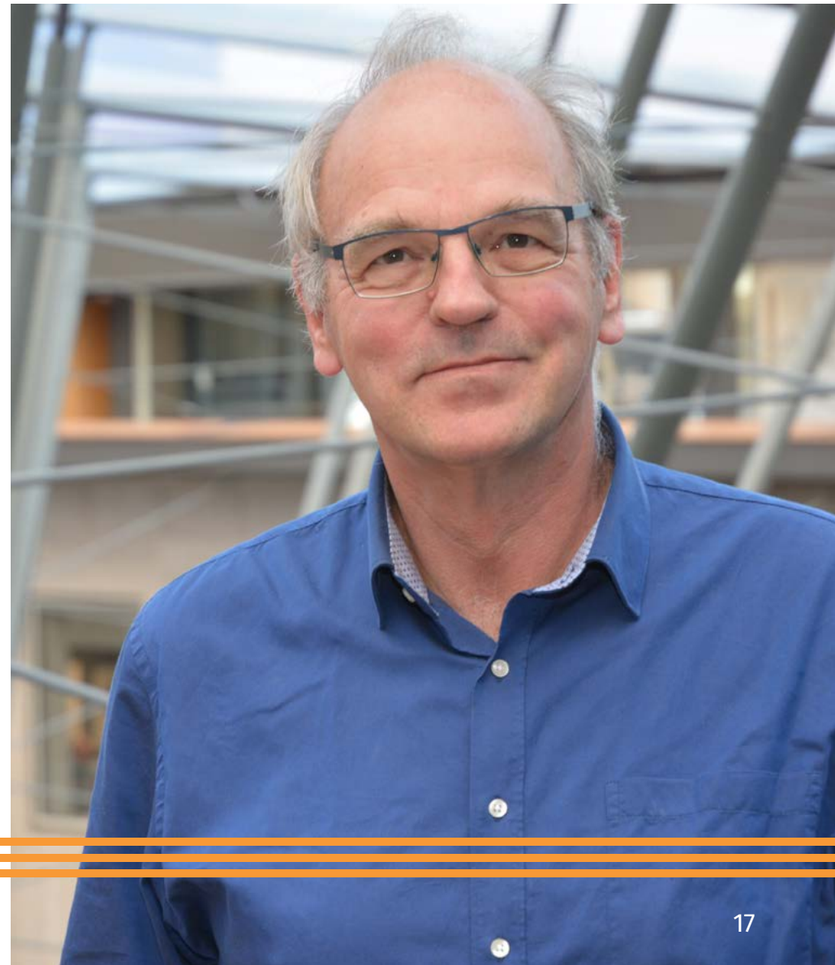
Groundwater monitoring network

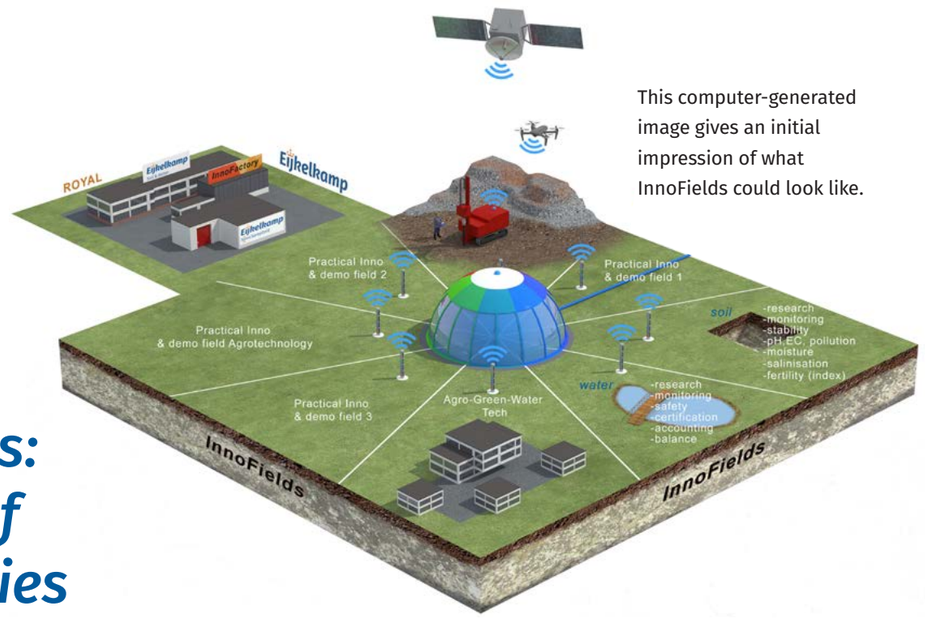
'We were really lacking important groundwater information to arrive at a concrete plan. We know the water levels of the river, but the effects of these water levels on the channels we want to dredge and the extent of the fluctuation in the channels were unknown to us. In order to map these data, I asked Eijkelkamp Soil & Water to install a groundwater monitoring network. With this groundwater monitoring network, we will monitor the river's response for two years.'
'We have installed a monitoring well equipped with a Diver water level logger at three different locations. This will provide us with a clear picture of the interaction between groundwater, river water levels, and excess precipitation at various locations. And that will serve as the basis for the dredging of the channels. This monitoring network will allow us to determine how deep we need to dredge, how we can ensure that certain parts do not dry out and what the average water level is.'

'We were really lacking important groundwater information to arrive at a concrete plan.'
Kees Buddingh - Eco-hydrologist

It is all about data

'Nowadays, it is all about data. In addition to the groundwater sensor, each monitoring well is equipped with a modem that sends the data to an online portal where I can easily access it. The beauty thereof is that there is no need to visit the different locations every time, because the sensor and the modem register everything.'





This computer-generated image gives an initial impression of what InnoFields could look like.

InnoFields: a world of possibilities

'InnoFields is a site where Royal Eijkelkamp, partners, and clients carry out research activities into soil, water, plants, climate, and agriculture, train, and demonstrate,' explains the architect of this new concept – Fons Eijkelkamp.

'What makes InnoFields so special? To start with, it's the location in Giesbeek. Royal Eijkelkamp and the InnoFields site are located in a large valley between Hoge Veluwe and Montferland. This is a fantastic location for soil and water research, information gathering, measuring, monitoring, and visualisation. The same applies to the fact that almost all freshwater in the Netherlands enters via the Liemers area. InnoFields is also well in line with the growing trend of Vocational Education and Training institutions (MBO), Higher Professional Education institutions (HBO), and even traditional universities offering hybrid learning (practice combined with theory).'

Looking for participants and a project manager
To further develop the InnoFields concept, we are looking for participants and an experience project manager. If you are interested, then let us know by calling + 31 313 880 200 or by e-mailing info@eijkelkamp.com.

'Ultimately, the fully energy neutral InnoFields should become a set destination on the itinerary of parties from all over the world that deal with soil, water, plants, climate, and agriculture. Delegations coming to the Netherlands must be fully reassured that the journey to the far eastern corner of our country is definitely worth the effort.'


Fons Eijkelkamp on the site where InnoFields is planned.

The Water Entrepreneur Update

You can read about the Water Entrepreneur Update in the previous two editions of The World of Royal Eijkelkamp, an ambitious project started by the Eijkelkamp Foundation in the West-African nation of Benin in 2014 to build Water Access Points (WAPs) in remote locations.

The objectives of the project are:
- To build 160 Water Access Points
- To provide work for 40 Water Entrepreneurs
- To provide clean drinking water for 100,000 residents in Benin

More than 30 WAPs are now operational, managed by 7 Water Entrepreneurs, and a further 50 WAPs are currently ready for installation Before these WAPs can begin operation, suitable locations will need to be determined, which involves looking at how many potential customers live around the proposed location. It's great to see the increasing enthusiasm amongst Benin residents for purchasing and using 'our' water. Residents have pointed out that by using clean drinking water, they, as well as their animals, fall ill less often.

Your financial support is more than welcome
If we are to achieve the project objectives, we are going to need financial support. If you are interested in sponsoring opportunities, please get in touch by e-mailing b.kelderman@eijkelkamp.com. €12,500 will provide a complete Water Access Point, which will give 625 people access to clean drinking water.

For more information, please visit www.eijkelkampfoundation.com.

Prominent role for Eijkelkamp Penetrologger in Dutch compaction research

During a large-scale research project in the 1990s, Wageningen University & Research (WUR) investigated the presence of organic matter in Dutch soil. Soil samples were taken at no fewer than 1,400 locations. A follow-up study was conducted in late 2018, and the 1,400 locations were revisited. This time not just to measure organic matter but also the penetration resistance. With further analysis, the latter can provide insight into compaction. Willy de Groot and Paul Gerritsen are both involved in this extensive research project, in which the Eijkelkamp Penetrologger plays a prominent role.

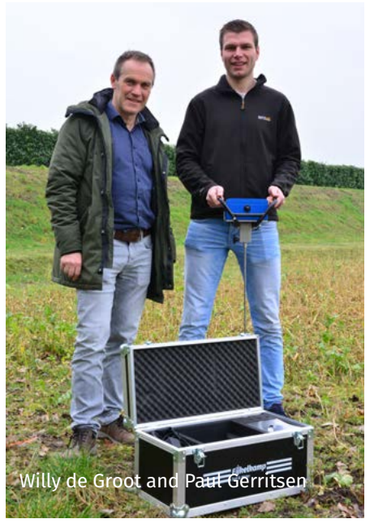
'It was a unique opportunity – parallel to the research into the presence of organic matter in Dutch soil – to simultaneously carry out penetration resistance measurements, because visiting so many locations is a real logistical challenge,' says Willy de Groot, soil researcher at WUR. 'We soon discovered that, with the available capacity and time, we would not be able to carry out nearly as many measurements as we had expected. That's when we sought the assistance of Eurofins, given their extensive experience in analysing and determining soil quality. But measuring penetration resistance is another matter, so we conducted several training days. The 35 Eurofins employees who would be carrying out the measurements were divided into groups and taught how to use the Penetrologger. This included detailed discussion of the embedded software and the technique to be used when working with the Penetrologger: keep the pin straight above the hole, hold it still, and be precise. Then there was a practical session in which the equipment was used in the field.'

'Now the measurement work is underway. We provide the address details of the measurement locations, arrange any necessary permits, and Eurofins coordinates the rest of the process. However, there's some doubt as to whether we will actually end up with 1,400 measurements. That might be because some people will not give permission to perform a measurement on their property, and some locations that were still farmland in the 1990s have since been built on, making it impossible to carry out a measurement. I expect we will end up with about 1,200 readings.'

'The Penetrologger is a standard choice when it comes to compaction research. Colleague and compaction specialist Jan van den Akker often uses the Penetrologger for EU projects pertaining to soil strategy. In the south of the Netherlands, for example, we are conducting a trial with sorghum, a tropical cereal crop that may be able to counter compaction in the soil. This is because sorghum roots can make their way through compacted soil. Corn and sorghum have been planted alongside each other on a trial field, and we are using the Penetrologger there to see whether there are any differences – and if so what those differences might be. However, we have to be careful not to disturb the trial ourselves, because the soil can also be influenced by conducting intensive measurements. That's why we do our work carefully, in the headlands. So alongside monitoring, the Penetrologger is used for conducting trials and to devise new measures against compaction.'

Data from all over the Netherlands

Once all the locations have been visited, we will start processing the data. It is a huge data set, so that will be a big job,' says Paul Gerritsen, researcher with Plant Research International at WUR. 'We want to filter out a few key figures for each measurement location, such as the depth at which we find the highest resistance to penetration, the greatest depth at which they were able to perform measurements, and the maximum depth. This ultimately produces a median curve per location, which we then use to examine the relationship to the compaction. And, through analysis, we can establish a good correlation. Where, in the Netherlands, does compaction play the greatest role? Where is the biggest concern?'


Willy de Groot and Paul Gerritsen

'Soil compaction is known to play a role in agriculture, in connection with active tillage. But this research will also give us more insight into compaction as it occurs under natural circumstances. So, the fact that this data set spans all of the Netherlands is fantastic.'

What is soil compaction?

'Soil compaction is a degradation of the physical quality of the soil. It is mentioned in the EU soil strategy as one of the most significant soil degradation factors in Europe. The use of heavy, soil-unfriendly machines is a problematic issue in preserving sustainable, healthy soil in Dutch agriculture.'

'The agricultural use of such machines, often in combination with wet soil conditions, is considered to be the main cause of soil structure loss and soil compaction – both in the tillage layer and in the subsoil.' (source - wur.nl)

Everything revolves around reliable data at Henk van Tongeren Water & Techniek

Henk van Tongeren Water & Techniek is active in the field of water technology, particularly groundwater technology such as well-point drainage and soil drilling. The Dutch family business often works on civil engineering projects involving concrete and the construction of underground infrastructure. Henk van Tongeren Water & Techniek is increasingly using sensors, modems, and the Eijkelkamp Soil & Water WebPortal for these projects. General Manager Guido van Tongeren explains why.

Guido van Tongeren

'For a client to be able to rely on me, they have to be able to count on my partners too. And with Eijkelkamp Soil & Water there is no need to worry.'

Guido van Tongeren – General Manager

'An example of where we use equipment from Eijkelkamp Soil & Water is larger well-point drainage projects, in which management of the local environment is very important. This involves collecting data from the environment and looking at how the groundwater levels relate to them. We check to make sure the groundwater levels are not too high or too low, and then report this to our clients and other project stakeholders.'

'In the past, this was mostly done manually. Once you had installed monitoring wells somewhere, you would measure the water table levels, sample them with a plumb line, and then enter the values in the administrative files and communicate the results. These days, it is essential to have access to real-time data, well-presented clear visuals, and various login options.'

'The Netherlands is a very densely populated country. People have to be able to trust that houses will not be damaged when construction work is going on nearby. Safety comes first. So, it is only logical that nowadays you have to be very transparent when disseminating information about a project. That is easier to accomplish with real-time data. It enables you to quickly model and analyse, and warn or intervene if necessary.'

'We work closely with Eijkelkamp Soil & Water because we consider quality and reliability to be incredibly important. After all, we want to have reliable data for the immediate vicinity of an excavation pit or pipeline trench. We also seek to avoid disruptions as much as possible. In that regard, I think the service level that Eijkelkamp Soil & Water provides is incredibly important. In the unlikely event of a technical problem, an entire support team is ready to assist, and you can always count on them.'

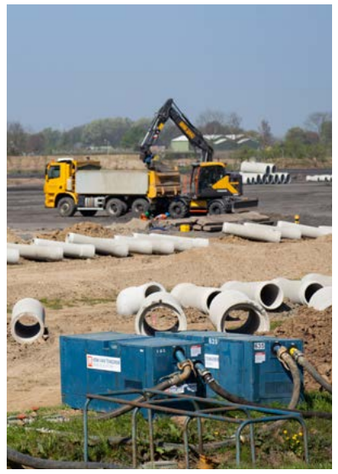
'While there are other suppliers, the fact that Eijkelkamp Soil & Water is so service-oriented makes them a top pick. For example, we try to integrate various things, such as the well-point drainage data and data from the surrounding area. Our intention is to bring this together in a single web-based application, and Eijkelkamp Soil & Water provide us with fantastic support in accomplishing this.'

'We are a very reliable technology partner for our clients. As you can imagine, it takes a huge investment to accomplish something like keeping an excavation pit dry. In a situation like that, you clearly need partners who are as committed as you are. For a client to be able to rely on me, they have to be able to count on my partners too. And with Eijkelkamp Soil & Water there is no need to worry.'

'I think you will see us working together more and more in the future. I expect the need for data collection and the distribution of reliable data to continue to grow. In that respect, we are increasingly becoming a data processing organisation. And if you want to be reliable, you have to think about long-term cooperation with partners. That is why I expect a bright future for Eijkelkamp and Van Tongeren.'

Henk van Tongeren Water & Techniek, like Royal Eijkelkamp also a family business, has been supplying a multitude of solutions in the fields of installation technology, groundwater technology, and sustainable energy for almost 70 years.

For more information, please visit www.henkvantongeren.nl.



For the video, view our official Youtube channel: **youtube.com/royaleijkelkamp**

‘The thing that makes sonic unique is its adaptability, its ability to overcome challenging geologies.’

Serving clients around the world, Eijkelkamp SonicSampDrill has the largest installed base of sonic drills and is currently approaching sonic drill number 600. We recently went on a trip to the United States, travelling the country from the west coast to the east coast to visit some very satisfied customers.

Terra Testing Inc.

Terra Testing Inc. (TTI), located in Washington, Pennsylvania, is a privately owned corporation that has specialized in geotechnical and environmental drilling since 1972. TTI has successfully completed thousands of projects for the private sector as well as state and industrial owners.

Eric Hajek is the President of Terra Testing Inc. and explained the company’s story. ‘We heard about Sonic about three years ago, I’d say. Our expertise is in geotechnical drilling, environmental drilling, direct push (DP) drilling, sonic drilling, and air excavations. We started talking with Eijkelkamp SonicSampDrill last April and moved on from there, discussing the different sizes of sonic and looking at the sonics we had. After communicating with Eijkelkamp, their sales team set us up with the right drill for us. They took the time to make sure we had the right information, the right tooling package when we purchased it, the right size head, and all the functions that would make our job easier.’

‘We have set 4-inch wells with 2-inch monitoring wells. We’ve been everywhere from depths to the shallows, i.e. 180 feet to 30 feet. We used it for rock coring for geotech, as it has a dual head, so we were able to drill a whole 642 feet, all WireLine, and with few coring runs. So, it worked out fantastic on the geotech end. What’s more, we’ve been using it to just south of Morgantown, Pennsylvania, which has a site that’s all boulder backfill. There are also areas that are 120 feet deep, but we were able to go in with sonic, sonic through the boulders, giving SPTs the whole way down. We took SPT samples every five feet.’

‘This was so far very safe – I think safer than other machines. Because everyone’s paying attention, we should be able to bring the number of back injuries and finger pinch points down to zero. We like how this drill has kill switches, and the safety shutdown switches are all where they should be.

‘One of the things we did that really helped, and which we didn’t know about before, was to run air with sonic. We can run the outer casing as well as the inner casing once we hit rock. So, basically, we run air and set up a flow tee inside our vice because we had the 3-tier clamp. We therefore set a tee on the bottom floating clamp and had a discharge hose, so we could run our 6-inch casing down on top of a CoreBarrel and not have to run water.

Mike Cramer

We did that for depths of 80 feet. Once we hit bedrock, we used our CoreBarrel and cored with air down until 140 feet.

‘Our sonic rig has a pretty nice setup now that we’ve got the rod loader, but I think we’re going to take the next step soon and start using the ManipAll rod handler as well. We’re eliminating the chances of someone injuring themselves by picking up tooling and other things. This has now become our standard practice, and it’s improving all the time. The technology is amazing. The more people see it, the more good things we can do with it.’

Gregg Drilling LLC.

Gregg Drilling LLC. offers a wide range of services for environmental, geotechnical, and marine-site investigation and remediation. Since Gregg’s inception in 1985, the company has been widely recognized as a leader and innovator in drilling, sampling, and subsurface investigation, providing clients in industry and government with the highest-quality services.

Mike Cramer is the Sonic Division Manager for Gregg Drilling: ‘Gregg Drilling has been in business since 1985. It has about 130 employees, and we do mostly environmental and geotechnical drilling. We got into sonic drilling in 2015, when there was a big need that we needed to fill. Sonic drilling is becoming more and more popular – the versatility and the adaptability of these machines is second to none.

‘We currently have two rigs – a truck rig and a track rig – and most of our applications are environmental drilling. The thing that makes sonic unique or special is its adaptability, its ability to overcome challenging geologies. Even sands, cobbles, boulders, and the more difficult geologies for conventional drills to work with.’

The Fraste Eijkelkamp SonicSampDrill FS 250, the LargeRotoSonic, is our most recent addition. This is a full-size sonic rig, truck-mounted (as big as you get with a sonic drill). It’s capable of drilling up to 6 inches and boring up to 1000 feet.

Most of our business is environmental drilling; it’s our core business. We do a lot of monitoring wells, soil sampling, and water sampling. I think sonic is the future. It’s the crescent wrench to the toolbox, as it can be adapted and do drilling in just about any formation.’

Eric Hajek

‘I think the sonic rig is safer than other machines.’

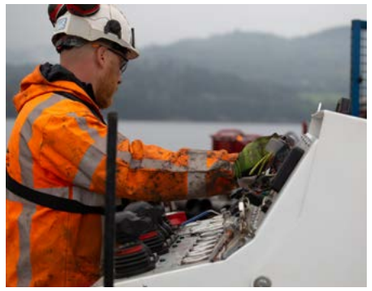
Eric Hajek – President of Terra Testing Inc

Check out Royal Eijkelkamp’s official YouTube channel to view the videos we made at Terra Testing and Gregg Drilling.

Unique CPT testing project on a barge on the biggest lake of Norway

A geo-technical survey was recently completed to determine how deep the foundations of a new bridge over Norway's biggest lake, Mjøsa, should be. The scope of the project was a survey along two lines across the lake by undisturbed sampling, sonic sampling and – parallel to the sampling – a complete CPTu test from a barge. This project was carried out with Eijkelkamp SonicSampDrill equipment.

Moritz Aydt



Moritz Aydt, project manager at BTR Bohrtechnik Roßwag, explains why BTR used the Eijkelkamp SonicSampDrill equipment for this project. 'To be able to engineer the bridge foundation, our client needed some soil data. We accomplished that with sonic sampling and CPTu. We did the CPTu testing to extreme depths. First, we went down through 80 metres of water and continued CPTu from the lake bed till we reached an overall depth of 140 metres. The cone penetration or cone penetrometer test (CPT) is a method used to determine the geotechnical engineering properties. The parameters measured are tip resistance, sleeve friction, pore pressure, inclination and penetration speed. This data shows our client the condition of the soil and how deep the foundations of the bridge should be.'

'I would definitely recommend sonic because of all its advantages.'

Moritz Aydt – Project Manager

'Our company chose sonic drilling because it's perfect for soft rock formations, silts and gravels. We come from an area where we mostly do rock drilling. But occasionally we must go through overburden or do sampling in landfills and softer formations. This is where sonic is perfect because it gets you nice core samples at an unbeatable production speed. This makes sonic very efficient and fast. I would definitely recommend sonic because of all its advantages. Its production speed allows us to be much more competitive. With the dual head sonic rig – that is, sonic plus high speed rotary – we can apply our sonic rig for multi purposes.'

About the project

The Moelv–Roterud project, which includes a new 9-km bridge across the Mjøsa lake, is one of three EPC contracts on the Moelv–Øyer stretch, which is a 44-km four-lane highway project run by Nye Veier AS. The existing bridge is not dimensioned for the future traffic. Therefore, Nye Veier AS started this project to investigate the possibilities for a new bridge. The project includes the 4-lane highway across the bridge, the bridge itself, and 2 interchanges and 8 smaller structures over a distance of 1.6 km. This project is technically unique because of the depth of the lake (80–90 metres), the depth to solid rock (deeper than 80 metres) and the conditions of the soil.

For the amazing video, view our official Youtube channel: **youtube.com/royaleijkelkamp**

More control of blue-green algae for Dutch Water Board by means of continuous measurement

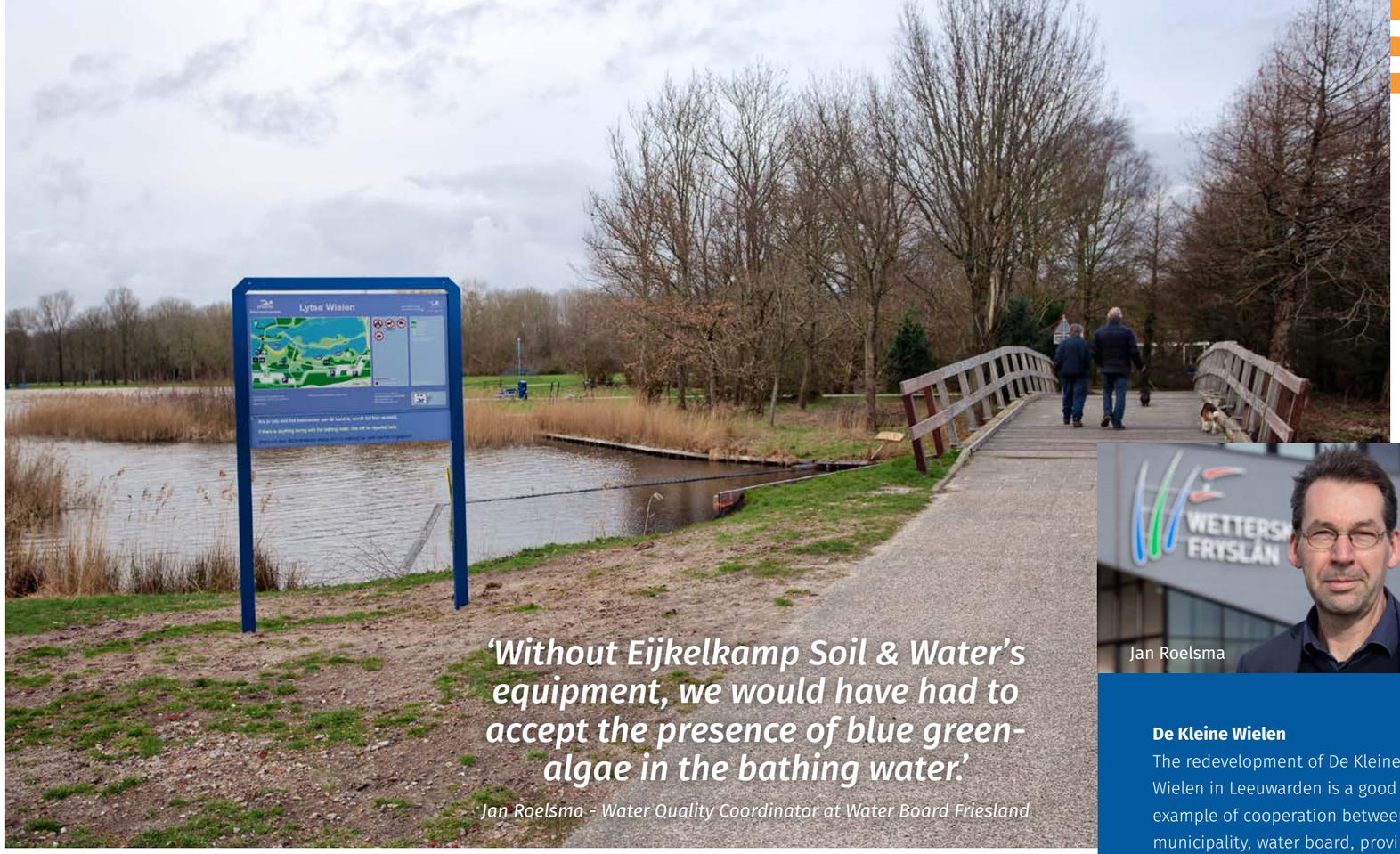
Friesland is a province rich in water. To ensure that all the water is and remains clean Friesland Water Board, Wetterskip Fryslân, measures the water quality at over 200 sites. This includes swimming and nature site De Kleine Wielen in Leeuwarden. At this site, Water Board Friesland measures bluegreen algae using equipment from Eijkelkamp Soil & Water to protect swimmers as well as improve water inlet management.

Jan Roelsma is the Water Quality Coordinator at Water Board Friesland and explains how they achieved better control of blue-green algae by means of continuous measurements. ‘The Water Board measures the water quality at more than 200 sites. The measurements include, for instance, physical-chemical parameters, nutrients, oxygen content, and water temperature. These are the standard parameters. We do this once every four weeks and have been doing so for the last 15 years. It’s become a tradition. We take a water sample and send it to the lab, which then analyses the water quality parameters. We will continue to use this conventional method, simply because there are no sensors or other no measurement methods for all the parameters we measure.’

‘However, based on an innovation programme at Water Board Friesland, we investigated whether there are other ways to measure water quality, especially in ways that involve continuous measurement. This yields immediate results, given that the traditional “misses” a period of 4 weeks – and a lot can happen in 4 weeks. The weather can change, which in turn can have an effect on water quality.’

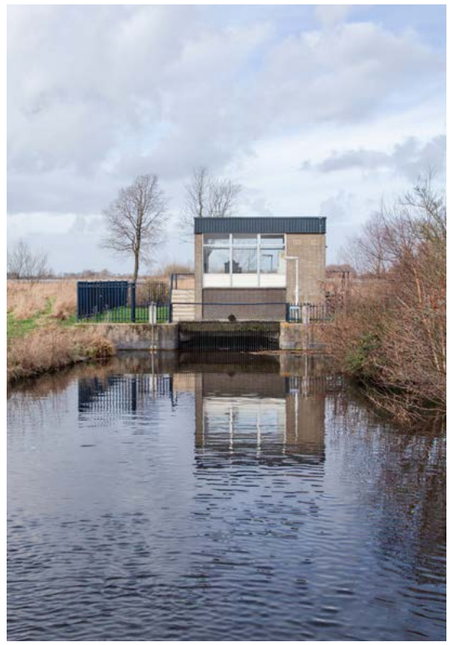
‘Eijkelkamp Soil & Water had the equipment to perform continuous measurements, and we used it in a pilot project at De Kleine Wielen in Leeuwarden. The immediate reason to do so was to improve intake management for this swimming and nature site. This is important, since water is let in as soon as there is blue-green algae. Thanks to the Multi-parameter Set AP-7000, we were able to let in water in a much more targeted manner and limit it to the moments that this was really necessary, so as to control the blue-green algae. Our system received the data immediately, enabling us to monitor in real time online and quickly respond by letting in water remotely once the blue-green algae exceeded a certain limit value. This ensured a very short response time.’

‘Last year was also a special year to work with this given the high temperatures and the fact that water shortages meant there was much less water for us to let in. However, in the end we were able to control the blue-green algae with the small amount of water that was available. We hardly had any blue-green algae problems.’



‘Without Eijkelkamp Soil & Water’s equipment, we would have had to accept the presence of blue green-algae in the bathing water.’

Jan Roelsma - Water Quality Coordinator at Water Board Friesland



‘If we hadn’t had Eijkelkamp Soil & Water’s measuring equipment, we definitely would not have been able to let in water as efficiently as we could, because of the water shortage caused by the persistent drought. In such a situation, you can only accept the presence of blue-green algae and issue a no-swimming warning. After all, you wouldn’t want swimmers to get sick because of the blue-green algae in the water. If this happens, De Kleine Wielen must be closed for a couple of days or weeks – at the busiest time of the summer season. Even worse, Leeuwarden was the European Capital of Culture at the time. That would have been an extremely unfortunate combination.’

‘Thanks to the success of the pilot project, we will be using the equipment again this year. In fact, we have purchased a second Multiparameter Set AP-7000 for a site in the south-western corner of Friesland. There are many bathing water sites here where we have had issues with blue-green algae for a number of years now. We will install the equipment there to monitor how the blue-green algae population fluctuates throughout the year. This will allow us to gain even more experience, collect even more data, and eventually take even more targeted measures to control blue-green algae. This way, we will ultimately increase the safety and security for swimmers.’

Jan Roelsma

De Kleine Wielen

The redevelopment of De Kleine Wielen in Leeuwarden is a good example of cooperation between the municipality, water board, province, and users of the swimming and nature site. De Kleine Wielen also received extra attention because it is an important link in the Wet Corridor of the Ecological Main Structure (EMS). This EMS provides connections between nature conservation areas, giving plants and animals with a larger habitat.

This is also one of the objectives of the European Water Framework Directive (WFD). This WFD is aimed at preserving or improving water quality through measures in all European countries. This is of great importance for De Kleine Wielen, as water in Friesland crosses half of Europe via the Rhine before it arrives here.

For the video, view our official Youtube channel: **youtube.com/royaleijkelkamp**

Sri Lanka project update

The finishing touches are made to the two Drill Rigs, two Service Trucks, and two Water Tankers produced by Royal Eijkelkamp.

The accompanying drilling equipment is thoroughly checked by the Logistics department in Giesbeek before being transported to Sri Lanka.

A delegation from Sri Lanka visits Royal Eijkelkamp in Giesbeek to check the vehicles and drilling equipment that will be shipped.

On this momentous day a column of six vehicles drive from Giesbeek to the Port of Antwerp (Belgium), from where they are shipped to Sri Lanka.

The vehicles arrive in the Port of Hambantota and are driven from there to Colombo, where they are checked.

Eijkelkamp SonicSampDrill employees give a demonstration of the delivered vehicles and equipment to employees from the Sri Lankan Ministry of Irrigation and Water Resources Management.

Work in progress! The monitoring wells are drilled and set up.

An insight into the three most important soil parameters

Available in our range now: HydraProbe

The HydraProbe is a rugged soil moisture sensor with patented technology. It offers continuous and consistent accuracy for simultaneous measurement of the three most important soil parameters – soil moisture, salinity*, and temperature.

As the most scientifically researched soil sensor on the market, the HydraProbe has been used by universities and leading irrigation and agricultural companies for more than twenty years. It is compatible with all dataloggers that can accept an SDI-12 connection. The HydraProbe can also be connected to our telemetry system GDT-S Prime Plus to make soil moisture data available everywhere.

Available exclusively from Eijkelkamp Soil & Water

The benefits of HydraProbe

- Continuous accuracy without calibration
- Accurate in a range of locations, soil types, moisture contents, and seasons
- Five-year warranty
- 100% resistant to water
- The HydraProbe is less sensitive to fluctuations in temperature, salinity, and soil type than most soil moisture sensors
- Compatible with all dataloggers that can accept SDI-12 connections
- Can be connected to our telemetry system GDT-S Prime Plus

Quick and easy ordering

You can order the HydraProbe by visiting eijkelkamp.com or by contacting the Eijkelkamp Soil & Water sales department on +31 313 880 200 or sales@eijkelkamp.com.

*Salinity parameter available on the HydraProbe Pro

A look back at half a century at Royal Eijkelkamp

After a career of some 48 years at Royal Eijkelkamp, 22 August 2019 marked André Eijkelkamp's last day at work. A look back at nearly half a century working at the family firm: 'Be polite to clients, make money, and be hands-on.'

'I know that my official first day at work was during the holidays. In the school holidays I had to make coupling sleeves. It started with punching the holes and then cutting out the material in-between. I then had to make two cuts so that the material would fall out. I had two blades clamped in a bow saw so that I could saw two pieces with just one cut and save half the time. You could say that I had a critical approach to working methods at an early age.'

'Once I had completed the four-year LTS, it was only natural that I would join the company. My father just said to me, "You're coming here, right?", and that's pretty much how I got the job. I did daytime and evening studies to further my training and development, and ultimately ended up being a manager, firstly assistant manager and then supervisor. It later became head of production. In more recent times, I've primarily been involved with After Sales.'

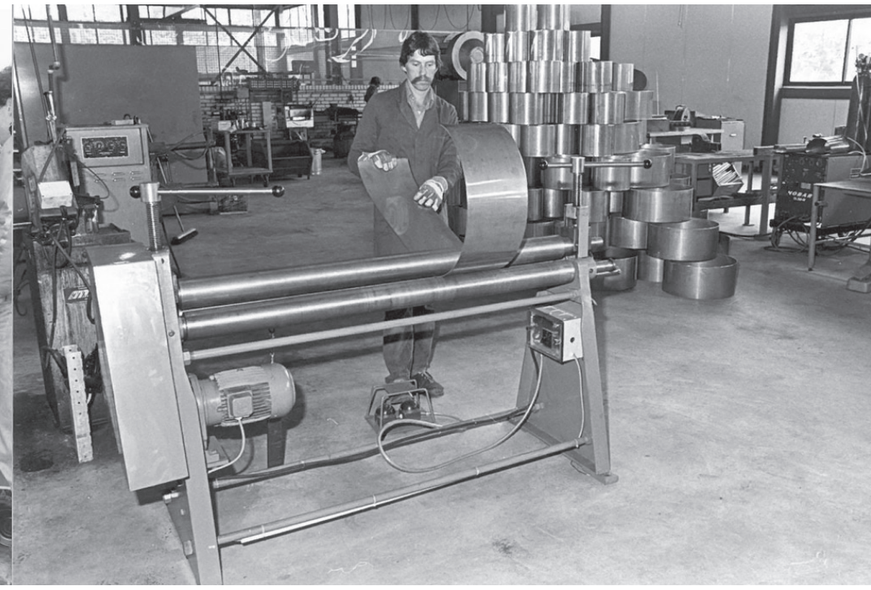
'I have always worked alongside my brother Fons; we have always been able to communicate in nods and winks. Otherwise, I'm not sure we'd have managed together for nearly half a century. Of course we have had differences of insight and lively discussions, but never anything serious. When the company started to get bigger and bigger, I was there to take the load off Fons. I would have meetings with staff and also hold evaluation meetings. so that Fons had time to do the things that he was good at. All in all I did more than 30 years in the office, from where I managed production. Fons and I would meet for two hours on a Monday, go over everything, and then we'd be able to tackle the week. If we needed more time than that, we'd often meet on a Friday evening or Friday night, and it always ended with a beer.'

'I've also experienced so many wonderful things. For example, I'll always be proud of our decision to keep assembly of our manure technology equipment in-house – and of the huge request from Romania to build a special drilling kit. We had to set up a complete assembly line next door so that we could put all the kits together. And then there was my father, just awakened from his afternoon nap, still in his underwear, to speak to an overseas client from the balcony. We

'Fons and I have always been able to communicate in nods and winks.'

have always been very internationally focused. We used to have our brochures and other documents translated by a Mr Beekman from Giesbeek, an accountant who knew his languages. So many memories, I could go on and on.'

'But over 48 years, not that much has changed within the company, really. Ultimately, you have be polite to clients, make money, and be hands-on. I've been able to take a step back over the past few years, but I've always been committed to our family firm. I'm chairman of the Eijkelkamp Foundation, for example, and part of the Water Ondernemer project team. It's a great project, and it gave me the opportunity to travel to Benin last year. When you get to see what we managed to achieve there for one another, it 'll give you goosebumps.'



Hans Jacobs

Sediment sampling with the sonic drilling technique

The Belgian drilling company Geosonda recently completed a sediment sampling project on the Ghent–Terneuzen Canal. This project was carried out from a barge using the SRS ML SmallRotoSonic drill with AquaLock 70 sampling system.

Hans Jacobs, team Manager at Geosonda's drilling department, led the project. 'Geosonda is active in soil research for environmental, geotechnical, and archaeology-related projects. During this project, we worked from a barge in Ghent-Zelzate to take sediment samples from the Ghent-Terneuzen Canal. The layer of sand just below the silt layer is very important in this case, because the canal will be deepened to a certain depth. However, before the work can start, the purpose of the material to be removed had to be investigated. In addition, this research helps to determine the correct way to excavate or dredge the riverbed.'

'An engineering firm asked us to take samples from the sediment., We sampled five metres into these fine river sediments using the AquaLock 70 system.' The Aqualock is a piston sonic proof sampler. This piston allows discrete or continues samples as it is locks the piston in the cutting shoe in place with water (aqualock) before you start sampling, therefore with continues sampling no casing is needed as the blocked piston will displace a collapsed hole. Other unique features of the Aqualock are that the piston creates a vacuum on the sample, in case of fine, wet or even slurrified materials this is a huge advantage for its sample recovery and integrity.

The patented AquaLock system is a piston sampler, specially developed for alluvial deposits and soft sediments. Although these formations are easy to drill through, it is often difficult to take high-quality samples from them. This is especially true for hydrogeology, such as heaving sands, tailings, delta and maritime formations, etc.

Geosonda saw the absolute sense in using the AquaLock and its sonic drilling system. 'Geosonda has several drilling techniques in-house, but sonic delivers the best quality and full recovery in these softer formations time after time. These good-quality samples ensure we can make a very accurate description, which is very important for an in-depth study of the water. This allows us to formulate fantastic, detailed descriptions and take high-quality sediment samples.'

> ***'Sonic delivers the best quality and full recovery in these softer formations time after time.'***
>
> *Hans Jacobs – Team Manager*

'Looking back at this project, I am very satisfied. We finished faster than we thought, and we worked very effectively with the crew on the pontoon. I expect that we will carry out many more of these kinds of projects in the future, especially in combination with this SRS-ML and the AquaLock in the Eijkelkamp SonicSampDrill. It's a technique that allows you to make a quick screening and get high-quality samples.'

For the video, view our official Youtube channel: **youtube.com/royaleijkelkamp**

Together we are the key to solve water & food challenges

In the first edition of World of Royal Eijkelkamp, Fons Eijkelkamp already talked about it, the ambitious collaborative project in which, besides Royal Eijkelkamp, other leading parties such as Grundfos and Rabobank are involved. Two years later the NL-Food Security Alliance is a fact and an interesting pilot project has also been started in KwaZulu Natal, South Africa.

Food Security is one of the biggest challenges for the coming years worldwide as acknowledged by Sustainable Development Goal 2: Zero Hunger. Food Security challenges are exacerbated by climate change and impact first the most vulnerable segment of the population particularly in Africa.

The NL-Food Security Alliance (NL-FSA) is a community of mainly Dutch companies and institutions collaborating in creating tailor-made and sustainable solutions for the agri-water-food business. The NL-FSA delivers products and services from various expertises and contributes to the development of a profitable and sustainable agribusiness in Africa and Asia.

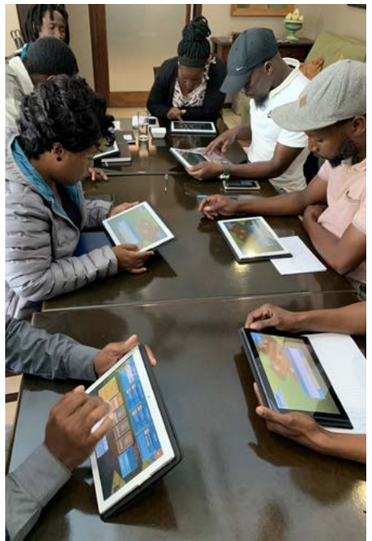
Nyembe project

In KwaZulu Natal, South-Africa, a private investor aims at advancing the local community and asked the NL-FSA to carry out a first prefeasibility study to implement a NL-FSA Farm Development approach. In October Fons Eijkelkamp, Jochen Froebrich (Wageningen Research) and Roef van Dijk (Kucheza) visited the Nyembe area south of Richards Bay to shape the entire future development.

The area around the central valley is blessed by fertile soils and an exceptional high rainfall. In an intensive collaboration with the local community and the private investor needs and starting points to advance the agricultural development had been defined. Results had been depicted in visuals (see graphic) and in a first promotion video. To realize a sustainable intensification of the production, the local community needs to get trained and supported in establishing a new innovative type of cooperative. The coming period will focus hence a lot of expectations management, communication, training and social interactions! A MoU for next steps has been signed.

During the visit, a first game based training by Roef van Dijk was given, using the Kucheza Farming Forward training game. Here, the high capacity and entrepreneurial skills of the trainees became already visible which is a pre-condition to co-develop the cooperative.

The future project aims at training 50 AgriPreneurs per year who will get their own farming plot after being certified. Becoming long term involved, the NL-FSA partners jointly create a true change and impact for a sustainable development!



NL-FSA

More information - www.nl-fsa.org

Could you help us make the difference?

A personal approach and a unique range of solutions – that's what Royal Eijkelkamp is all about. We conceive, develop, produce, and supply smart solutions for soil and water projects around the globe. And we do it successfully. We have evolved into one of the world's foremost groups of companies, with headquarters in Giesbeek and sites in Sassenheim and Raleigh, USA.

Royal Eijkelkamp is growing fast, and to support this growth, we're looking for motivated and ambitious colleagues. Could you help us to grow? If you think that you could, why not take a look at careers.eijkelkamp.com to see if there's a vacancy for you?

Could your item be in the next edition?

If you'd like to submit an item for the following edition of The World of Royal Eijkelkamp, and our YouTube channel, you can. We are always on the lookout for interesting projects – large or small – that involve our equipment. We'd be happy to visit you for an interview and to shoot some videos.

Interested?
Please send an e-mail to
b.kelderman@eijkelkamp.com and
we will be in touch.

Where do we meet in 2020?

In 2020 Royal Eijkelkamp participates in events such as exhibitions, conferences and seminars throughout the world. For an up-to-date overview, visit royaleijkelkamp.com.

Event	When	Where	Info
Indaba	3 – 6 February	Cape Town, South-Africa	miningindaba.com
PDAC 2020	1 – 4 March	Toronto, Canada	pdac.ca
CONEXPO	10 – 14 March	Las Vegas, US	conexpoconagg.com
Deutsche Brunnenbauertage	22 – 24 April	Bad Zwischenahn, Germany	bohrtechniktage.de
IFAT	4 – 8 May	Munich, Germany	ifat.de
FGWA	28 – 30 May	Orlando, US	fgwa.org
Eurosoil 2020	24 – 28 August	Geneva, Switzerland	eurosoil2020.com
Geofluid 2020	30 September – 3 October	Piacenza, Italy	geofluid.it
Groundwater Week(NGWA)	8 – 10 December	Las Vegas, US	ngwa.org

Royal Eijkelkamp

Personal attention and a unique range of solutions: for more than 100 years, this has been our trademark at Royal Eijkelkamp. Royal Eijkelkamp has been devising, developing, producing and delivering smart solutions for soil and water projects worldwide since 1911.

These innovative solutions, together with the existing knowledge and expertise of our soil and water specialists, have served to raise projects to a higher level. From field measurement equipment to smart sensoring & sampling and from Edelman augers to sonic drilling machines, Royal Eijkelkamp has quite the product range on offer.

Royal Eijkelkamp is involved in the following themes: Land Degradation, Food Security, Natural Resources, Land Development, Urbanisation and Pollution.

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Meet the difference

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Volg Royal Eijkelkamp

Check Royal Eijkelkamp on the following social media.