



Water Management Solutions



Royal Eijkelpamp water management solutions

For the last 110 years, Royal Eijkelpamp has been developing, producing and delivering solutions for soil- and water-related projects. We are constantly launching technologies for various industries, including mining, environmental research, construction & infrastructure, and agriculture.

Water management is the management of water resources under set policies and regulations. The decisions to be made about water access, quality, treatment and reuse impact the future living conditions of communities around the world. These decisions rely on correct and timely information from the field. Royal Eijkelpamp offers holistic solutions for municipalities, governments, water boards, contractors, developing countries, etc. We provide expertise, products, and services such as delivery, installation, calibration and maintenance of equipment for water management and related issues such as dam safety.

- ✓ Monitor essential water parameters regarding water quantity, quality and discharge to reduce costs, save energy, and protect public health and nature;
- ✓ Obtain insightful, reliable and customised data from our IoT platform and data services;



The challenges around water

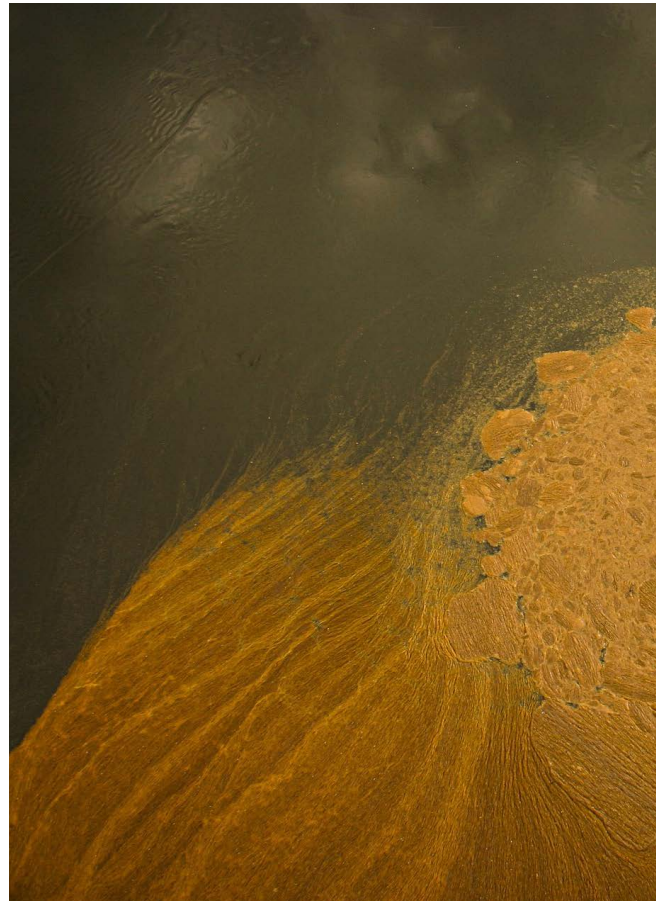
Water is essential for many processes on earth, but the ever-growing population, industry and climate change are putting increasing pressure on the water supply. In addition, the presence of water alone is not enough – it must also be clean.

Good water management allows for reduced costs and energy consumption, and protects public health and nature. We are committed to good water management for the following reasons.

Our access to water is limited

Only three percent of all water resources on Earth is fresh. Two-thirds of this fresh water is locked up in ice caps and glaciers, and of the remaining fresh water, 20 percent is in remote, inaccessible areas. Therefore, at present, only about 0.08 percent of all the world's fresh water can be exploited by mankind.

Although water is in basis a renewable resource, the pressure on its supply is increasing due to the ever-growing population, industry and climate change. To manage water properly, it is essential to know how much water we truly have access to.



Water management is complex

When it comes to managing water resources, multiple parties are responsible. They need to know how much water is available, how the water needs to be used, and what needs to happen to make the water usable. Moreover, they need to be aware of competing demands, processes and policies. Besides, water sources often cross national borders.

When all these complex aspects come together, it is crucial to streamline everything with good water management.

Poorly-managed water resources are deadly

(Drinking) water can be contaminated with bacteria, heavy metals or chemicals like pesticides. Waterborne illnesses like cholera cause millions of deaths each year. Children under the age of 5 who live in developing countries are most at risk. Contaminated water can also lead to diarrhea, dehydration, vomiting, infections, and more.

Strict policies regarding impurity levels are essential to any water management system. Good water management saves lives!

Monitoring is key

As is clear by now, we need to make sure water is not wasted, is kept clean, and is distributed properly. Whether we focus on agriculture, sanitation, environment, urban planning, mining, industry, or on something else; we need to make the right decisions on time to save costs and problems. Therefore, **monitoring is key**.

Monitoring in agriculture

Agriculture uses 70% of the world's fresh water. Often, too much water is used, which is a waste of money and water. In addition, using too much water may also cause nutrients from the field to seep into the surface water in the area, resulting in algae growth.

To prevent an excessive use of water, it is important to map out the soil characteristics. By monitoring the rainfall, soil moisture, the permeability, and the amount of water that goes to the plant, you will know exactly how much water to use.



Monitoring in construction

During construction or digging activities, temporary dewatering is often necessary. However, this creates risks for the surrounding area. If plants and trees do not receive enough water, they can die. Besides, lowering the water level can cause subsidence and damage the surrounding houses.

To keep groundwater at an optimal level for both construction and flora and fauna, levels must be continuously monitored.

Monitoring in mining

For planning and developing a mine site, it is crucial to research the characteristics of an aquifer, such as its depth and capacity. Moreover, mining activities may compromise the groundwater quality on site. Tailing ponds contain 'unwanted' substances that should not come into contact with aquifers.

It is important to continuously monitor groundwater hydrochemical values around tailing dams.



Monitoring in sanitation

Sewers are often constructed in such a way that they take into account an average amount of rain. Due to climate change, heavy rain showers are becoming increasingly frequent. Heavy rain overloads the sewage sanitation system, forcing it to discharge its untreated sewage into the environment.

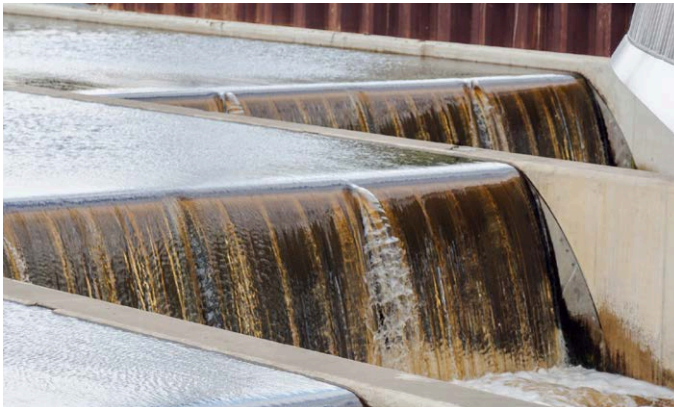
To anticipate the overloads and limit pollution, it is important to monitor precipitation and water discharge.



Monitoring in the industry

Industries often pump up groundwater for their production process, for example for fabrication, washing or cooling. Extracting too much water, however, may limit the water available for nature. Furthermore, industries also have to dispose their wastewater, often polluting the environment.

To determine the extent of discharge and not take away too much water from the area, the groundwater level and water quality must be carefully monitored.



Monitoring in recreational water

In recreational water, blue-green algae can cause health problems to swimmers. Algae growth occurs when too many nutrients are released in the water. This happens, for example, through discharges from industry, sewer overflow and over-fertilisation.

By measuring algae growth continuously and online, measures can be taken and people can be warned in time.



Royal Eijkelpamp can provide you with the expertise, products and services you need to monitor water levels, water discharge and water quality. Monitoring typically includes the following actions:

- ✓ Drilling, installing a monitoring well and placing sensors correctly with certified equipment;
- ✓ Establishment of the baseline hydrogeological conditions and trends in the groundwater levels;
- ✓ Comparison of the monitoring results with the predicted groundwater depressurisation and associated groundwater inflows;
- ✓ Remediation actions, if deemed necessary based on analyses from the monitoring network.

Discover our water management technologies

Below, you can find a selection of our products that can be used to overcome water management challenges.

Diver water level loggers

The Diver water level logger range provides a robust line of dataloggers for groundwater and environmental professionals. It accurately measures and records water fluctuations in surface and underground, temperature and conductivity.



Scuba water quality probes

Scuba water quality probes can be used for discrete sampling and profiling, both as self-powered loggers or connected to telemetry stations for continuous real-time monitoring. The water quality data is accessible via cloud-based software. In addition to standard configurations, each Scuba probe can be customised for your specific application.



Smart piezometers

The smart piezometers are used to monitor pore water pressure and can also be used to monitor water levels. The internal data logger (available in various measuring ranges) stores both pressure and temperature readings.



Grundfos MP 1 submersible pump

The Grundfos MP 1 submersible pump is specially designed for quick purging and sampling of monitoring wells with a diameter of at least 50 millimetres or bigger.



HydraProbes

The HydraProbe is a rugged soil moisture sensor. It is suitable for the measurement of soil moisture in all soils.



Lysimeter

The Royal Eijkelkamp Smart Lysimeter is designed to measure real evaporation in the field. It is a patented, high-quality and scientifically backed system to monitor invisible water loss.



Modems

Connect your sensors, such as Divers, piezometers or Scuba probes, to the Global Data Transmitter (GDT) modem. Royal Eijkelkamp offers a range of GDT modems that transmit sensor data to anywhere in the world. Our GDT modem range is designed for extended use in the field and to transmit water level, temperature, conductivity, rainfall, soil moisture and various water quality parameters in a secure way.



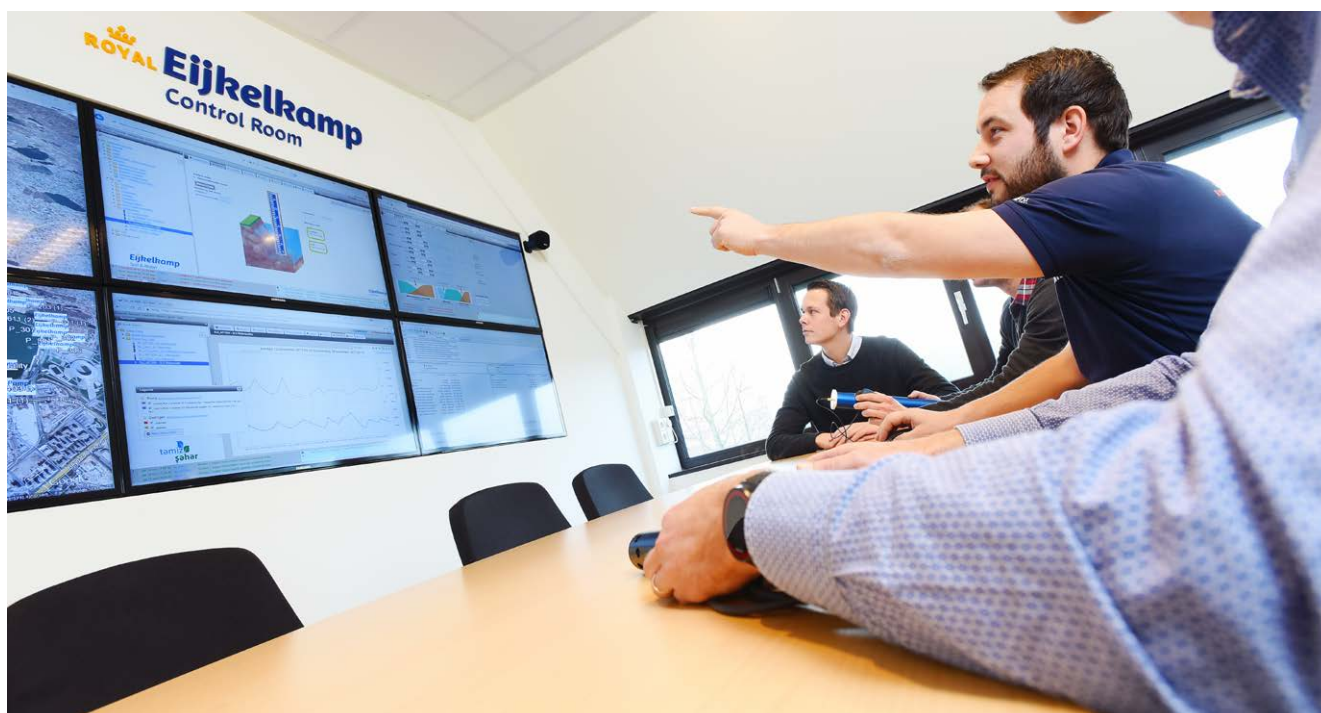
Data-based solutions for automated decisions

Royal Eijkelpamp understands the need for valuable, clear and complete data when monitoring activities on mine sites. That is why we offer a unique IoT platform for both groundwater and drilling monitoring in combination with our hardware and field equipment. The platform allows for:

- ✓ Real-world data acquisition via sensors
- ✓ Connection of devices to the cloud in order to store and transmit data from the field and to receive commands
- ✓ Data analysis to gain insights and present these to users
- ✓ Commanding field equipment to perform specific tasks based on gained insights

Basic features of the IoT platform

- Customised, accurate and reliable data, both real-time and historical
- Automated alarms and predicted maintenance tasks
- Automated scheduled reports such as environmental compliance reports and operational performance reports
- Application Programming Interfaces (APIs) for convenient and easy connectivity with other platforms
- Data security and accessibility



Groundwater monitoring

The IoT platform provides reliable and customised real-time insight in your groundwater supply. It is your system to easily manage your groundwater network with low costs.

The platform includes customised dashboards that monitor long-term and real-time groundwater data, control borehole sensors and provide a unified overview of the entire groundwater monitoring network.



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