



EXPECT
STORIES FROM THE
AVK WORLD

Expect... **AVR**





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Frontpage image

AVK gate valves and ball valves enjoying the beautiful view over Granada, Spain, where the local wastewater treatment plant has recently been upgraded.

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DEAR READER

It is becoming increasingly obvious how much impact water has on the world's supply challenges. Especially water and energy are strongly interlinked; energy extraction and generation requires water, and water supply depends on energy - and the demand for both is accelerating.

Conventional power plants are using vast amounts of water for cooling. If a given plant is situated near the coastline, sea water is usually used for the cooling process. If not, freshwater must be used and is therefore taken from other areas where it is needed – e.g. for drinking water purposes.

The practice of nuclear power generation has been discussed heavily in the midst of the ongoing energy crisis, as the process does not add to our CO₂ emissions. But what is not mentioned is the heavy use of water for cooling. Who has not seen images of those distinctive, cone-shaped towers oozing with steam?

This evaporated water is lost for the next century, which is what meteorologist estimate that it takes for water to return to us in the form of rain. Yes, about 100 years.

The ongoing crisis has also shed extra light on a new dimension in the energy mix: **Power-to-x**.

Power-to-x is about establishing energy sources big enough to run a hydrolysis facility, which divides water into oxygen and hydrogen. The hydrogen can be used directly in the natural gas network, or it can be converted into green fuels such as ammoniac (by adding CO₂). A power-to-x process therefore also requires a lot of clean water, which will have to be considered in the creation of such facilities. But it is being suggested that treated wastewater can be used to feed the production, which makes perfectly good sense with water being a sparse resource in most parts of the world. And just as important: right

now, 80% of all human-induced wastewater is discharged into Nature without any prior treatment. A massive, on-going act of contamination, and as explained above, also a gigantic waste of potential. Left-over sludge from the treatment process can be used to generate electricity and heat, and the treated water can then be used to produce green fuels – what's not to like?

In this edition you will find an interesting read about our valves being tested for hydrogen purposes, as well as a number of case stories about wastewater treatment plant being expanded and equipped with AVK products. The solutions are ready, we just need to make use of them.

Enjoy reading.

Michael Ramlau-Hansen



AVK VALVES REACH THE WATER2NEPAL CONSTRUCTION SITE

NEPAL

A water supply project has been initiated in Madi, Nepal, with several Danish companies bringing their expertise to the construction site. The project is called Water2Nepal, and we are eager to follow the development.



*By Katrine Klejnstrup Sørensen,
Global Marketing & Communications
Coordinator,
AVK Holding*

The 3D illustration shows how the final solution is expected to look when finalised. Illustration: Surya Prajapati

The current water solution in Madi is not able to deliver enough water to the residents, who now rely on surface water and wells without knowing if the water is actually safe to drink. Previous attempts have been made to create a feasible water solution, but it has been impossible to drive any of the solutions to a point where it gained sufficient local support. Without support and local capabilities, even the most well-designed system will be destined to fail.

Tailoring the right solution

Water2Nepal covers the construction of a distribution pipe network that will supply 4,000 people with water through a daily capacity of 350 m³.

The purpose of the project is to:

- Deliver clean drinking water to three villages
- Test new technology
- Train and educate the next

- generation of water engineers
- Define the future criteria for water supply in Nepal

The network will cover a 16 km long pipeline solution fully equipped with products from AVK, JC Hansen and other project partners.

Back in March 2022, the final contracts were signed. The solution's design has now been approved, the entrepreneurs are found, and the construction and drilling has been initiated.

The project is initiated by the non-profit organisation Jysk landsbyudvikling i Nepal (Jysk Village Development in Nepal), funded by the Grundfos Foundation (Poul Due Jensen Fond), and is managed by engineering consultancy company Envidan. After construction, the supply system will be driven by Madi Municipality under the supervision of Oxfam in Nepal.

Khushbu Nirman Sewa Pvt Ltd. has been selected as the contractor, which is an advantage for the project, as they have a lot of experience with similar projects and challenges, says Surya Prajapati, who is the project engineer in the Danish Envidan team.

In addition to AVK, the primary contributors to the project are Grundfos (pumps and Power Adapt), JLIN (project owner), Kamstrup (Smart meters and data system), Envidan (project management and design), Oxfam (local anchoring), local entities in Madi Municipality as well as a large group of local volunteers.

Prepping the community for system hand-over

Experts from Envidan and Danish water utilities will be following the construction phases thoroughly to ensure quality in every step. Also, they will make sure that the appointed technicians



and supervisors will be fully equipped to take over the maintenance and operation tasks when the system is put into operation. Much of the technology and hardware is new and unknown to the local operation teams, which means there is a need for ongoing training and education to ensure that the system is running as efficiently as possible and in a sustainable manner.

The preparation does not stop there, as Envidan will be collaborating with Kathmandu University and Oxfam in educating future engineers on design criteria for sustainable and efficient water supply in remote areas.

Sustainable operation

The complete solution will include the

distribution network, a water tower, a solar panel installation as well as a technical facility near the water tower where panels can display an overview of the current supply details in terms of quantity and water quality. To ensure the water quality, the water will be tested several times a year.

To have their home connected to the main pipeline, the residents will be paying a one-time fee corresponding to 60 USD to ensure a sustainable foundation for operation.

The system is expected to be completed by the beginning of 2024, but the residents might be able to start tapping water from their homes before the end of 2023 as soon as the wells

and distribution network are up and running.


A proper water solution needs quality valves

One of the main ingredients in a sustainable water network is valves that are reliable, efficient and of high quality, to avoid the hassle of cutting off vital processes in order to replace products or perform maintenance.

AVK has taken part in online meetings during the planning phases and has offered to donate and ship valves and accessories for the distribution network. The valves reached the construction site in Madi on 30 August and are now waiting to be installed.



The valves supplied are service connection valves, which are used to connect a home or facility to the main pipeline, and gate valves with PE ends from AVK as well as end-of-line brass ball valves from JC Hansen.



IMPROVE NON-REVENUE WATER CALCULATIONS WITH VIDI POSITIONER

DENMARK

As part of the LEAKman project, VIDI Positioners are installed on sectioning valves to ensure reliable data for water balance and non-revenue water level calculations. The purpose of the LEAKman project is to implement state-of-the-art solutions for water distribution with the overall goal of minimising water loss.

*By Gerner H. Knudsen,
Business Development Director,
Smart Water*

&

*Charlotte Brønsted Rasmussen
Technical Writer and Marketing
Coordinator,
AVK International A/S*

At an early stage, The LEAKman partners identified the need for knowing if and when DMA boundary valves are operated, as this commonly influences non-revenue water (NRW) management and often leads to false results when conducting water balance assessment and minimum night flow monitoring.

Monitoring boundary valves increases the reliability of data

Flow meters on DMA inlet pipes and shut-off valves on the pipes connecting DMAs enable water balance calculations at DMA level. Accurate water balance calculations rely on robust, precise and complete data where all water entering and leaving a DMA is monitored and measured.

Such calculations are highly dependent upon valid information confirming that all boundary valves are closed during the water balance assessment period. It is a well-known problem that if the boundary valves have been opened during maintenance work, they are sometimes not brought back to closed position afterwards.

In other words, monitoring the open/closed position of boundary valves can help prevent unmeasured flow between DMAs and thereby ensure more reliable data and calculations.





VIDI Positioners contribute to improved overview at Denmark's largest utility

HOFOR, the largest utility company in Denmark, has approximately one million customers in Greater Copenhagen. They have divided the area into 65 DMA zones allowing for, among other things, calculating the water balance and monitoring water loss – one of the most cost-effective ways to spot leaks and thereby reduce NRW.

To ensure reliable data for water balance calculations, VIDI positioners have been installed as part of the LEAKman demonstration facilities at

HOFOR, at three strategically important shut-off valves acting as boundary valves between DMAs.

The VIDI Positioner is an IoT sensor that indicates in percentages how much the valve is open, and it reports any operating activities opening or closing the valves. Data is automatically sent to HOFOR at regular intervals and whenever the valve is operated.

Through API, data is integrated with the GIS so that the entire operation and maintenance staff automatically has direct access to the valve status information.

The valve position data is further integrated with the management information system HOMIS, developed by the LEAKman partner NIRAS, and directly connected with the hydraulic model where the hydraulic simulations automatically reflect the change in valve position. HOMIS will also utilise the information coming from the VIDI Positioners to disable water balance calculations during periods where the DMA boundary valves are open.

This way, the VIDI Positioners ensure precise information about valve positions and allow for a better overview and automated knowledge sharing.

AVK Smart Water

AVK Smart Water develops digital solutions for valves and hydrants that enable registration of changes in the hydraulic setup and send the data directly to any preferred IT system.

VIDI Positioner

VIDI Positioner registers whether a valve is open, semi-open or closed. It sends a signal when the valve is being operated and continuously sends updated data on how much the valve is open.

The LEAKman Project

The LEAKman project intends to demonstrate Danish solutions to reduce water loss and to pave the way for new Danish water technology.

The goal is to establish guidelines that can be implemented globally and help ensure efficient water distribution all over the world. Nine partners are working together on the project and in addition to AVK, these are HOFOR, NIRAS, Grundfos, Kamstrup, DTU, Schneider Electric, Novafos and Leif Koch.

EXPANDING THE LOCAL TREATMENT PLANT TO MEET THE AREA'S NEEDS

SPAIN

The plant had reached its maximum capacity, but after an extensive project the capacity is now three times higher than before.

*By Manuel Martin Guardia,
South Area & Desalination Sales
Manager, AVK Válvulas*

Granada is located at the foot of the Sierra Nevada mountain range in Spain. It is said that the name "Granada" comes from someone who once compared the spectacular sunset over the area with an open vermillion pomegranate; a sunset that, according to Bill Clinton, is the most beautiful in the world.

The area's wastewater treatment plant, located in the west of Granada, had reached its maximum capacity, and a

new plant was therefore a necessity. With a budget of approximately EUR27.5 million, including drafting and execution of work, CADAGUA was hired as general contractor.

The project was led by the General Directorate of Water Infrastructures of the Ministry of Agriculture, Livestock, Fisheries and Sustainable Development of the Junta de Andalucía. Now, upon completion, the wastewater treatment





capacity in the plant is three times higher than before.

The plant was initially designed to handle 24,000 m³/day, whereas the project has tripled the capacity to 72,000 m³/day. From now on, the plant will not only treat water from the 20 nearby municipalities, but also from parts outside the Granada metropolitan area - which means treating the water from 552,000 Grenadians instead of

287,000 as before.

The expansion was carried out while the existing plant continued its service.

If you are lucky enough to visit Granada in the future, enjoy the city and its monuments knowing that its water is treated in an efficient treatment plant full of AVK equipment.

Products supplied to the project by AVK Valvulas:

- Gate valves, DN100-DN600
- Flanged gate valves, DN150 and DN200
- Motorised gate valve with AUMA actuator, DN200
- Ball check valves, DN100-DN600
- Resilient seated swing check valve, DN50-DN150
- Centric butterfly valves, DN100-DN600
- Knife gate valves with pneumatic actuator, DN150



UNDERGROUND CAVERNS EQUIPPED WITH CONTROL BALL VALVES

GERMANY

To function as main inlet and outlet control valves for a natural storage cavern, four control ball valves have been supplied, tested and are now securing smooth operation.

*By Stefan Haftenberger,
General Manager,
TEC artec*

A storage cavern is a cavity created underground, which can be filled with natural gas, crude oil or air for later use. The cavity is created by removing salt from a salt dome below the ground, usually located 1,000 to 2,500m below the earth's surface. The salt is flushed out with water through a so-called leaching process.

Such caverns are used to compensate for seasonal fluctuations in demand, supply bottlenecks and to optimise the commercial conditions of procurement and thus serve the overall security of supply of the European energy market. In the future, underground storage of hydrogen produced with renewable energy sources will play a greater role.

In addition to the underground cavity, there are above-ground facilities including compressors, filters, control stations, as well as measuring, drying, cooling and preheating facilities. On the valve side, control valves play an important role in addition to the various shut-off and safety valves.

Since the natural gas in the salt caverns is usually injected and discharged again via the same pipeline, the control valves in these pipes play a special role.



Control ball valve 12" cl1500 as main feed-in and withdrawal control valve for one of the natural gas storage caverns in Etzel (with trace heating without insulation in the installation phase)

Their job is to:

- regulate the quantity when the natural gas is pressed into the cavern, as well as the discharging quantity when it is withdrawn with a constant pressure change gradient.
- ensure largely pressure-preserving operation in fully open position (with similar pressure ratios between the cavern and the network pipeline).
- avoid overshooting and pressure shocks.
- cover a wide flow range which brings

conventional control valves to their performance limits.

In the East Frisian municipality of Etzel in Germany, there are 75 operated caverns in total. 51 of them are used to store natural gas.

For four of these caverns, which have already been in operation for years, TEC artec has supplied control ball valves.

Originally, the plant operator had two control valves at each cavern, directly

between the cavern head and the above-ground facilities. The two control valves of different sizes are used to cover the wide control range. The smaller of the two covers the smaller load scenarios, while the larger of the two valves controls the large load cases accordingly.

A split-range operation cannot be realised in this application due to the extreme design scenarios with the compressible medium natural gas under changing pressures. In addition to the internal pressure in the cavern, the pressure gradient and the temperatures prevailing also have an influence on the safe operation and service life of a cavern.

Due to the positive experience of neighbouring cavern operating companies with control ball valves and

the limited selection of other suitable valves, TEC artec was initially awarded the contract for the supply of one control ball valve. This was to be put through its paces under real operating conditions.

After successful commissioning and convincing performance tests, the delivery of another three identical control ball valves for the other caverns was also ordered from TEC artec.

The valves for the gas storage operator in Etzel are equipped with a 2-stage pressure reduction for control at high pressure differences. At smaller pressure differences and the associated larger opening positions of the valve, the mode changes smoothly to a 1-stage pressure reduction. From approx. 50% opening, regulation takes place with a barely measurable pressure difference.

The 2-stage pressure reduction at higher pressure differences reduces the icing risk due to the Joule-Thomson effect; the change in fluid's temperature as it flows from a higher pressure region to lower pressure. In addition, the control discs with the bores directed parallel to the pipeline create a uniform flow with low turbulence, which also has a positive effect on noise emissions. With leakage rate A according to EN12266-1, the control ball valves supplied meet the significantly higher tightness requirements for shut-off valves.

The valve is designed for bi-directional flow, is mounted with AUMA actuator, and is designed to withstand 210 bar pressure and -20 to +50°C. It is suitable for hydrogen use.

NEW TELESCOPIC EXTENSION SPINDLES

PRODUCTS

We are pleased to introduce our new telescopic extension spindles with break zone in the key adaptor.

*By Lene Mark,
Head of Marketing,
AVK International*



The break zone prevents damage to the valve and the extension spindle itself if too much torque is applied during operation. In such events the break nut will break and can easily be replaced. Meanwhile, the extension spindle can still be operated by means of a #20 socket wrench.

The key adaptor consists of two parts – the key adaptor itself and a top spanner – and in between there is a break nut made of ECO BRASS DZR CW724R. All three parts are assembled with a socket head bolt.

The break nut will break at different ranges of torque depending on the valve size. Spare part sets are available consisting of a break nut and a spare socket head bolt that can be mounted by use of an Allen key.

Easy mounting and operation

All our extension spindles are designed for ease of use with features that secure easy mounting and easy length adjustment on site. Easy operation of the valves is secured by the bottom covers of the extension spindles which protect the valve stems from impurities

and enable them to rotate freely – and by a high, uniform and long-lasting quality of the extension spindles.



Click/scan to see our extension spindle animation

AVK BRASIL JOINS THEIR CUSTOMERS FOR A TECHNICAL SITE VISIT

BRAZIL

Being close to our customers and understanding their needs is key in order for us to seek out the best solutions.

*By Juliana Celestrim,
Marketing Analyst,
AVK Válvulas do Brasil*

In September, we accompanied our customers from water and wastewater companies PROLAGOS and CAGECE for a technical visit to experience an installation carried out by SABESP; the

Basic Sanitation Company of the state of São Paulo.

Both companies are very interested in using needle valves in their projects, and therefore wanted to know how the valve works in line. And what better way to learn than to see and experience a finished, working installation.

AC.MO needle valve on display
REGFLUX needle valves from AC.MO are located at the inlet of the reservoir in the city of Itapevi, São Paulo, which supplies water to two cities. Here, the valves are responsible for reducing

the filling pressure of the reservoir. The valves are equipped with an anti-cavitation cylinder to control cavitation and improve the closing/opening phases.

Any doubts were clarified by the construction engineer who is an employee of SABESP, and by the sales employees from AVK Brasil.

It is always good to be close to our customers to seek out new solutions for them, especially with the diverse line of products and brands we can offer from within the AVK Group.



Products supplied to the installation, by AC.MO:

- 1 REGFLUX needle valve DN400, F800, PN10, with anti-cavitation cylinder K50
- 2 REGFLUX needle valves DN500, F800, PN10, one of them with anti-cavitation cylinder K20
- 1 REGFLUX needle valve DN600, F800, PN10 with anti-cavitation cylinder K50
- 2 REGFLUX needle valves DN600, F800, PN10 with anti-cavitation cylinder K100

THERE IS NO "ONE SIZE FITS ALL" IN PRODUCT DEVELOPMENT

FRANCE

Despite success in other markets with their surface boxes range, AVK Plastics were experiencing reluctance in the French market due to the usual installation practices in the country. An additional research and development phase has helped fine-tune a new product which is now ready for launch

*By Jelmer Dijkstra,
Product Manager,
AVK Plastics*

Researching the market

In early 2021, AVK Plastics and AVK France agreed to execute a full market research into the surface boxes area, to get the full overview and consequently come up with a business development strategy.

From a comprehensive research, one main conclusion could be derived: the currently promoted AVK Plastics product portfolio was not fit for purpose according to the French installation methods, which typically means using PVC downpipes (instead of e.g. extension spindles). Furthermore, the French market is used to seeing this product in the usual cast iron version, but with the right features and benefits, customers indicated that they would not be reluctant to try the plastic version.

Redesigning, testing and confirming

The research and customer feedback was used to establish an extensive list of requirements which the new product

range needed to comply with. Based on the list, product designs and 3D printed prototypes were developed and presented to multiple end users. After collecting their remarks, multiple rounds of adjustments have been carried out leading to the final product design. Once the design of the new models was completed, multiple samples were developed for trial installations and internal testing, and the compliance was confirmed. Samples were presented at a couple of large water industry exhibitions to create awareness of the product, and we have received very positive feedback.

Introducing BACfixe and BAClift

The new product range consists of fixed (BACfixe) and height adjustable (BAClift) models with round, square and hexagonal top shapes. Polyamide is

used as material for the housing and the lid is made of cast iron.

The new product's main features:

1. Interchangeable plastic inscription plate, available in multiple colours and personalised which can be used for e.g. valve identification
2. Opening of the lid with a bayonet system without the usual bolt connection of lid to housing avoiding conflict with downpipe which is mainly used in French installations
3. Wide and thin top rim with small chambers underneath the rim enables a perfect bonding of surface box in tarmac, ensuring a long-lasting and maintenance free installation
4. Downpipe acceptance and centration (Ø90mm and Ø100mm)

The product will be officially launched by the end of 2022.



AVK Plastics manufactures synthetic surface boxes at their production facility in Balk, the Netherlands.

Over the years, they have become very successful in multiple European markets such as the Netherlands, Belgium and Germany.



TESTING AVK VALVES FOR POWER-TO-X APPLICATIONS

GLOBAL

Green energy plays an important role in the future energy supply and with the progress of Power-to-X technologies, hydrogen will play a significant role as an energy source. Therefore, we have tested our gas valves to determine whether they can withstand the long-term effects of hydrogen.

By Idriz Rahmanovic,
Product Manager,
AVK International A/S

&

Charlotte Brønsted Rasmussen
Technical Writer and Marketing
Coordinator, AVK International A/S

Transportation of hydrogen using the existing gas networks

The Power-to-X technology transforms green energy into for instance hydrogen, that can be stored and used directly as a source of energy or processed to be used as fuel. An obvious choice would be to use the existing gas distribution network to transport hydrogen, but is it possible to do this without any risk of damage on gas installations, infrastructure etc.?

In several countries throughout the world, the distribution network is being tested for transportation of gas with different concentrations of hydrogen: in some places even up to 100%.

"One of the challenges of hydrogen is that over time it will diffuse into the metal of e.g. a valve. As a result, hydrogen embrittlement can occur, which can cause cracks in steel materials. Since hydrogen is a very small molecule, it is important to keep focus on tightness and leakages. The worst case scenario is that an explosion will occur in the gas pipeline or the Power-to-X plant." – FORCE Technology

Green transition and Power-to-X are two important elements in the future energy supply, and as valves are a part of the gas network, it is important that our

products can handle the transportation of e.g. hydrogen.

Specially developed hydrogen test for valves

The Power-to-X technologies are still quite new, and there are no standards yet. Most manufacturers of valves will follow the ASME B31.12 standard for hydrogen in distribution networks, but there are no standards for tests of valves used for hydrogen.

Therefore, in collaboration with FORCE Technology, we have developed special tests to simulate the long-term effects of hydrogen. FORCE Technology has specialised knowledge within this field, and they have access to test facilities established in cooperation with Danish Gas Technology Centre, DGC. It takes a lot of safety precautions to perform tests with hydrogen, as it is a highly combustible gas, and furthermore, the valves need to be tested under pressure.

We have developed two comprehensive tests: a functionality test that simulates the full lifetime and a burst test that

exposes the valves to increased pressure until they burst.

AVK valves can withstand the effects of hydrogen

Test results show that AVK valves can withstand the effects of hydrogen. They can therefore be used as components in the gas networks used for transport of hydrogen.

AVK is the first company in Denmark to test valves for hydrogen use. By being first-mover and contributing to development of tests within this field, we will have an advantage when it comes to meeting our customers' needs in their transition to green energy.

Click/scan to see a video about
our hydrants being tested



Power-to-X is a designation of the process in which green electricity from wind, sun or water is transformed into something else (X), like e.g. hydrogen. Hydrogen can either be stored for later use as a direct source of energy or it can be processed further and used for transport and industry, like other fuels.

FORCE Technology is a technology consultancy and service company, working to create a positive technological change and make the world safer and more sustainable. The company has an infrastructure of facilities for testing products, structures, components, and materials, as well as several unique laboratories.

REDUCING WASTE THROUGH PROCESS REVIEWS

SAUDI ARABIA

As any other production facility, our daily work has an impact on our environment, and any improvements – big or small – are contributions to our shared goal of a greener future.

*By Randa Abu Mazen,
Customer Service Coordinator,
AVK Saudi Valves Manufacturing*

Sustainable processes have been the foundation of the Saudi Arabia 2030 Vision since its inception. In addition, the Saudi Green Initiative, SGI, plays a key role in achieving the global sustainability targets. Through whole-of-society action and investment, the Kingdom is taking decisive steps towards a greener and more sustainable future.

One of the SGI goals is to improve the quality of life and protect the environment to the benefit of future generations in Saudi Arabia. At AVK SVMC, we want to live up to this vision, and have introduced a number of changes in our production processes.

Our standard process for producing gate valves, butterfly valves, check valves and fire hydrants has many steps and as with any other process, there is waste. Waste of material, waste of water, but in an attempt to minimise our waste as much as possible, we are reviewing each step to optimise wherever we can.

Steel shot blasting was the first process we decided to look into. Steel shot



blasting is a common technique used to clean or perfect a steel surface to prepare for secondary finishing operations, such as product coating. Basically, the technique consists of small pellet-type projectiles, often made from carbon steel, which are blasted onto the product to obtain the smooth surface. It is environmentally friendly in the way that there are no chemical products involved and no waste of valuable drinking water. We now recycle the steel shot itself by filtering it after every use, so it can be reused in the following similar process.

For our coating process, we use powder paint for some of the products while using a filtration system to absorb all the left-over powder to be reused.

Another important step is in testing of our isolation valves, where we use water to test every single one for leakages. This means we end up with a lot of wastewater, but with a recycle system draining and filtering the wastewater

back to the tanks, this was an easy step to save a large amount of water.

Finally, for the production process of packing and shipping, we recycle the broken wooden pallets to create new ones. Recycling or reusing waste materials and objects can benefit us and our country in so many ways, particularly economically and environmentally.

The Saudi Green Initiative works to increase Saudi Arabia's reliance on clean energy, offset emissions, and protect the environment, in line with the Saudi Vision 2030. It aims to improve quality of life and protect future generations.

The Saudi Vision 2030 is a strategic framework to reduce Saudi Arabia's dependency on oil, diversify its economy, and develop public sectors such as health, education, infrastructure, recreation, and tourism.

CONGRATULATIONS TO THIS YEAR'S WATER COURSE GRADUATES

DENMARK

On 27 August, this year's course participants left Låsby Kro with their diplomas in hand, ready to go out and influence the future water industry.

*By Katrine Klejnstrup Sørensen,
Global Marketing & Communications
Coordinator
AVK Holding*

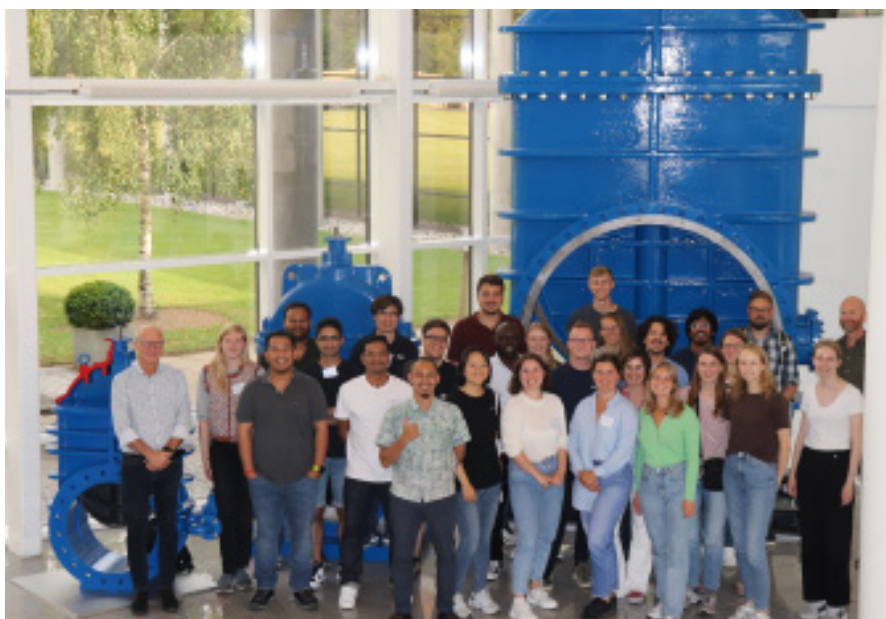
The two-week Advanced Water Cycle Management Course was held for the third time, and once again the mix of guiding theory backed by semi-practical tasks turned out to be a great way of constructing a water knowledge upgrade.

From silo mentality to teamwork

The course content is designed from a holistic view on water infrastructure throughout society, also in terms of the energy circle and how to efficiently use our available resources; once cleaned, water should return to the ground by establishing constructed wetlands, and the energy required to do so should be produced by the wastewater treatment plant itself.

In the second week, the course was divided into three thematic tracks of Groundwater, Water Distribution and Wastewater, and each participant selected a track based on their individual area of interest.

For the final exam, the participants were divided into groups based on the track selected, but the groups had to work together to make sure that all chains in the water circle were considered; something that the participants mention as the most important take-away from the course: prioritising to work together across areas of expertise to obtain the most sustainable solution possible.





Fun and networking in rural settings

The participants joined the course from 12 different countries, which brought a lot of value to the knowledge sharing process - both regarding cultural differences, local views on products or solutions, environmental concerns and the like.

In between all the lectures and company visits, there was also a bit of time to get to know each other and the local area. On a sunny Sunday, they went on a canoe trip on the Skanderborg Lake to enjoy a day off away from computers and brainstorming.

Katrine - studying biotechnology engineering in Denmark

"I was advised to join the course, and was happy with both the content and the social aspect of the two weeks; the structure of mixing both groundwater, water distribution and wastewater gave good insights to the complete task of managing water throughout a society. And two weeks in the countryside was a good way to socialise and network with others from the business".



Interested in a water knowledge upgrade?

Then join us next August, when we kick off the course once again. The course (5 ECTS) is designed to upgrade your water management skills and to provide you with substantial knowledge of water resource management, water distribution and wastewater handling including resource recovery.

Company visit to our AVK headquarters

One of the main ingredients in a sustainable water network is valves that are reliable, efficient and of high quality, to avoid the hassle of cutting off vital processes in order to switch out products or perform maintenance. As valve specialists, the participants should of course stop by our facilities and have a closer look at our product range.

The course participants visited our AVK Academy and Visitor Centre, where they met with representatives from the

University of Aarhus, AAV, Grundfos and AVK who gave lectures within their specific areas of expertise.

In our showroom, they were sent on a "Valves for dummies: The valve park" scavenger hunt to search out details about some of our many products. They were given a short introduction beforehand, so they were tuned in on the valves' technical specifications.

Thanks to all for a great day of fun and learnings!



Scan/click the code to learn more about the course

THE IMPORTANCE OF SELECTING THE CORRECT TYPE OF VALVE

UNITED KINGDOM

For a project on the Usk Reservoir, a mixture of AC.MO, Orbinox and AVK products and Glenfield Invicta's technical expertise formed the combined valve solution.

*By Greg Morris,
Business Development Manager - Dams,
Reservoirs & Hydropower,
Glenfield Invicta*

Built in 1955, the Usk Reservoir is located in the Usk Valley in the western part of the Brecon Beacons National Park, Wales.

The reservoir lies 320 m above sea level and comprises an earth dam some 30m high and 480m wide. It is the first UK example of an earth dam; a barrier built from highly compressed earth material such as gravel, sand, clay and the like.

The water source of the Usk, derived from a word meaning 'abundant in fish', is Fan Brycheiniog. Fan Brycheiniog is the name of the highest peak in the Black Mountain region of the Brecon Beacons National Park.

Environmental responsibility

Usk Reservoir is owned and managed by Dwr Cymru Welsh Water (DCWW). The works referenced in this case study were first envisaged as far back as 2015. They form part of DCWW's response to the requirements of the EU Habitats Directive which focuses on the conservation of natural habitats and of wild fauna and flora.

In essence, the works are designed to give DCWW enhanced control of water

releases to the Rivers Usk and Wye both from a habitat and draw-down safety perspective.

The impact of surge pressure

Glenfield Invicta's first contribution to the design of the Usk Reservoir works came in 2016. The engineering consultancy Arup was reviewing design options, and their engineers were particularly concerned that works to enhance water releases could lead to surge pressure damaging legacy pipework within the reservoir.

Understanding the operational characteristics of different valve specifications was, therefore, paramount.

Selecting the right valve for the purpose

As representative from Glenfield Invicta, I was in several in-depth discussions with Arup engineers relating to the optimal choice of control valve and described how the risk of surge pressure was mitigated through the valve's design. In particular, both under electrical and manual operation, the





"As an engineer, I feel very fortunate to have access to the product ranges of so many AVK Group manufacturers which means I can offer the ideal product for virtually every application."



valve in question was designed to ensure that it closed slowly (operational speed between 50–100 mm/min) and smoothly to ensure flow was regulated gradually and without any pulsing effects taking place.

We provided a 3D animation of the proposed control valve which demonstrated how the valve operated, to reassure the engineers that no surge pressures would be created in any upstream pipework provided the correct valve type and valve size was specified.

Designs were finalised, contracts awarded and valves specified. Our involvement in earlier consultations ensured that we were well placed to win the contract.

The main technical challenges were the surge potential and the high flow velocities acting on the system, and several valves were specified across the system. We recommended the Orbinox Model CH fixed cone discharge valve (DN450) as the principal control valve due to the relatively slow operating speed and the need for a smooth and regulated flow regulation performance.



An important objective of the Usk Reservoir project was to achieve accurate compensation flows. The required range and accuracy of compensation flows led to the specification of a series 872 needle control valve (DN300). Compensation water is defined as the flow that must be supplied from a reservoir to a stream in time of drought.

The left image above shows the commissioning of the fixed cone discharge valve and needle valve working in parallel. As seen of the right-hand image, space within the upstream tunnel was restricted and we supplied 3D models of the gate valve to ensure it fitted within the space envelope.

Isolation gate valves were required on the upstream tunnel (DN450) and on the embankment toe (DN800). In both cases, our series 54 reservoir-specification gate valves were specified to meet the required 100-year design life and accommodate the high flow velocities.

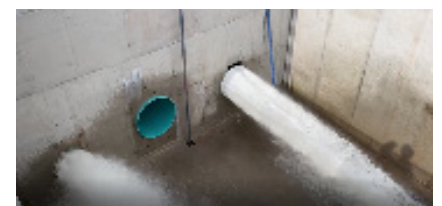
Consideration was also given to the orientation of the electrical actuator and

gearbox to avoid any fouling with the tunnel walls. Glenfield Invicta engineers installed the actuators and extension spindle arrangements on site.

Technical support is paramount

The technical support was simply fundamental in the award of the supply contract to Glenfield Invicta. As with all dam and reservoir projects, technical support is paramount in securing the business. Lots of time, effort and resource has been spent on reviewing system drawings and specifications, selecting the correct valve type, calculating the optimal size and confirming the exact specification of valve for each application.

The really rewarding aspect of this project for me was that we (Glenfield Invicta) worked with several of our sister companies from across the AVK Group, including Orbinox, AC.MO and Anhui, to deliver a valve package that comprehensively met the rather demanding requirements of the Usk project.



A HOT SUMMER FOR HYDRO-COS

ITALY

Mid-July was quite special here at Hydro-Cos, where we received two urgent orders for large-size, customised Hydro Stop repair collars.

*By Dario Rotolo,
Managing Director,
Hydro-Cos*

Both orders came from contracting companies involved in maintenance of the northern area of the aqueduct "Acquedotto Pugliese". An aqueduct is an artificial channel for conveying water from a source to a distribution point.

Wasting an already sparse resource

The northern district of the Acquedotto Pugliese lies in Tavoliere delle Puglie, one of the most important plains in the Apulia region of Italy, which is very famous for its tomato cultivations. The area is also known for its large-size pipelines that transport water from border regions, helping Apulia cope with its lack of freshwater reservoirs.

Therefore, it is simply paramount that any pipe leakages in this district is fixed as quickly as possible; something that involves a wide number of contractors in the maintenance. The network consists of pipes ranging from DN2500 mm and downwards.

No downtime for crucial supply

The first order we received was to fix a DN2000 concrete pipe with a remarkable leak from one of its sockets. The solution was a large-size Hydro Stop HS610S in socket layout.



The DN1000 collar being installed

After several inspections, the contractor's and Acquedotto Pugliese's technicians decided to use our Hydro Stop collar as the definitive and safest repair. Due to the importance of the area served by this pipeline, it was mandatory to not interrupt the service while installing, meaning that an encapsulation collar was the only option.

10 days from inspection to job done

The size of the socket - larger than usual - required a bigger cavity with a length of 1,400 mm and an internal

diameter of 2,630 mm, meaning that it would need a specific collar design. Just 10 working days after the inspection, the collar was on-site and ready for installation: a short time considering the specs of the collar.

Despite the size, only five workmen and a crane operator were needed to perform the installation, which happened under the supervision of a couple of our technicians and the technical staff of the Acquedotto Pugliese. The installation went smoothly and was completed within six hours.



The DN2000 collar being installed

Quick customisation and easy installation

The second order was to encapsulate the remnants of a previous ineffective repair that was still on the pipe, and that could not be removed before the installation of the new collar.

The solution was a Hydro Stop Socket, type HS240S, with a range of 1000-1040 mm to be installed on a steel pipe.

The contracting company provided us with the exact size of the cavity needed and we supplied them with the collar in

seven working days, due to the urgency of the repair.

The final size of the cavity was 2000 mm in length and 1700 mm in internal diameter: well above the usual standard!

Despite being the first time this company was installing a Hydro Stop, our supervision was not required on-site. This shows how easy and quick these collars are to work with, as well as how versatile they are in terms of performing any kind of repair.

In general, Hydro Stop is widely considered state-of-the-art in repairing “live” pipelines ensuring top performance, high-end quality, competitive prices and huge customisation possibilities.

With the introduction of our encapsulation collars, a new and excellent class of products is added to the AVK product range – especially for customers who are involved in leakage detection and pipeline maintenance.



PRODUCT TRAINING AT LOCAL WATER DISTRIBUTION COMPANY

IVORY COAST

The Ivory Coast is one of the largest countries of the African sub-Saharan region. Abidjan is the country's largest city with a population of five million inhabitants.

*By Guillaume Vion,
Product & Promotion Manager,
AVK International A/S*

In Abidjan, they are experiencing vast challenges with unauthorised people operating valves and hydrants to tap water, while at the same time they are working hard to ensure a more reliable distribution network and to prevent water loss.

As part of our strategy to strengthen our business in Africa, AVK International established an office in Abidjan in May 2022. To improve our position in the market, we are reaching out to the local water companies to pick up on their challenges and at the same time present the solutions, products and know-how we can offer.

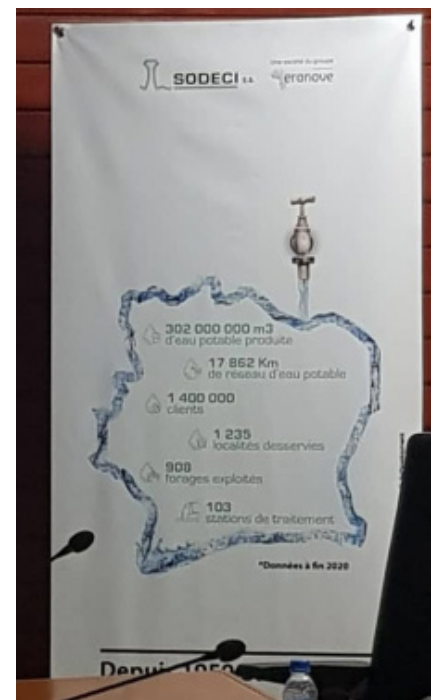
One of the local companies is SODECI – a water distribution company

established in 1960, which produces, transports, and distributes drinking water in the country. Since 1999, SODECI has operated and maintained the wastewater supply in Abidjan, where they supply drinking water to 1.5 million households (approx. 10 million people) via an 18,000 km long water line. The total amount of purified water is around 302 million m³.

In August, we held a technical seminar for SODECI to present our range of valves, accessories and complete solutions. In particular, the seminar focused on gate valves, the Supa Lock threadless connection system, the Hydro-Cos solutions for pipe repair as well as Smart Water solutions with VIDI positioners and sensors to monitor

network activities. Based on the above-mentioned challenges with water theft and water loss, the Smart Water introduction was particularly relevant.

A special thanks to SODECI for their knowledge-sharing and feedback. It is very important for us to keep a close cooperation with our customers to be able to offer the best solutions.



CROSSING LAND AND SEA TO INTRODUCE OUR SOLUTIONS

INDONESIA

After more than two years of pandemic shutdowns and cancellations, we were finally able to carry out the much-anticipated Nusantara Tour – a trip around the islands of Java, Madura and Bali, presenting our products and solutions.

*By Gert Borrits,
Regional Marketing Director,
AVK in Southeast Asia*

The extensive tour - which covered 45 cities over a three-month period - was kicked off with the following quote, which turned out to be rather accurate:

“We have put together a very ambitious plan that will take a lot of coordination, determination, and relentless work to carry out”.

Doing such a tour is not easy at all, especially considering that geographically, Indonesia is an archipelago country. Our bus crossed the sea, and we encountered many

obstacles on the road. But it was most definitely worth the hassle, and we are very grateful for the many participants' warm welcome and for the opportunity to present our technical know-how regarding proper water management.

Some of the visited areas are already using AVK products, while others are not, so it is an opportunity for AVK Fusion Indonesia to build a strong relationship with both new and potential customers.

Each province and city is different and is unique in terms of water needs, and as with everything else, it is about meeting the customer where they are and in the situation they are in:



In today's ever-evolving and challenging business environment, we believe that the company that is closest to the market's customers will win. This is what Nusantara Tour is all about.

Our next destinations will be Sumatra and Kalimantan. This year's Tour follows the success of the first Nusantara Tour, which was held back in 2020, targeting Sumatra Island and visiting nine cities.



“Nusantara” is an old Javanese term which refers to the conquered territories of the Majapahit empire, corresponding to what we today know as: Indonesia.

FUSION ASSIST APP PLAYS KEY ROLE IN MEGA-PRISON QUALITY ASSURANCE

AUSTRALIA

Australian Piping Solutions (APS) installs the pipework for commercial HVAC systems. A recent, and ongoing, project is the Gatton Correctional Facility Extension in South Queensland. Gatton is a 'mega-prison'; the extension alone has 1004 cells.

*By Kelly Hearnshaw,
Group Marketing Executive,
Fusion Group*

The Fusion Assist app is fundamental to the quality assurance system implemented by APS on projects like Gatton. The app imposes disciplines of the installation process and, critically, underpins the twenty-year warranty that APS must provide on the integrity of its workmanship.

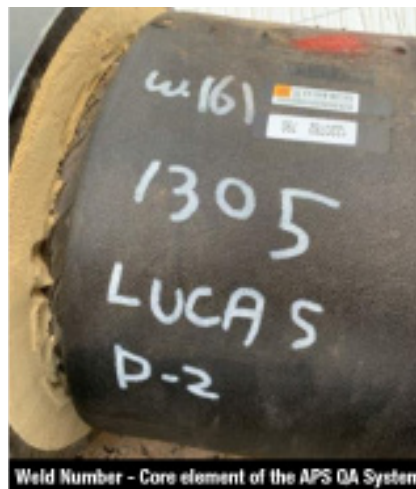
One single source of truth

At Gatton, APS is working as a specialist subcontractor to VAE, who has designed HVAC system and has overall responsibility for its construction and commissioning.

The pipework used on the HVAC system ranges from 355mm to 180mm on the ring main, reducing to 63mm within the buildings. The system is centred on a ring main that services all areas of the extension. The section of the project, which is the focus of this case study in terms of reports and images, relates to the leg back from the ring main to the chiller point. The pipe featured is 355mm.

Using the app to track all steps of the process

At the core of the APS quality assurance system is the weld number. This is manually written on the joint by the operator, is captured both visually and numerically as part of the Fusion Assist data collection process and is also referenced in the output weld record from the electrofusion box. See an example of this in the image below.



The weld numbers also feature as GPS datum points which help to create the installation map.

The APS operator uses a Fusamatic fitting to create the joint. Once pipe scraping and alignment are completed, the operator can either use the automatic welding parameters activated by the Fusamatic pin, scan the welding parameters barcode on the Fusamatic fitting, or enter the setting manually. At Gatton, APS used an industry standard electrofusion control box and extracted the weld data using weld analyser software.

Once the weld has been completed, the operator marks the fitting with the welder serial number, the unique generated welder log number, his qualification ID number and the date and time of weld completion.

The operator then opens the Fusion Assist app and scans the standard 12176 traceability barcode which is available by virtually all world-class electrofusion fitting manufacturers. With a Fusamatic fitting, the operator is also prompted to capture the QR code which forms part of the fitting label. The QR code further extends traceability as it provides traceability down to the raw materials and operator that manufactured the fitting.

The Fusion Assist app further prompts the operator to capture images of the joint weld which become part of the joint record.

Finally, the operator answers straightforward questions relating to weld number, scraping and clamping. There is also a series of simple visual quality checks e.g. "Have the fusion indicators extended?" or "Are there signs of plastic melt outside the joint?"

Generating a combined QA report

APS extracts the Fusion Assist data as an Excel CSV file and generates a weld map from it. The APS team also captures a video of the completed pipeline.

APS collates a report for its client, VAE. The report incorporates Fusion Assist data; data from the electrofusion box; pressure test report on the completed pipe section; calibration records for the electrofusion box and other equipment; weld map; training records of operators.

The app showing an overview of all welds performed and tracked, which is part of the data collection process



The report is comprehensive, authoritative and straightforward to compile.

As a client, you can almost feel the quality

According to Ian Commons-Fidge, Managing Director at APS, Fusion Assist has provided them (and their clients) with a single source of truth:

"Before embracing Fusion Assist, we would typically take a series of photos and try to tie them back to the work undertaken. There was a degree of variability in the images captured and, with manual record keeping, a degree of inaccurate data capture.

The Fusion Assist app imposes disciplines on the site teams, provides

consistency from a data capture and presentation perspective, and stands as a '...single source of truth'. It also greatly simplifies the data collection and reporting process. At Gatton it is a requirement that we warranty our work for twenty years and Fusion Assist gives us the confidence to do this.

The best thing from a management perspective is that, with Fusion Assist reporting, the client can almost 'feel' the quality. The quality, productivity and commitment of the APS workforce, combined with Fusion Assist reporting, has definitely helped us win new packages of work at Gatton."

APS is always seeking to further improve the QA process and is now working with Fusion Group on ways to

integrate PE pipe into the Fusion Assist app as well as developing the ability to create a video through Fusion Assist as part of the weld mapping process.

A positive, unintended impact of Fusion Assist is that it has helped APS to win new packages of work at Gatton worth around EUR640,000.

"At Gatton it is a requirement that we warranty our work for twenty years and Fusion Assist gives us the confidence to do this."



GROWTH IN POPULATION AND PRODUCTION MEANS MORE WATER REQUIRED

VIETNAM

To meet the increasing needs for water supply, an extensive expansion project was initiated in Da Nang, Vietnam. The project is a national key project and is part of an overarching plan in Da Nang's overall development.

*By Chuong Ngoc Anh,
Internal Sales Manager,
AVK Vietnam*

The Hoa Lien water treatment plant is the largest plant in Da Nang, an important port city on the coast of Vietnam. To meet increasing water needs as a result of growth in the production and tourism sectors it was planned to expand the plant's capacity. Additionally, the project will help prevent contamination of the local environment: Rivers, especially in the southern area of the city, are vulnerable to salt contamination in the dry season. The discharge of untreated domestic and

industrial wastewater as well as careless disposal of garbage by residents along the rivers are two other reasons for river and lake water contamination. As a result, old facilities have been forced to stop operation, leading to water shortage in the area. Therefore, the Hoa Lien plant pumps river water from other areas along the river, which are not salty, to treat and supply to the residents.

Hawaco Central, a technical consultancy company based in Da Nang, was established in 2018. After working on a few projects together, AVK Vietnam and Hawaco Central have established a good and promising partnership, where we are able to offer high quality products for distribution as well as feasible solutions for projects in the region of Central Vietnam.

10.6 km of raw water pipeline

The expansion of the Hoa Lien plant features the construction of a spillway on the Cu De River to source water, with a 727m² raw water pumping station, with a daily capacity of 120,000m³ as well as DN1400 raw water pipelines with a daily capacity of 120,000m³. In a

following phase 2, the plant is capable of upgrading to 240,000m³ of water. A 1.4 m diameter and 10.6 km long raw water pipeline will be placed underground, running from the pumping station in Hoa Bac Community's Nam My Village to the water treatment plant in Hoa Lien Community's Quan Nam 1 Village. Ultimately, the expanded project will help increase the capacity of water supply for residents of Da Nang city.

With the support of other AVK Group companies such as AVK International AVS, AVK Polska, Wouter Witzel Eurovalve and AC.MO S.r.l., AVK Vietnam and Hawaco put together an ideal solution for the project. Our valves meet the strict technical specifications of the installation and can ensure quality in coastal climates and potentially saline water sources.

Drinking water certifications were essential

An important factor in the product evaluation process that turned out to be our valves' many certifications for drinking water by independent international organisations such as WRAS, DVGW and KIWA. The project



stakeholders were completely assured by our products' quality in meeting optimal operation cost and minimising water loss, and can safely assume that the water quality is kept safe for the residents and tourists in Da Nang city.

Complex installation

The dam had to be constructed between two rainy seasons in a very complex terrain. Therefore, to ensure the safety of the project, adjusting to the downstream is an extremely important matter. The construction of a raw water pipeline in a mountainous terrain entails many difficulties in the transportation of machinery, materials, and workers.

AVK and HAWACO have been happy to support this important project.



AVK BRASIL WINS ESG AWARD FOR THEIR GREEN INITIATIVES

BRAZIL

In September, AVK Brasil participated in the yearly National Exhibition of Sanitation and Environment Services, FENASAN, which was held in São Paulo.

By Juliana Cristina Celestrim, Sales Assistant Senior, AVK Válvulas do Brasil

FENASAN is a highly recognised fair, and is seen as one of the most important fairs in the sanitation sector in all of Latin America. This year's theme was Sanitation: priority for life.

Record-setting fair

With the largest number of exhibitors to date, 230, the entire exhibition area was covered. The fair was visited by no less than 20,000 visitors, of which more than 1,000 stopped by our stand where we showcased our products for sanitation,

gas, fire protection and pipe repair.

We presented brands such as AVK, VCW, ACMO, FUSION, REPICO and ORBINOX, and we had very positive response from our many visitors. Some of our brands chose to share their products "on display" on their social media – great to feel the teamwork!

Green practices are rewarded

For the first time, FENASAN - through its ESG Committee – has decided to reward ESG (Environmental, Social and Governance) practices of the exhibitors to encourage that we continue working towards our common goals for sustainable development adopted by all United Nations.

We participated in the award and demonstrated, through a survey carried out by the organiser of the event, our campaigns and practices in favor

of the environment carried out here in Brazil. Based on this, we won the AESabesp Exhibitors ESG Award, as we were in the top three of exhibiting companies in the event.



AVK AT THE IWA WORLD WATER CONGRESS & EXHIBITION 2022

DENMARK

Decision-makers, delegates and water professionals from all over the world were gathered to focus on sustainable water solutions, and on how to put water higher on the global agenda.

*By Michael Ramlau Hansen,
Public Affairs,
AVK Holding*

The event was held in Copenhagen, the capital of Denmark, and together with numerous other Danish companies and institutes, we had our own stand at a shared Danish pavilion.

It is always a pleasure to take part in the event, and this year was no exception. The programme was well put together, which was underpinned by a record-setting number of participants, and as Anders Thomassen, Market Director at AVK International points out, it was a great opportunity for us:

“At AVK, we are focusing targeted on the UN development goals, and our Smart Water products are one of our recent contributions to reach the goals. IWA was a great way to get inspired by other water professionals, and it was the perfect place to demonstrate our product innovations within Smart Water to some of the most important decision-makers and influencers in the business.”



Dr. Kala Vairavamoorthy visited the AVK booth at the conference, and as we have quoted him in our Water in the World leaflet, he should of course have his own copy. Here he is getting introduced to our smart VIDi cap.

Technical tour to experience the LEAKman project

40 participants joined me and Gerner Knudsen, the Business Development Director at Smart Water, on a technical tour to see some of our LEAKman project (LEAKage management) installation sites and hear about the partnerships behind the project. The aim of the project, which was initiated in 2016, is to demonstrate the Danish water industry's best solutions to bring down water loss

The technical solutions that are used in the installations were presented, particularly our contributions, which include regulating valves and VIDI positioners from AVK Smart Water – sensors that are installed on key valves to monitor network activities.



AVK presentations for the crowds

Besides the stand and the technical tour, Gerner Knudsen and I gave three presentations: two about Smart Water installations, results, and learnings, and one about AVK's contributions to sustainable water management solutions.

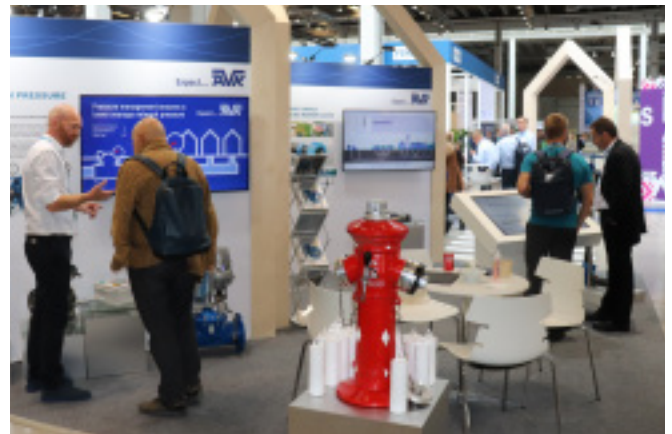
Cheers to intelligent water management

We had arranged for an AVK hydrant to be installed on the stand, so visitors could tap drinking water from it – with free, reusable water bottles kindly offered by the event organisers.

The hydrant was of course equipped with a Smart Water VIDI cap, so visitors could try and remove the cap, which was immediately reflected on

the dashboard that can be seen in the background.

The VIDI cap is designed to register any movement of the cap, e.g. if someone is tampering with the hydrant. By regularly transmitting data, it can help detect unauthorised use and minimise water theft, loss or tampering via hydrants.



On display at AVK's stand was:

- Digital monitoring with Smart Water products
- Leakage repair with collars and couplings
- Solutions for critical applications with our Premium 100 and Duplex valves
- Solutions to save resources with pressure management using control valves

EXPANDING THE CAPACITY OF YUELU WASTEWATER TREATMENT PLANT

CHINA

In Changsha City, China, an extensive initiative has been initiated to assure the necessary infrastructure for the area. The initiative is called "Two times supply and treatment", referring to the important tasks of supplying the area with water and gas, as well as properly managing the generated waste, i.e. wastewater and other waste. The initiative is dedicated to benefit the local citizens and eco-systems as well as accommodate the needs in growing urban areas.

*By Ken Yan,
B&D Marketing Director,
AVK Valves Shanghai*

As part of the initiative, an expansion of the local wastewater treatment plant, Yuelu, was introduced.

The Yuelu wastewater treatment plant is located in Changsha and was built in 2016. It is the largest wastewater treatment plant in the Hunan province, and uses state-of-the-art technology such as AAO+ and a secondary sedimentation tank for advanced treatment.

In order to expand the capacity of wastewater collection and treatment, it was necessary to upgrade and renovate the facilities. The project includes the addition of 142,000 m² of construction land, with a total investment of about EUR193 million.

Larger and greener capacity

The initial capacity of the treatment plant was 300,000 tons/day, which has been upgraded in phases. By the end of the project, which was finalised this year, the plant reached a total capacity of 600,000 tons/day.

Additionally, the outlet process has been upgraded from what is now called

"first-class B" to the surface water standard IV, including a nitrogen content reduction to (TN<10) = below 10mg pr litre.

Nitrogen is an important nutrient for plant and animal growth, but balance is key; if there is an overabundance, it can have critical ecological and health-related consequences. Effectively, the upgrade means that the water discharged from the treatment plant into Nature is cleaner. Also, deodorisation has been part of the project, to make sure the inconvenience for the surrounding area is kept to a minimum.

Working against the ongoing pollution

Finally, upgrading and reconstructing the Yuelu wastewater treatment plant will greatly alleviate the contradiction between the increasing wastewater volume and the inadequate wastewater treatment capacity. This plays a key role in protecting the water environment of the Xiangjiang River reservoir and the Longwanggang River, as the direct discharge of excessive wastewater will be reduced.





Critical anti-corrosion performance

For valves that are to be used in wastewater application, it is critical that they are properly coated to avoid corrosion. All AVK castings are blast cleaned according to ISO 12944-4. Any unevenness of the product surface is cleaned to provide perfect adhesion of the coating. Of the installed products, all internal and external epoxy coating is performed to DIN 30677-2 and GSK guidelines. Thorough control measures ensure optimum corrosion protection.

AVK products assure steady operation

Bringing decades of experience within the wastewater industry, AVK has been deeply involved in the expansion and renovation project of Yuelu. The plant has been equipped with hundreds of AVK products including gate valves, butterfly valves, check valves and penstocks.

With the reliable, efficient and long-term quality of AVK valves, the overall operation efficiency of the Yuelu plant is kept safe.



COMPETITION



We are happy to announce that the winners of the competition in AVK InterLink no. 60 are:

- Jan Vaculík, AVK VOD-KA a.s.
- Mohammed Hamad, AVK Saudi Valves Manufacturing
- Vinicios Arnóbio, AVK Válvulas do Brasil

Gifts are on their way.

The correct answer is: 120 AVK hydrants in Doha's new downtown area.

New competition:

We have tested our valves to determine whether they can withstand the long-term effects of ____ ?

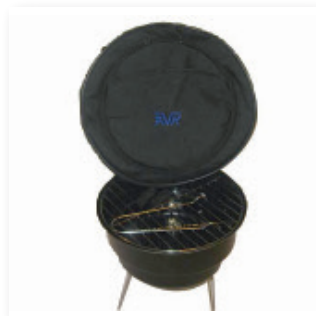
Send an e-mail with the correct answer in which you state your address and the gift you would like to receive - if you win.

E-mail to: kakl@avk.dk

Choose between:



Beach towel with AVK valve



Picnic grill in a cooler bag



Ocean bottle

AVK Holding A/S

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