

**EXPECT**  
STORIES FROM THE  
AVK WORLD

Expect... **AVR**





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### Frontpage image

Cone valves are installed at the bottom outlet of this hydro-electric dam in Zimbabwe. AVK in Southern Africa has delivered two new ones - learn more about the project on page 30.

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# DEAR READER

It is probably no surprise that AVK is deeply involved with water management and infrastructure, which is particularly clear when you browse through this edition of InterLink.

Water has a tremendous impact on a lot of aspects and challenges that the world is facing right now, such as the production of energy and food, which you can read more about in especially two of the articles.

Luckily, there is an increasing focus on water's importance among politicians and decision makers. Maybe because it is more and more noticeable how much we are fighting over the sparse freshwater that must supply to agriculture, food production, industry, and as drinking

water to the world's 8 billion people. And the same amount will have to cover all the people added to our world population every year, along with all the brilliant, water-consuming ideas we will get.

## **Groundwater event in New York**

Representatives from Denmark held a presentation at a UN introductory meeting in Paris in December 2022, which was a warm-up meeting to this year's UN Water Conference. The conference will be held in New York this month, March 2023, and we will be participating alongside other Danish companies and partnerships. Additionally, in cooperation with Danish Water Forum, AVK will be contributing to an event surrounding groundwater's importance for sustainable water management at the

conference, which this year is held on World Water Day. The World Bank was working on a similar idea, so the UN's Secretariat has asked us if we could combine our separate event ideas into one – so, most likely, a joint event will be happening within the walls of the UN headquarters in New York. We are both very eager to turn words into action and are looking forward to meeting up shortly.

Hopefully, you will be able to read a lot more about the event in the next edition.

With spring greetings from Denmark, Enjoy reading.

Michael Ramlau-Hansen



# LARGEST RESILIENT SEATED GATE VALVE SUPPLIED TO ANTI-CORROSION SOLUTION

# CHINA

To withstand complex and harsh working conditions, AVK China has become the preferred supplier of valve solutions for the Haiyan wastewater treatment plant.

*By Ken Yan,  
BD and Marketing Director,  
AVK China (Shanghai)*

In recent years, the Haiyan wastewater treatment plant has implemented a series of anti-pollution measures for long-term development and to ensure a proper environmental foundation. One of these measures covered a local government project to reduce the load of water pollutants within the service sector to improve the quality of inland water.

The project's first phase covered the expansion and renovation of the plant as well as the construction of a reclaimed water system and an

#### **Product supplied in the project:**

- 4 pcs resilient seated gate valves, series 06, DN1200
- 12 pcs double eccentric butterfly valves, series 756, DN1000-DN1400



**AAO technology** is a biological treatment process applying anaerobic and aerobic microorganisms to treat waste. Under the effect of decomposing pollutants by microorganisms, the pollutants are treated before being discharged into the environment.

**A membrane bioreactor (MBR)** is a process which combines a microfiltration (or ultrafiltration) membrane unit with a suspended growth bioreactor and is now widely used in both municipal and industrial wastewater treatment plants.

**Advanced oxidation**, in a broad sense, is a set of chemical treatment procedures designed to remove organic (and sometimes inorganic) materials in water and wastewater by oxidation.



associated water distribution pipeline. The expansion entails that the plant's capacity will go from the current 100,000 m<sup>3</sup>/day to 120,000 m<sup>3</sup>/day, and the complete service area will be about 500 km<sup>2</sup>. The total investment of the project is around CNY200 million.

The reclaimed water system is an addition to the current sea drainage pumping facility for conveying reclaimed water to Shanying Paper, a local pulp and paper factory, as production water. The capacity of reclaimed water is 25,000 m<sup>3</sup>/d. The system also includes a new DN1000 pipeline with a length of about 4.2 km.

The project's second phase covered the implementation of a new process combination, now including primary, secondary (AAO and MBR) as well as tertiary treatment (advanced oxidation). For the plant's valve solution, there were two core challenges. Firstly, on the connecting pipeline between each biological treatment process segments, DN1200 direct-buried gate valves were needed - valves that are installed on the pipeline and then covered with soil without a protective chamber. Considering the large dimensions and the direct-buried working conditions, finding a suitable valve was already challenging. Secondly, when advanced oxidation technology is used in the treatment combination, the valves must be able to withstand the long-term effects of ozone corrosion.

For the purpose, it was decided to use a series 06 resilient seated gate valve DN1200 – the largest of its kind ever produced by AVK China, only beaten by our range of metal seated series 54.

In such working conditions, AVK has become the preferred valve supplier

for the Haiyan plant relying on our advanced manufacturing capabilities, high quality and professional application and support.

#### **A comprehensive solution**

The majority of AVK products are, as a standard, with internal and external epoxy coating in compliance with DIN 3476 part 1, EN 14901, and GSK guidelines. The excellent anti-corrosion performance and long service life fully meet the requirements of direct-buried gate valves. To meet the requirements of anti-ozone corrosion in the advanced treatment process section, AVK applied a special anti-ozone coating for the double eccentric butterfly valve to ensure lasting and stable operation.

#### **State-of-the-art manufacturing setup**

Based in Anhui, our modern

manufacturing sites are set to supply customers around the world with reliable, smart and resource-efficient solutions complying with the highest European quality standards. Our strategic setup helps us deliver a broad variety of solutions at competitive prices.

AVK China has more than 20 years of experience working domestically across +500 projects within a variety of water and wastewater projects, supporting our customers across all aspects of the value chain. From project scoping to system planning and regular maintenance, we help refurbish existing solutions and develop new water infrastructure in growing urban areas that benefit local citizens as well as our eco-system.



# EASY ASSET MAPPING WITH FUSION ASSIST

# ITALY

Due to the smart Fusamatic system and our Fusion Assist app's asset data offering, Fusion Italia won a significant fittings contract last year.

*By Kelly Hearnshaw,  
Marketing Manager,  
Fusion Group Limited*



Network management and asset mapping are two areas highlighted as ongoing issues and industry-wide challenges for water utilities. Obtaining an overview of installations and locations of network assets plays a key role in effective management and saves crucial resources for the utility.

The features of our Fusamatic electrofusion fittings and the functionalities in our Fusion Assist app speak right into this challenge, and in

a recent project in Italy, they were the perfect combination in winning the project.

### **3 km wastewater pipeline**

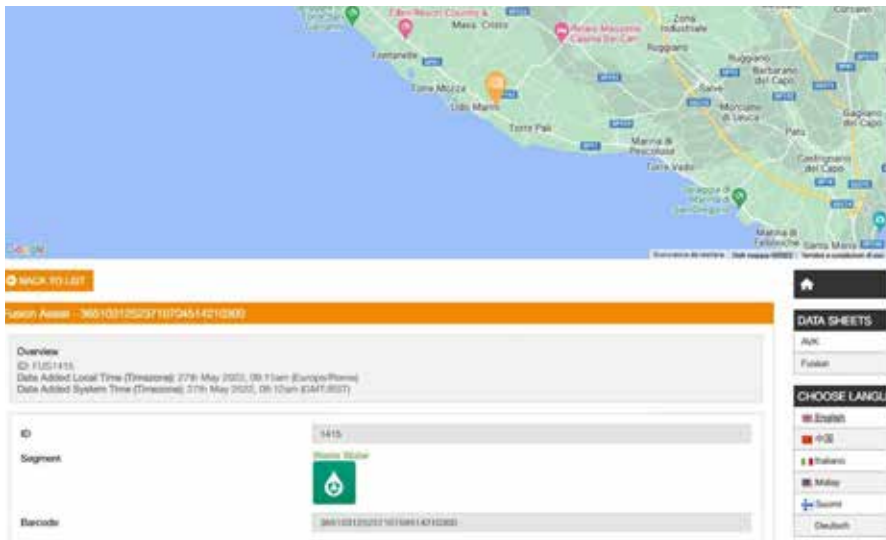
Fusion Italia S.R.L, Fusion Group's distributor and wholly owned sales company in Italy, has won a major contract to supply Fusamatic electrofusion fittings to a project in Lecce province; Lecce is often referred to as the 'heel of Italy' and forms part of the Puglia region.

The project involves the construction of a 3 km wastewater pressure pipeline running along the south coast of Lecce.

Fusion Assist, Fusion Group's asset management app, is being used to create a comprehensive record of each of the electrofusion joints on the project, including the GPS location.

### **The project in detail**

Management of wastewater in Lecce



Example of a Fusamatic fitting record captured on the Fusion Assist app.

is the responsibility of company Acquedotto Pugliese S.p.A. The previous wastewater pipeline had deteriorated to the point that sewage risked being discharged into the environment. In its place, it was decided to construct a polyethylene pressure pipeline to transport the wastewater. Fusion Italia has supplied 125mm, 160mm, 200mm and 250mm low-pressure couplers to the project.

Along the length of the pipeline there are multiple connections to private properties. The properties store their wastewater in tanks, and this is then discharged into the pipeline. As in much of Southern Italy, the terrain is rocky, and construction of the pipeline trench is far from straightforward. When completed, the 3 km pipeline will be owned by the local authority.

**Smart fittings and App assistance**

The Fusamatic fittings used on the project were supplied by Fusion Italia's local distributor in Bari. Fusamatic electrofusion fittings, when used in conjunction with a Fusamatic-compliant electrofusion control box, automatically set the required electrofusion parameters once the leads are connected to the fitting. All the installer has to do is check that the parameters match the fitting and start the weld cycle.

Fusion Assist is Fusion Group's free asset management app that works on mobile phones and tablets and can work on both Apple and Android devices. Fusion Assist is designed to enhance traceability of network

assets by recording data on each electrofusion installed network asset and can also be used to support with monitoring and reinforcement of installation best practice.

The data contained in the barcode and QR code of each Fusamatic fitting is fundamental to the Fusion Assist app. Opening the app on their mobile phone, the installer scans the ISO 12176-4 barcode on the fitting. Fusamatic fittings will prompt the automatic capture of Fusion's own unique QR code located on the fitting, providing the individual fitting serial number. Together these provide traceability right down to the raw materials used to manufacture the fitting.

Besides traceability data, Fusion Assist also records asset location via GPS, core installation parameters and reference images for that fitting within one central record. Fusion Assist is not restricted to Fusion products, meaning that assets from other manufacturers too can be recorded in the app to ensure the asset owner retains a comprehensive overview.



Map indicating the location of installed assets.

Back in January 2022, a member of the Fusion Italia team spent a day on site training the installation team on the use of the Fusion Assist app.

Over 500 joints were recorded in the first month on site. The project is on hold over the tourist season and will restart in October.

When the project is completed, some 3,000 Fusamatic fittings will have been installed on the pipeline.

Francesca Nari (Commercial Director, Fusion Italia) is the Fusion Italia lead on the project:

“There is no doubt in my mind that the network owner chose Fusamatic fittings in part because of the network management data provided by the free Fusion Assist app. Whilst there are similar apps available, Fusion Assist is the easiest to use for the installer, especially allowing the ability to track retrospectively, without necessarily being directly connected to an electrofusion control box. Fusion Assist improves quantity, quality and productivity of asset records. The client liked the fact that they were able to record other assets with the Fusion Assist app, including the pipe and other fittings.”

Fusion Group is a world-class manufacturer of electrofusion fittings. Since 2017, Fusion Group has been a member of the +100 companies strong AVK Group.

# VCW VALVES INSTALLED IN IMPORTANT RESERVOIR RECOVERY PROJECT

# BRAZIL

For a recovery project in the state of São Paulo, butterfly valves and fast check valves have been supplied by AVK in Brazil.

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

The project has been carried out by SABESP, the basic sanitation company of the state of São Paulo, which are part of the Água no Litoral program with the objective of guaranteeing the water supply of the surrounding municipalities of Itanhaém, Mongaguá, Praia Grande and São Vicente.

Under the name “Booster Suarão” the project will ensure the operational recovery of the existing structures in the drainage channels and canalisation of the water channel.

The results will benefit more than 2.1 million inhabitants and is expected to be complete by September 2023.



#### **Products supplied to the project:**

- 14 double eccentric butterfly valves, series 926, DN1200
- 6 double eccentric butterfly valves, series 926, DN400
- 2 double eccentric butterfly valves, series 926, DN500
- 3 fast check valves, series 928, DN1200
- 2 fast check valves, series: 928, DN400



# INTRODUCING SMART WATER SOLUTIONS AT INFRATECH 2023

## THE NEDERLANDS

After four years, AVK Nederland was again present at the InfraTech exhibition in Ahoy Rotterdam, held once every two years.

*By Dana Hofman,  
Marketing Manager,  
AVK Nederland BV*

InfraTech is one of the most important exhibitions for AVK Nederland. Under the theme 'Move Forward', an interesting four-day program had been drawn up for all to meet and inspire, share knowledge, and innovate together.

Innovation is – of course - one of AVK's cornerstones. During the exhibition, we introduced our smart water concept, which consists of smart wireless sensors and positioners for collecting data and a software platform for data visualization from which valuable insights can be obtained.

In addition, we presented other new products, such as a stainless-steel valve, PE electro-welding fittings, a Repico® coupling for PE pipes and our latest gas products.



Our visitors were mostly contractors, engineers and consultancies, municipalities, provinces, as well as water and gas companies. It was a very good exhibition and there was a lot of interest in especially our smart water solutions.

**It's time to Move Forward!**



# BONNETED GATE VALVE INSTALLED ON THE ANGAT DAM

## THE PHILIPPINES

To help secure the water supply of Manila's metropolitan area, a rehabilitation and maintenance project was initiated for the complete dam system.

AVK Philippines supplied a DN1400 BU bonneted gate valve accompanied by a set of gate valves to the project.

*By Alyssa Joy Reyes,  
Marketing Assistant,  
AVK Philippines*

The Angat Dam is a hydroelectric reservoir embankment dam located in Bulacan in the north of The Philippines.

The dam serves potable water to millions of families in Manila and other nearby provinces through the utilities Manila Water and Maynilad. The dam is approximately 130 meters high and impounds water from the Angat River and has subsequently created the Angat Lake.



### Securing continuous supply to the area

The National Power Corporation (NAPOCOR) were conducting a rehabilitation plan, requiring a replacement of the dam's electric turbine and would have to perform shutdown due to maintenance purposes.

One of the steps in the project was to install a gate on the dam. Contractors J.K Builders Inc. were in charge of the installation and reached out to AVK Philippines with their requirements. J.K Builders Inc. is a construction company especially known for performing dam

projects, located in Quezon City, The Philippines.

The BU bonneted gate from Orbinox was found to be the ideal solution for the installation. Orbinox is part of the AVK Group, and is based in Spain, where the Factory Acceptance Testing (FAT) was conducted in July 2022 to ensure that the materials of the item would pass the standards and specifications before they were shipped to the Philippines.

The gate and accompanying gate valves are now in operation on the Angat Dam.

Despite the activities on the Angat Dam, measures were taken to not affect the services to the many people relying on steady water supply.

According to Engineer Emelson Retetal, AVK's capabilities and unique valve specifications helped make the project feasible.

#### Products supplied to the project:

- BU bonneted gate, DN1400, PN16, coupled with Auma electric actuator
- 2 pcs gate valves, DN150



## ABOUT ATPLAS

Atplas has a rich history of serving the water industry both nationally and around the world from its base in Wales, UK, and is a recognised and reliable supplier of especially house connection products.

With an extensive range of boundary boxes for water meters, water fittings and valves for a range of service pipes, Atplas stands for certified quality, product innovation and years of know-how.



Article continues on the next page >

By Simon Spridgeon,  
Marketing & Product Director,  
Atplas UK

Atplas can trace its history back to as early as 1904, when the Talbot business was founded in Winchester by Frederick William Talbot.

He developed a machine for tapping under pressure into water mains and installing a valve or "ferrule" without interrupting the water supply.

## Talbot Pushfit - fittings for water pipe

### Benefits:

#### User Friendly

The Talbot Pushfit fitting is quick and easy to use with no nuts to leave undone, just chamfer the pipe and push it into the fitting.

#### Stronger Than The Pipe

The fittings grip and seal on the pipe increases with water pressure and tensile load. This means that the PE pipe will burst or break before the connection fails. The Talbot Pushfit fitting is pressure rated PN 16.

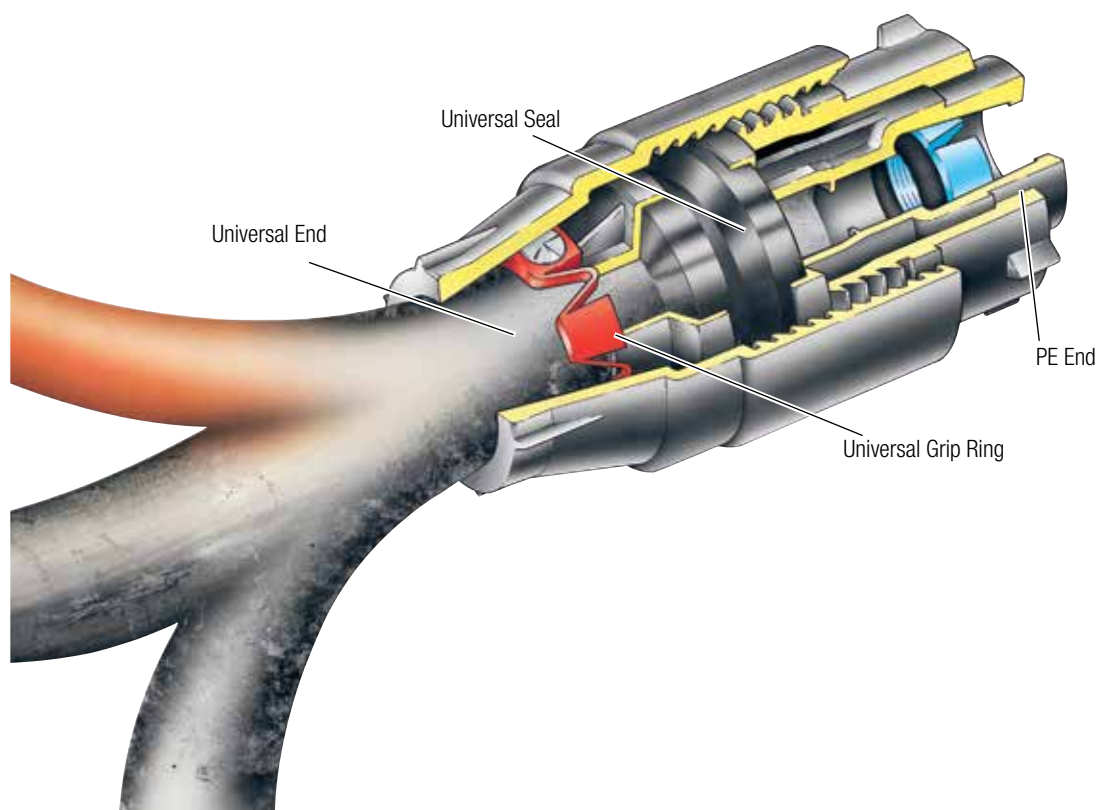
#### Tough and Robust

Talbot Pushfit fittings are manufactured from quality materials providing resistance to distortion and cracking also providing for a strong threaded connection.

#### Adaptors from Imperial to Metric pipe

For special applications AVK offers adaptors converting from imperial to metric sizes.

The Talbot Pushfit connection is a tried and tested method of connecting low, medium and high density metric polyethylene water pipe ranging from Ø 16mm to Ø 63mm.



Scan to learn more



# SUSTAINABILITY AND THE AVK GROUP

# GLOBAL

The AVK Group's purpose is to develop, manufacture and market high-quality, lasting products and solutions.

Our products are parts of infrastructure all over the world, and we recognise that we have a responsibility to contribute to responsible and sustainable development. Therefore, we support international principles for responsible business operations as well as the UN's Sustainable Development Goals (SDGs).



By Michael Christensen,  
Group Quality & Sustainability  
Manager,  
AVK Holding

In our business model, we especially pay attention to technological innovation, responsible production, dedicated employees and involvements of stakeholders.

In our newly published Sustainability Report, you can read about our efforts

in the financial year 2021/22.

### Our contribution to the UN Sustainable Development Goals

The UN 17 Sustainable Development Goals (SDG) are the framework for the global effort within sustainable development. The goals recognise that social, economic, and environmental development are intrinsically linked and that it requires a common, global effort to achieve lasting results. We are aware of our share of the responsibility. SDG 6 and 9 are particularly relevant to our business.

Scan to read the report



### UN SDG 6



Our product portfolio for water is a direct extension of the UN SDG 6 which aims at ensuring access to clean water and sanitation and a sustainable management of this. Our valve solutions enable a reliable and efficient water and wastewater management and so assists at reducing water loss and energy consumption.

### UN SDG 9



The UN SDG 9 is about developing reliable infrastructure, promoting sustainable industries, and investing in scientific research and innovation. All our business units contribute to this goal as we design and produce innovative products, some of which are used in recycling initiatives and processes or for energy, water, and infrastructure solutions.

### UN SDG 17



The sustainable transition is one of the biggest change management projects that public and private companies are facing. Therefore, we consider SDG 17 essential if we are to succeed with the other SDGs. We co-operate with partners across industries, governments, authorities, the civil community, and the academic world.

# AVK FIRE HYDRANTS INSTALLED IN DOHA WATERFRONT PROMENADE

# QATAR



AVK fire hydrants are regular sights for joggers and by-passers around Doha Corniche, which is a popular tourist and leisure attraction in Qatar.

*By Dias Thottan,  
General Manager,  
AVK Flow Control LLC*

In the summer of 2020, Qatar Public Works Authority (ASHGHAL) launched an improvement project in the central parts of Doha Corniche. The project provides a further facelift to Doha through a host of infrastructure development and enhancement works,

and is being developed in four phases, which aim to make the city a must-visit destination.

#### **Quality coating and local stock**

Due to the hydrants' proximity to the sea, they would need to have a high-quality coating to withstand the harsh atmospheric conditions. This was, therefore, a primary concern in the product selection phase. Fortunately, AVK's series 84 hydrant was just right for the purpose.



The purchase order for 92 pcs of series 84 fire hydrants was awarded to AVK Flow Control. It was also a prerequisite that they be delivered on site in a remarkably short time.

Fortunately, both sizes of the hydrants required were locally available in stock and could be delivered on site and on time, meeting customer expectations. The project was completed by 2022.

The hydrants in question, which have top barrel with 300 microns FBE and polyester coating, were outstanding in

comparison to the competition when evaluated by the project consultants for the project. Also, they were already approved by the client in Qatar due to their proven track record, so the approvals came through swiftly. AVK Flow Control has over the years maintained a strong relationship with the main contractors and consultants from UCC Infra Roads and Al Jaber Engineering, as they know they can expect strong, long-term partnership doing business with AVK.

### Beautiful surroundings at Doha Bay

The corniche surrounds Doha Bay, covering a length of seven kilometres comprising three main areas; the Corniche Park and Promenade, Corniche Street, and the Government Zone.

The scope of work in the first phase included the construction of a road intersection and associated facilities. Phase two included the construction of a surface water drainage tunnel and cycling and jogging tracks, and phases three and four included the construction of three pedestrian tunnels, three plazas in Al Dafna, Corniche and Al Bidda Plazas, and an exhibition space with several artwork installations.



### Products supplied to the project:

- 75 pcs AVK/Armaturen hydrants series 84, DN100, PN16
- 17 pcs AVK/Armaturen hydrants series 84, DN150, PN16

# +10.000 HYDROPASS UNITS FOR DELIVERY IN THE BASILICATA REGION

## ITALY

*By Luca Del Negro,  
Marketing Graphic Designer,  
AC.MO Srl*

In some areas in the Basilicata region, the conditions of the irrigation system were far from optimal. The system suffered from structural and technological inadequacy, lack of basic maintenance and was facing water leaks and unauthorised water withdrawals.

This situation made it necessary to modernise and renovate the distribution network, as well as expanding the area served by the system.

At Basilicata Water Authority's request, AC.MO supplied more than 10,000 Hydropass HNS ultrasonic meters, which will help to improve the efficiency and optimise the use of the water resources.





# DO WE NEED "WATER FOOTPRINT" REGULATIONS, LIKE WE HAVE FOR CARBON EMISSIONS?

## GLOBAL

The suggestion was on the agenda at a recent seminar at the EU parliament in Brussels, arranged by State of Green, DI Water, DI and Water Europe, and hosted by Pernille Weiss, member of the European Parliament. And if you ask me, it would be an important step.

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



The seminar was focusing on European industry's heavy water consumption, which is seizing 50% of the available freshwater at the moment - in time, it will push Europe into ongoing drought as we have seen it happening in other parts of the world.

Simultaneously, water-consuming processes like power-to-x and plant-based protein production are gaining traction.

Introducing a water footprint would mean applying regulations for water-

consuming industries' for how much water they can use for every single unit they are producing - thus how much pressure they are allowed to apply to our precious water resources - a natural extension of the 2021 revised EU Drinking Water Directive.

#### **In other words:**

We cannot keep using this much water.  
We need to cut down, now.

#### **Are you updated on the global water situation?**

Download our Water in the World booklet here, that gives an introduction to the current water challenges and their consequences.



**Scan to read  
the report**

# AVK SUPPLIES TO THE LARGEST REGENERATION PROJECT IN THE HISTORY OF OMAN LNG

## MIDDLE EAST

The upgrade project for two of Oman LNG's gas trains were successfully finalised, and are now equipped with large-size butterfly valves from AVK.



*By Anurima Roy,  
Regional Marketing Manager,  
AVK Gulf CMCC*

Located in Qalhat near Sur on the coast of Oman, Oman LNG undertakes project operations and related activities essential to liquify, store, transport, and market Oman's natural gas to deliver LNG to its local and global customers.

Oman LNG's liquefaction plant sells its LNG and natural gas liquids (NGL) through 3 LNG plant trains with a capacity of 10.4 million tons per year contributing to diversifying the economy of Oman.

### **Supplying the entire country with LNG**

In 1996, Oman LNG undertook the construction of the plant's trains 1 and 2 in Sur, Oman. The \$2500 million project included the upstream gas production facilities in central Oman

and a pipeline from these facilities to Al-Ghalila, producing 6.6 million tons of LNG annually for export.

Since seawater is used for cooling in the gas liquefaction process, it is drawn in through an intake structure and then discharged back to the sea again at a higher temperature. The cooling water from each train is discharged back to the sea through two weir boxes connected in series to a submerged outfall pipeline and diffuser.

The project's scope of work was to replace the weir boxes for trains 1 and 2. The preferred replacement option required the construction of two new dedicated weir boxes (one for each of the trains), a butterfly valve connected

The term LNG "train" is referring to a liquifaction unit, and consists of various components to process, purify, and convert natural gas to liquified natural gas (LNG).

They are called trains due to the sequential arrangement of the equipment used to process and liquify the gas.



was high-performing, long-lasting, and maintenance-free with a proven track record in supplying similar valve solutions in the region for the last 20 years.

to each of the boxes, the installation of two butterfly valves connected to the y-piece, and a separate dedicated outfalls to the open sea.

The work associated with this contract was awarded to engineering consultant Worley Oman in January 2020.

### **Know-how and experience beats competition**

We were supporting our client Worley Oman from the front-end engineering design and budgetary stages, and the initial enquiry was received in July 2020. After several rounds of technical discussions, we were qualified for the project in December 2020. Despite stiff competition from other manufacturers offering loose liner solutions at a competitive price, we were able to match Worley Oman's needs by providing a cost-effective i.e. efficient vulcanised (bonded) lined butterfly valve solution that



It was Oman LNG's top priority that two of the critical butterfly valves be delivered at the site overcoming logistical challenges during the covid situation for the scheduled production line shut down in September 2021 soon after the PO was awarded to AVK on 5th Jan'2021.

The remaining 2 valves were delivered in March 2022.

AVK and Wouter Witzel met the stringent test and coating requirements as per the end user's need in accordance with SHELL and matched the critically short lead time. The project's success was an outcome of several months of dedicated hard work by Team AVK demonstrating our expertise once again. Completing this project on time was seen as a milestone being the largest TA in the history of Oman LNG, strengthening our foundation and collaboration with Oman LNG for their upcoming mega projects.

### **Products supplied to the project:**

- 4 pcs Wouter Witzel concentric butterfly valves, double flanged, DN1800

# AVK SMART WATER SYSTEM SOLVES CHALLENGE AT MAJOR ENGINEERING SITE

The Wilton Science Park houses companies that work at the cutting edge of the life sciences, sustainable processing and manufacturing technology.

Diaphragm control valves fitted with VID1 flow and pressure sensors now send alerts to the operations team.

Article continues on the next page >



The above images show the before and after with the valve, sensors and PMD located in an above-ground housing for ease of access and maintenance with the engineering drawings overlaid.

*David Hurley,  
Director,  
AVK UK SMART WATER*

**The Challenge**

In 2019, a burst water main feeding the Park caused damage running into the hundreds of thousands of pounds. The resulting insurance investigations led to the Wilton Science Park’s insurers insisting that a contingency shut-off valve be installed as part of the reinstatement works. A complicating factor, however, was that the Park’s fire main was also fed by the same water supply and could not be compromised.

**Valve and sensors product selection**

The chosen solution was to fit an AVK series 879 diaphragm control valve fitted with VIDİ flow and pressure sensors. The valve and sensors were, in turn, linked to an AVK UK Smart Water PMD (Pressure Management Device). The valve, sensors and PMD were located in an above-ground housing for ease of access and maintenance.

**Instant flow and pressure level alerts**

The PMD and VIDİ sensors send alerts to the Wilton Science Park’s operations team when flow and pressure levels breach agreed levels. If there is a leak, the PMD can reduce pressure and alert the operations team who are able to close off the flow from their mobile phones or laptops. This is all achieved via remote communications to the valve. If changes in flow and pressure are due

One of AVK’s key promises is that our customers receive solutions to the challenges they face from us and not simply the supply of products.

At the Wilton Science Park we delivered handsomely on this promise. We looked at the complex challenges faced by the Wilton Science Park, identified a solution, worked to deliver a design that was acceptable to all parties, and then implemented it. It was an immensely rewarding project to work on.

to a fire, the valve remains open.

**Leak Detection**

The new arrangement has already shown its worth in normal working conditions. The VIDİ sensor detected a change in flow indicating a possible leak on the network. The PMD reduced pressure which saved a significant amount of water whilst the leak was detected and remedial measures taken.

**Training and Support**

AVK UK Smart Water Specialist Team were responsible for the planning, specification and commissioning of the new valve configuration. Additionally, the Specialist Smart Water Team also delivered training to the Wilton Science Park’s operations team to ensure they were able to get the most from the PMD and VIDİ sensor technology.

The left image shows the AVK Series 879 diaphragm control valve fitted with VIDİ flow and pressure sensors.

The right image shows the installation before the housing was fitted.



# FROM PLASTIC FLAKES TO PALLETS

## THE NEDERLANDS

ENGEL is an Austrian company delivering innovative machinery to moulding processes. Their new technology means that a whole process step can be eliminated in the processing of recycled material. AVK Plastics BV uses this technology to manufacture their pallets, and it boosts efficiency in production plus saves valuable energy.

By Patrick Grüner,  
Business Development Manager, Technical Moulding,  
ENGEL  
and  
Vally Hoogland,  
Technical Operations Manager,  
AVK Plastics BV

60 tonnes of post-consumer material are processed every day at AVK's Dutch location in Balk; an achievement that is made possible by process optimisation. The demand for pallets made of "second life cycle" plastics is currently very high and has prompted the capital outlay for new ENGEL duo 1500 and ENGEL duo 2300 machines featuring an innovative two-stage process.

Decades ago, AVK Plastics established its strategic role on the recycled materials processing market.

"Back then, we were looking to offer attractively priced alternatives by substituting existing products such as pallets and manhole covers. Today, the increased demand is driven by the pandemic and supply chain problems on the one hand and, of course, by the vision of sustainability and customers' elevated requirements in terms of hygiene on the other," says Vally, describing the current situation.

### Compact machine design thanks to two-stage process

AVK currently deploys five ENGEL

injection moulding machines which process the full range of recycled materials. Three machines are running conventional injection moulding technology, where plasticising and injection occur in a single process step. The two latest injection moulding machines were delivered as a duo in the truest sense of the word, as they incorporate a new two-stage process, where plasticising and injection are broken down into two independent but finely tuned process steps. In this way, an entire time-consuming and energy-intensive process step can be omitted.

"The demand for plastic pallets is high because the classic supply chains for wooden pallets have been massively disrupted by the war in Ukraine," as Vally Hoogland, Technical Operations Manager at AVK Plastics BV explains.



Article continues on the next page >

Compared to the standard ENGEL machines, this technology can be housed in an even more compact machine design. This is why the new duo machine is also several metres shorter compared with the classic model from the same series. This was also an important aspect for AVK Plastics BV, as it frees up space for additional machine capacity at the facilities.

### Recycled materials only

AVK exclusively processes recycled material, and it is a blend of polyolefins that are partly obtained from post-consumer sources and partly from industrial waste.

AVK collaborates with companies that are specialised in the collection of

dimensional stability or load-bearing capacity. This is important, because the mixing ratio has a considerable influence on the melt/volumetric flow rate. Virgin material has a very constant value, while recycled material varies a lot", adds Vally.

### Lab tested compounds

AVK has these properties analysed in advance in a test lab to determine the proportion of impurities. If a material is not compliant, supplementary material is added until it meets the desired properties. This mixing takes place on site at AVK, and Vally adds that recycled material quality has continually improved over the years. However, it is important to understand that the material will never be single grade. It is not uncommon to find some disruptive

to recycled material. "At the time, this was new ground for us, because there weren't really many products made of recycled material at that time," Vally recalls.

Later on, the company switched to polyamide as a recycled material. AVK developed its own material blend for this purpose in order to ensure the best properties for the product, and in 2003, the first customer enquiry for producing pallets reached the company. The order was processed using what was already a familiar and proven material as the basis at that time: recycled material. The business share accounted for by pallet production has grown steadily ever since. This has resulted in a portfolio with a large number of standard pallets of different dimensions, load carrying



waste for recycling and deliver to the processor in bundles. The material is then washed, and the metal separated to sort the different raw materials. In downstream processing, AVK exclusively uses the portion that floats on the liquid medium due to its lower density.

"With recycled materials in particular, we draw on our years of experience to create the optimum mixing ratio of the different polyolefins, which forms the basis for injection moulding of plastic pallets with defined properties such as

materials in it, such as small stones or wood residues.

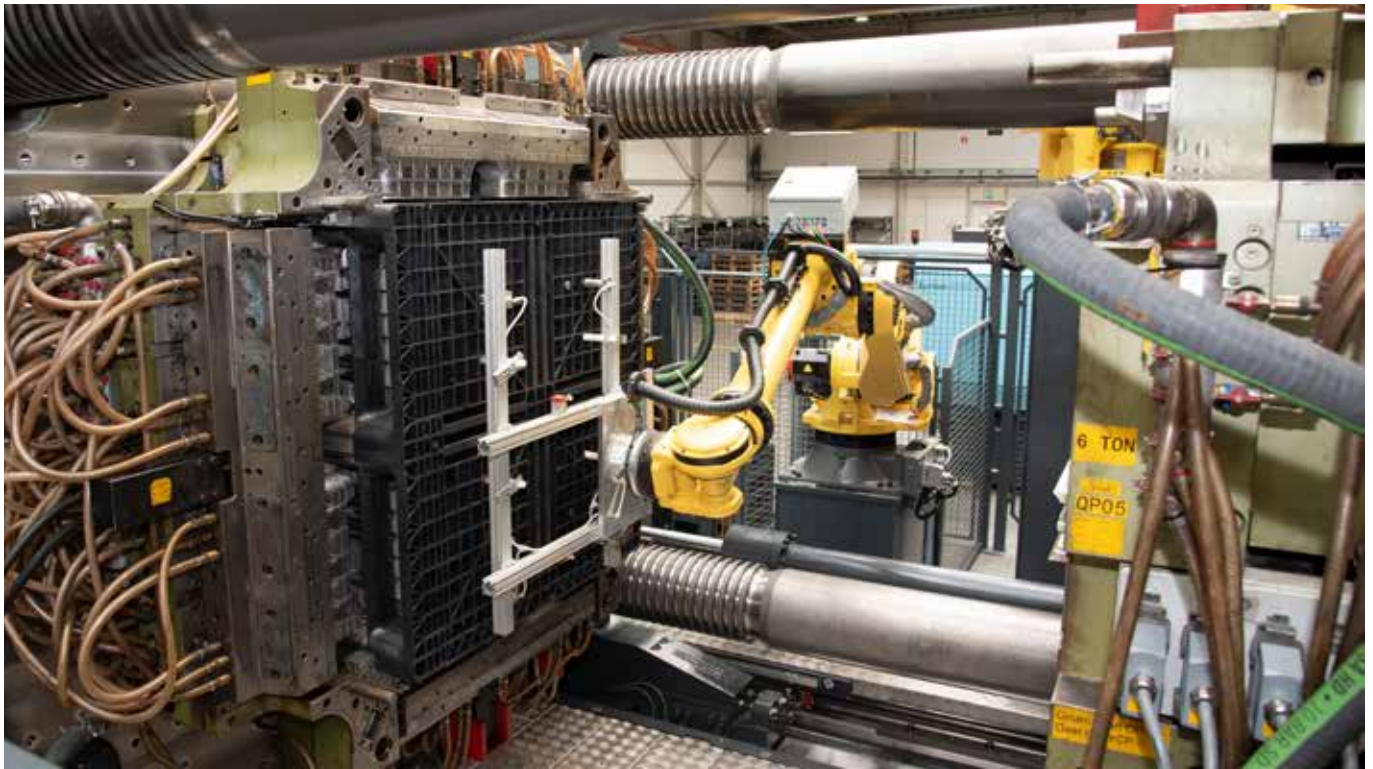
### Close collaboration between ENGEL and AVK in development

AVK's first contact with recycled materials was back in the 1980s, when the Netherlands started to substitute cast-iron manhole covers. Plastic was increasingly being used as a material for road construction. At first, the manhole covers were produced from polyurethane to ensure lockable access to pipes. It was price considerations that prompted the company switch

capacities and features. AVK even develops and manufactures custom pallets in-house.

"There was very close cooperation between our development engineers and AVK during the development of the two-stage process," says Dr. Thomas Köpplmayr, who was involved in the development project in the ENGEL Plasticising Systems and Recycling Development department. And this

Article continues on the next page >



development project was a win-win situation for AVK, as Vally confirms from the customer's point view: "For us, ENGEL was the only partner with whom we could have implemented a project like this." Both project partners contributed with their know-how, which made it possible to build the newly configured piston machines on the basis of dual-platen technology.

In particular, operations-specific details of the post-consumer material to be processed were very important to ENGEL, while AVK was keen to implement plastic flake processing in a way that lent itself to series production. In the "hot phase" of the project, which was during the covid-19 restrictions, joint project meetings were held every week to discuss the technical challenges. Contact with AVK was first established back in 2007, and the first ENGEL injection moulding machines were then delivered in 2015 with modified equipment as predecessors to the injection moulding machines with the integrated two-stage process.

### Greater acceptance of post-consumer products

AVK is strongly in favour of "end-of-lifecare", and Vally hopes to see far greater acceptance of post-consumer products on the markets in future. Plastic is an excellent material, he says. But you need to dispose of it reliably at the end of its service life to avoid it entering the environment.

### Lower energy consumption than conventional process

The capital expenditure has paid dividends for AVK in many ways, especially in terms of power consumption. This is because there is an issue specific to the production plant resulting from the existing infrastructure: restrictions in terms of the power supply from the local energy provider. The two-stage process has significantly reduced the connected loads of the machines compared to standard models. In figures, it translates to 585 amperes as opposed to 900 amperes.

On top of this, the functional approach of plasticising with the piston unit is more energy-efficient because the process is continuous instead of first starting plasticising and then stopping it again when the process is finished. "There are no more current peaks as there is enough time to plasticise the high shot weights during cycle time." This means that the machine combines various benefits: the coordinated plasticising capacity on the one hand

and a matched shot volume on the other.

### The next evolutionary stage: processing agglomerates

The next stage of development will be the use of materials that are more difficult to process, recovered from recycled film material. A similar process is already being presented in collaboration between AVK and ENGEL at the K show in Düsseldorf. This machine is additionally being equipped with filtration and degassing to enable the processing of recycled materials with a lower degree of purity. Plastics with a higher melting point, or impurities such as wood, aluminium and paper can then be filtered out of the recycled materials and gaseous impurities from detergent residues or printing inks removed. ENGEL is already working on a digital solution to support the two-stage process, Dr. Thomas Köpplmayr reveals.



# CONQUERING NEW MARKETS WITHIN GAS AND NETWORK REPAIR

# BRAZIL

In addition to the VCW product line, AVK Brasil is moving into the national markets within ball valves and connections for gas as well as clamps for pipe repair.

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



HDPE ball valves are conquering the national market, bringing satisfactory results with an important technical capability certificate issued by numerous renowned gas companies in Brazil.

#### **Important recognition**

SABESP, the most renowned sanitation and sewage treatment companies in Brazil, has approved the HDPE connections after exhaustive standardised tests in a controlled

laboratory, reaching up to 1000 hours of testing in water immersion at 80°C where we obtained a satisfactory final result contemplating the approval and homologation.

Sanitation and wastewater treatment company CAESP has also had excellent results with HDPE connections, where electrofusion HDPE connections were used, such as the below shown tapping tee:

For the mining, steel, industrial, agribusiness, food, oil and gas markets, repair and pipe union clamps have gained attention for the most varied applications of fluids, temperatures and pressures.

#### **Surprisingly easy and efficient repair**

A recent installation took place in a cooperative of the agro-industrial sector in the southern state of Paraná, Brazil, where a repair clamp was



needed in a poultry scalding process (feather removal). The coupling applied to the 4" diameter carbon steel pipe was a hinge-type hole repair coupling, and the installers were surprised and satisfied with the ease of installation and the speed in solving the significant leakage problem which was causing major disruptions in their manufacturing process.

Gas company ESGÁS is also purchasing fire-resistant hinge-type Repico® clamps for repairing holes for installation in HDPE pipes (DN63, 125 and 180mm), and at AVK Brasil

we are in the process of approving the Repico® repair and pipe union clamps for PETROBRAS - a Brazilian oil company with worldwide reference, currently operating in more than 14 countries in the energy segment. AVK Brasil is very confident in the performance of these new markets and products, seeking new supplies, partnerships and projecting an increase in sales for the year 2023.

**Products supplied in the mentioned installations:**

- Repico®FRC with fire resistant cover
- Repico® FS 10/20/30 models
- Repair coupling series 747/81-112



# WANT TO GET UPDATED ON THE LATEST WATER TRENDS AND TECHNOLOGIES?

# GLOBAL

Sign up for this year's Advanced Water Cycle Management course, and learn more on how to turn the most valuable resource on earth into a smart, sustainable business.



Article continues on the next page >



By Katrine Klejstrup Sørensen,  
Global Marketing and Communications,  
AVK Holding

**What, when, and where?**

Converting to 5 ECTS, the overall course content is a mix of guiding theory and semi-practical tasks. It 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.

**The ideas behind: No more "business as usual"**

Water is a scarce resource in many places, also in highly developed countries. According to WBCSD (World Business Council for Sustainable Development), over 60% of European cities with more than 100,000 people do not have sustainable ground water management. This will lead to a

substantial water crisis somewhere in the near future. Cities like Jakarta and Mexico City are sinking every year due to over-exploitation of ground water resources, and more cities will follow.

By combining UN SDG #6: "Clean water and sanitation for all" and #4: "Quality Education", we aim at a more sustainable water infrastructure; both in terms of the water circle through society, but also in terms of the energy circle and how to efficiently use our available resources. Cleaned water should be put back into the ground by establishing constructed wetlands, and energy should come from the wastewater treatment plant.

This holistic way of thinking is what our water summer school is all

about. The course has been created together with like-minded institutions and businesses, including Aarhus University Centre for Water Technology (WATEC), Grundfos, Kamstrup, DHI, Skanderborg Forsyningsvirksomhed A/S, NIRAS, Aarhus University School of Engineering, AquaGlobe, I-GIS and Aarhus Vand. All of these will take part in the intensive, two-week tuition, contributing with their particular area of expertise.

**A complete course package**

The course package includes tuition, materials, lodging and board. The exact price depends on your circumstances.

**NEXT COURSE: 13-26 AUGUST 2023**  
**Applications are open from 1 May - 1 June**

**Katrine - student of biotechnology engineering in Denmark**

*"I was recommended 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 14 days in the countryside was a good way to socialise and network with others from the business"*



**Learn more about the course and package details here:**



# AVK INTERNATIONAL HAS BEEN AWARDED A SILVER MEDAL BY ECOVADIS

# EUROPE

More than 100,000 companies have been rated by EcoVadis for their work on sustainability, and we are proud that our efforts have earned us a spot among the top 20%.



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

The methodology is built on international sustainability standards, and the rating evaluates how well a company has integrated the principles of sustainability and CSR into their business and management system. Performance is rated by assessing company policies, actions and results as well as from inputs from third-party and external stakeholders. The EcoVadis platform allows for sharing of sustainability performance information between buyers and suppliers.

### **Non-financial performance rating**

EcoVadis has rated more than 100,000 companies across the world. We are proud of our overall score of 61 which earned us a silver medal and a rating among the top 20% of all rated companies, and even among the top 8% of companies rated within the manufacture of general-purpose machinery industry.

We constantly work hard to implement new initiatives that will reduce our energy consumption. Some of the recent activities are the implementation of heat recovery from the air compressors at our factory in Galten



and space heating via heat pumps, which will replace gas heating in all factories. Furthermore, in order to map, track and measure CO2 emissions in our operations and per product, we are working on a GHG (Greenhouse Gas) baseline report for 2021/22 as well as an EPD (Environmental Product Declaration) for our gate valves.

**EcoVadis** performs business sustainability ratings based on a number of CSR related indicators within four themes:

- Environment
- Labor & Human Rights
- Ethics
- Sustainable Procurement

# ADAPTING TO INCREASING DEMAND AND ENVIRONMENTAL CONCERN

# SPAIN

At AVK Válvulas, we have recently supplied the COMSA/DAM joint venture with different types of valves for the new wastewater treatment plant in the town of Ribarroja del Ebro in the Tarragona province.



*By Carlos Patiño Tribaldos,  
East Area Sales Manager,  
AVK Válvulas*

The project has been drawn up by the Catalan Water Agency (ACA) and the works will involve an investment of EUR4.2 million, which will include the construction of the plant (estimated at 13 months) and operating costs for one year.

The treatment plant will be of the biological type and will have a capacity to treat 500 m<sup>3</sup>/day, thus adapting to the population increase in the summer months and the current and future sanitation needs. The works also include the construction of a pumping station, the network of collectors and the spillways of the wastewater system.

At the same time, space will be made available so that the plant can

## Products supplied to the project:

- Knife gate valves, series 702, DN80, with V-port and AUMA SAR electric actuator with MODBUS RTU communication interface
- Butterfly valves, series 820, DN80, with AUMA Profox electric actuator with MODBUS RTU communication interface
- Ball check valve, series 53, DN50-DN80
- Dismantling joints, DN50-DN200
- Gate valves, series 06, DN50-DN200

be expanded in the future and a new additional treatment line with a capacity of 200 m<sup>3</sup>/day can be built. The commissioning of this plant will make it possible to improve the water quality of the Ebro River, the largest river in Spain.



# APPLYING EFFICIENT IRRIGATION MANAGEMENT TO SAVE VALUABLE RESOURCES

# ITALY

In December 2022, AC.MO signed a contract for the supply of hydraulic equipment for the project on the irrigation plants in the Aquilana Valley and Tirino Valley in Italy (approx. 1780 ha). The project client is the water authority Abruzzo Interno.

*By Luca Del Negro,  
Marketing Graphic Designer,  
AC.MO Srl*



Abruzzo Interno's aim is to rationalise irrigation management through the use of automated user measurement equipment. The ambition is to save on water resources used, which will benefit both the water authority and the users who, due to the pre-loaded electronic card assigned to them by the water authority, will have the opportunity to use the functionalities, such as:

- Assignment of seasonal volumes and irrigations diversified by crop
- Monitoring of consumption and control flow rates
- Control of distribution 24/7 with efficient irrigation programming
- Manage water volumes in cubic metres and/or on a time basis

The equipment will be delivered within 2023.



## **AC.MO will provide (among other products):**

- 200 pcs flow meters, which will be able to monitor and control the distribution of water resources and will facilitate the timely drafting of the water balance.
- 2,900 pcs Hydropass HNS with integrated ultrasonic meter, DN100
- A supervision, control and management centre for the plant and more generally for the water resources (software and hardware).

# UTILISING THE WATER FLOW TO COPE WITH LOCAL POWER SHORTAGE

# AFRICA

In Zimbabwe, fixed cone valves from AVK have been delivered to a newly built hydroelectric power station.

*By Jørn Urup Nielsen,  
Director,  
Glenfield Middle East & Africa  
and  
Prosper Shoniwa & Jason Kessell,  
AVK Valves Southern Africa*

The customer approached us for a solution to replace the existing energy dissipating valves at the dam bottom outlet. The existing valves were installed in the 1950's, were not of standard dimensions, and were welded directly onto the pipeline as opposed to i.e. flanged valves.

The complete project entails the construction of a 5MW run-of-the-river hydropower station on the dam; a method that can utilise the water flow to generate power, which will assist in alleviating the power shortage



challenges Zimbabwe is currently facing. The station is added on an existing river dam (for drinking water and irrigation) with no previous hydropower production. We were tasked to come up with a design and do a value proposition.

Jason Kessell, Engineering Manager, and Prosper Shoniwa, Business Development Manager from AVK Valves Southern Africa visited the site in Zimbabwe to familiarise himself with the old installation. This visit also had officials from Zimbabwe National Water Authority (ZINWA), the EPC contractor and the developer. After consultations,



it was agreed that we were to supply fixed cone sleeve valves by January 2023. The manufacturing process was completed within agreed time by mid December 2022.

**AVK in Zimbabwe**

In Zimbabwe, our first recorded project dates back to 1932-35 at the Khami River Dam in Bulawajo (through our Scottish entity Glenfield Valves). Since then, we have supplied energy dissipating valves to several other projects in Zimbabwe, including the “Pungwe to Matare Christmas Pass” (1997) and the Marovanyati Dam (2021/22).

The AVK Group have supplied valves and sluice gates to more than 100 dams and hydropower projects in Africa.

**The fixed cone valve: Used for flow control and energy dissipation**

The valve provides energy dissipation and flow control at the end of a pipework system.

Primarily, it is used in bottom outlet arrangements from dams where it may be necessary to bypass a turbine, provide compensation flow to a river, rapid drawdown, the dam water level or indeed to provide desilting (removal of small solid, dust-like sediment from the

water).

The valve is designed for operation under high flow rates and velocities.

The energy dissipation is affected by discharging a thin conical curtain of water into the atmosphere where it dissipates most of its energy, falling in droplets onto the suitably sized stilling pond.

The flow enters the valve where it is split by means of the internal guide blades, and discharge is over a fixed conical shaped outlet. The flow is induced by retracting the horizontal stainless-steel sleeve which permits the thin, high velocity conical jet to be discharged.

The energy break takes place in the atmosphere, and therefore no cavitation is experienced. The sleeve being cylindrical ensures that operation is in hydraulic balance, hence operational forces are minimised.

**Products supplied to the project:**

- 2 fixed cone sleeve valves, DN1100



# COMPETITION



We are happy to announce that the winners of the competition in AVK InterLink no. 61 are:

- Tomáš Slavata, AVK VOD-KA a.s.
- Maciej Stępnik, AVK Polska Sp. z o.o.
- Claus Poulsen, AVK Holding A/S

Gifts are on their way.

The correct answer is: Our valves have been tested and approved for hydrogen applications.

New competition:

How big is the bonneted gate installed on the Angat Dam?

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](mailto:kakl@avk.dk)

Choose between:



Beach towel with AVK valve



Picnic grill in a cooler bag



Ocean bottle

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Expect... **AVK**



MIX  
Paper | Supporting  
responsible forestry  
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