



EXPECT  
STORIES FROM  
THE AVK WORLD

Expect... **AVK**



## AVK INTERLINK NO. 53, MARCH 2020

### Published by

AVK Holding A/S 2-3 times a year

### Chief editor

Michael Ramlau-Hansen – mrh@avk.dk

### Content

Katrine K. Sørensen – kakl@avk.dk

Lise Rye Brix Østergaard – lios@avk.dk

### Frontpage picture

The frontpage illustrates the generation of hydropower: a 100% renewable energy source, converting the energy from flowing water into electricity.

### Index

|                                                                                        |    |
|----------------------------------------------------------------------------------------|----|
| Make the world a better place .....                                                    | 4  |
| Recycled iron in quality AVK products..                                                | 5  |
| Reusing plastic.....                                                                   | 6  |
| AVK helps water authorities be more efficient .....                                    | 7  |
| Helping regenerate the UK iron and steel industry.....                                 | 8  |
| Aiming for blue skies.....                                                             | 9  |
| AVK provides training to 10 water authorities .....                                    | 10 |
| Non-revenue water and corporate sustainability on the agenda of utility companies..... | 11 |
| Casting foundry run on 100% hydropower .....                                           | 12 |
| Boosting efficiency in production while reducing the environmental impact ...          | 13 |
| Glenfield Invicta merger .....                                                         | 14 |
| High quality valves are the backbone in any water distribution system.....             | 15 |
| Glenfield Invicta removes and replaces DN1500 butterfly valve .....                    | 16 |
| 30 luxury cruise ships equipped with exhaust gas purification systems .....            | 17 |
| Running Poland's green transition on wastewater sludge .....                           | 18 |
| Enabling green power generation and maritime transportation.....                       | 19 |
| AVK is valve partner on south west water flagship project.....                         | 20 |
| Powering growth: Abu Dhabi gas network project .....                                   | 21 |
| AVK contributes to the transition to a green energy future.....                        | 22 |
| Waste to raw oil: Replicating natural processes in 15-minute technique ....            | 24 |
| Delivering products for sustainable waste separation.....                              | 25 |
| Smart solutions to our water .....                                                     | 26 |
| Smart irrigation: Contributing to a more sustainable infrastructure .....              | 27 |
| Smart Water in Georgia: Next level pressure management .....                           | 28 |
| AVK Smart Water .....                                                                  | 29 |
| AVK valves delivered to multiple district cooling plants.....                          | 30 |
| Big Repico® repair couplings DN1200(PN10) for The Middle East...                       | 31 |
| Gate valves with PE ends in four new sizes .....                                       | 32 |
| Water and efficiency workshops for sustainable cities.....                             | 33 |
| Reducing the risk of human errors in projects .....                                    | 34 |
| Expect AVK: maintaining and growing our customer relations .....                       | 35 |
| Competition .....                                                                      | 36 |

# DEAR READER

Welcome to a new issue of InterLink, this time featuring sustainability themes.

Since the 17 Goals of Sustainable Development (SDG) were defined at the UN General Assembly in 2015, sustainability, circular economy and the green transition have impacted the international agenda more every day. Recently, the Danish parliament passed a law obligating the country to reduce CO<sub>2</sub> emission by 70% before the end of 2030. Some people will claim that such a small country cannot make a difference globally, given that they only represent 0,11% of the total emission of greenhouse gases. But that is not the point. The point is to create green solutions, facilities and systems that create jobs and can be exported, ideally including products from the AVK Group.

Alongside the green transition other megatrends are appearing, determining the future agenda.

Climate changes: the UN estimates that by the year 2030 up to 700 million people will have migrated because of water stress, either away from too much water or because of too little water or none at all. This will stress the existing infrastructure significantly. Water supply which may already be strained has to supply to even more consumers and if water resources are already scarce, the challenge is even bigger.

Secure food supply: The UN also estimates that by 2050, the global population will have reached 10 billion people. To feed these people, food production must increase by 70% – and already food production requires 70% of the global fresh water resources. In this area too, water as a resource will be put under additional stress.

Urbanisation: Despite water and climate changes, more and more people move to the cities. A city

like Ho Chi Min City has a daily population growth corresponding to the number of seats in a jumbo jet. A city like Oslo is weighing whether it is more economical to reduce the NRW rate or to find more water outside the city despite all the transmission pipes and reservoirs. More people means more wastewater which must also be collected, treated and directed back into nature.

Digitisation: The UN SDG no. 11 is about sustainable cities and societies. This includes SMART and digitisation. How can data drive an intelligent infrastructure operating on real time data, making control and monitoring better, faster and cheaper to run, all with respect to maintenance and water and energy consumption?

Electrification: 90% of the world's energy production require water and by 2035, the global energy consumption will have increased by 50% which will lead to an increase in water consumption. The challenge is that water which has passed through a power plant cannot be used as drinking water or for irrigation purposes. It therefore makes sense to focus more on renewable energy to release the water for other purposes.

I recently read in a magazine that “electric vehicles (EVs) are taking the world by storm as an alternative to fossil fuel vehicles. Now, it's Hydrogen Fuel Cell Electric Vehicles' (HFCEV's) turn to shake up the mobility sector, with many of the world's leading automotive companies showing an interest in selling, leasing and developing fuel cell vehicles”. During Expo 2020 in Dubai, transfer busses using this technology will be used on a 50 km route to the Expo. What caught my attention was that now a Middle Eastern petroleum exporting country is looking into alternative fuelling methods.

Regarding water infrastructure, the IEA (International Energy Agency) calculated that 30-50% of an average city's energy expenses are made up by water and wastewater treatment and 50% of such a city's CO<sub>2</sub> emission derives from wastewater treatment. If the flow of water through society can be made energy neutral, the city can save 40% off its power bill. The good news is that this can be done using known and well-tested technologies. Today, only 20% of all human-induced wastewater is treated. 80% flows directly back into nature without any kind of treatment. If only half of this was collected and treated and the energy was extracted from the sludge of 60% of the wastewater, it would correspond to the entire energy production of all coal-powered power plants in Europe. This would be a massive CO<sub>2</sub> reduction!

At AVK we have a lot to say about these megatrends. You can read much more about this on the following pages and you can read about our other initiatives, including those that involve ourselves. On p. 4 you can read about our new Sustainability Report 2018/19 which describes how we work with CSR and sustainability and you can also read more about the way our products and processes contribute to a greener future.

Enjoy reading.

Michael Ramlau-Hansen

# MAKE THE WORLD A BETTER PLACE

## GLOBAL

The world is facing enormous challenges in terms of green transition and the fulfilment of the 17 Sustainable Development Goals (SDG) and 169 targets as set by the UN General Assembly in 2015 to make the world a better place.

*By Michael Ramlau-Hansen,  
Global Brand Manager,  
AVK Holding A/S*

As far as AVK is concerned, SDG no. 6 – ensure access to water and sanitation for all – is one of the most important goals. Without water there is no life. It is as simple as that. Water is the foundation for life on earth, and water plays an important part in almost all other sustainability goals.

In 2015, AVK started working with the United Nations' Global Compact principles within the areas of human rights, labour, environment and anti-corruption. Later, the 17 sustainable development goals followed. AVK's take on these goals is very clear when it comes to promoting our products and SDG no. 6 is where we fit in. Our products are the backbone of any proper and sustainable water infrastructure. Here, we have a very clear image of the location and function of our products and how they impact an operational and functional system, regardless of it being a water supply or wastewater handling.

Now the time has come for AVK to see what we as a company can do to be more sustainable and to contribute more to circular economy. What have we already done to reduce our carbon footprint and what do we do to minimise our waste?

Looking into our organisation, we actually do a lot. Since the beginning of the 1970's, by-products from the valve production have been sent to recycling to be recast as new products. In our plastic production, all street covers and EUR-pallets are made 100% from recycled plastics.

Until our last financial year, we monitored our consumption of electricity and water in our largest production units but as of this year, we will be monitoring the entire AVK Group. This will enable us to formulate specific goals for the consumption of energy in the years to come and to pay attention to reducing our consumption of water. When our customers ask what we do to reduce our carbon emission and waste, we will be able to account for our efforts to reduce our impact on nature and the environment.

AVK published a Sustainability Report along with the annual accounts for 2018/19. In our efforts to be more sustainable, we focus on three areas: THE PLANET, including consumption

of energy and waste handling; PEOPLE, including quality, health & safety and SUPPLIER MANAGEMENT, including human rights.

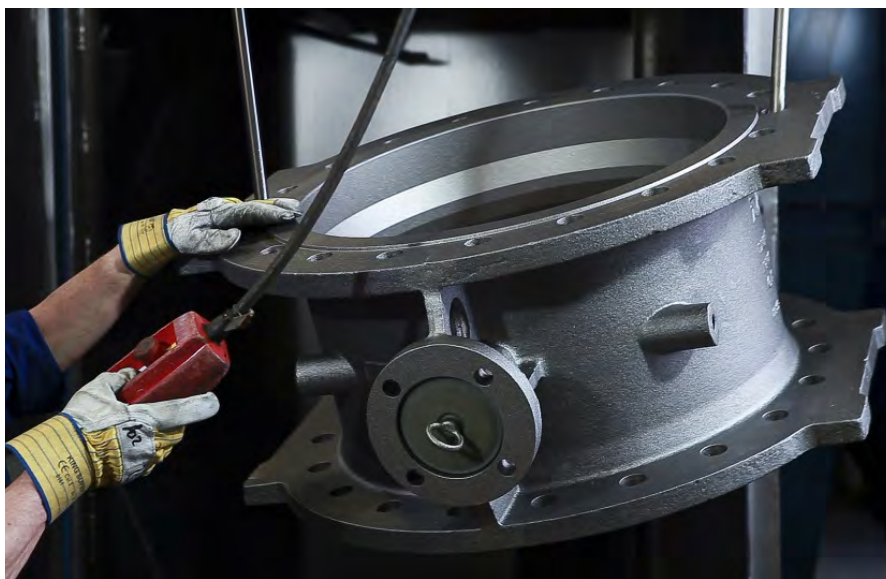
Our sustainability report tells us which of the UN goals we use as our benchmarks, the current status and the targets we have set for our future work. You find the sustainability report on our global web: <https://www.avkvalves.com/en/downloads>



# RECYCLED IRON IN QUALITY AVK PRODUCTS

# GLOBAL

Regardless which AVK foundry you visit, the result is the same; a large percentage of recycled iron will be part of the final products.



*By Arne Hjortshøj,  
Senior Group Procurement & Sourcing  
Specialist,  
AVK Holding A/S*

When casting new valves there is a need to find the perfect balance between recycled and new iron. The goal is of course to reach the same quality within each valve regardless of the production site, but with that goal in mind there is a challenge in finding just the right scrap metal. It is not always possible to find as much quality scrap as planned, but the quality of the final product depends on it. At AVK, we use scrap from the car industry and similar industries that know exactly what their scrap consists of. Regardless where the scrap comes from, a list of additives such as carbon, silicon, manganese, and magnesium are added to reach the correct strength.

It all comes down to supply and demand. If we can gather large amounts of quality scrap, we do not need a large amount of new iron and vice versa. However, new iron must always be added to the recycled iron to reach the desired features of the final valve material. Our own factory in China estimates that they approximately use 90% recycled iron and 10% new iron. Of course this estimate varies depending on the quality and amount of scrap iron they can retrieve from local scrap dealers during a certain time period. Therefore, some foundries might have 30-40% new iron if they have not been able to find scrap iron in a quality good enough for the AVK products.

Discarded cast materials in our factories are of course reused, and discarded products from our factories are sold locally via scrapdealers. In this way we try to minimise waste. The AVK valve itself is also a recyclable product; if an AVK valve is dug up, most of the product can be taken apart and the materials can be reused separately.

# REUSING PLASTIC

## DENMARK

Decades of plastic dumping has left our nature and oceans contaminated and suffering. Luckily, we see many great initiatives to collect plastic waste all over the planet. And it's one thing to remove the unwanted plastics scattered around; but what if it could gain new life as a valuable product somewhere else?



*Translated article by  
Midtjyllands Avis,  
[www.midtjyllandsavis.dk](http://www.midtjyllandsavis.dk)*

These were the key reasons for our Group owner and CEO, Niels Aage Kjær, to start incorporating recycled materials in AVK production.

### **Royal inspiration to reuse plastics**

For many years, Niels Aage Kjær has been an active member of the Danish department of the World Wildlife Fund,



WWF. A department that was initiated in 1972 and directed by the late Danish Prince Henrik up until his death. Mr Kjær and the Prince got along very well, and they often travelled together. "We went to many different places together and saw how plastic was scattered in the nature. Once Prince Henrik said to me; We must do something about all this plastic. As a manufacturer, you should really be able to come up with a solution for this..."

And so, Niels Aage Kjær did. AVK is now the third biggest consumer of recycled plastic in the country, producing and selling plastic products for more than 26m EUR every year. For the same reason, Mr Kjær is well into the details of plastic recycling and when looking at the current efforts within this area, he is not impressed.

### **Wasted opportunities**

When used properly, plastic is in fact environmentally friendly. Every year, AVK production of primarily plastic pallets and surface boxes is based on about 19,000 tonnes of recycled plastics at our production sites in

Denmark and The Netherlands - AVK Plast and AVK Plastics. The plastic is mostly bought from Sweden and Holland as they are much more efficient in their recycling efforts. Among other types, the recycled plastic include grinded soda caps and cutting waste from used airbags. When sold as new quality products, the lifetime of this "old" plastics is extended with about 50 years.

In Denmark, more than 400,000 tonnes of plastic waste are discarded every year. According to Mr Kjær, the sorting and recycling process is far from optimal. Half of the amount is incinerated and used for heating, emitting huge amounts of carbon dioxide into the atmosphere. The remaining is roughly sorted, of which more than half is shipped out of the country. Some is lost in nature, only leaving around 50,000 tonnes for recycling.

Article continues on the next page >

Blaming the state and the local recycling centres, this is simply just not good enough. Based on own experience, Mr Kjær emphasises the fact that recycling materials is a pretty good business case, and that great opportunities are missed.

#### **Water as a scarce resource**

AVK delivers products and solutions to both water supply and wastewater handling; areas that hold some of the world's biggest challenges in the years to come where especially drought will put more pressure on the management of scarce water reserves.

In 2030, half of the world's population will lack access to clean water based on UN prognosis. Countless water supply networks are in such poor condition that about 40 percent of all distributed water worldwide is simply lost in transportation. When doing the math, the solution seems rather tangible.

"At AVK we create products for safe and sufficient water supply. Throughout my career, I have always had two passions; quality drinking water and plastic recycling. To put it mildly, I think it is a terrible waste to store and sell drinking water in plastic bottles. In Denmark, bottled water is sold for



more than 330,000 EUR every year, leaving little initiative for breweries to look for more sustainable ways of supplying. At AVK, we never serve water in bottles", emphasises Mr Kjær.

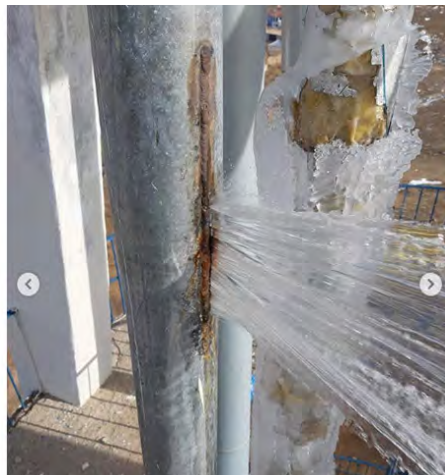
# AVK HELPS WATER AUTHORITIES BE MORE EFFICIENT

# TURKEY

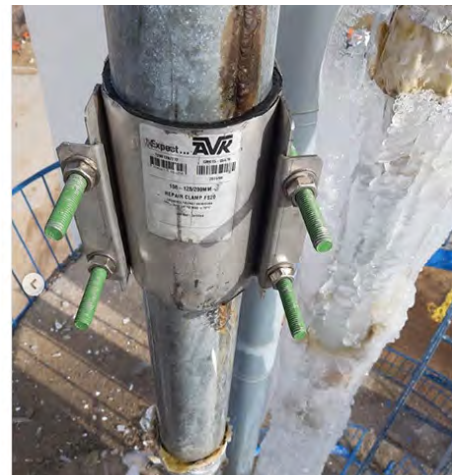


A recent case from Kayseri in Turkey proves how AVK can help authorities become more efficient in their daily operations.

*By Ismail Sincik,  
Country Manager, Turkey,  
AVK International A/S*



In January, the mainline for a water tower in Kayseri failed for the second time. The authority then asked for the help of a fire truck to access the burst area and applied AVK's repair clamp to cut the water burst. AVK's liner design allowed it to maintain water tightness despite the uneven surface of the pipe due to the previous welding.



Due to the quick solution, the authority was able to proceed without disturbing the water supply thus demonstrating the efficiency to their customers.

AVK's wide range of couplings, adaptors and repair clamps can help water utilities all around the world save precious time and water in a wide range of pipeline failure cases.

# HELPING REGENERATE THE UK IRON AND STEEL INDUSTRY

UNITED KINGDOM



AVK UK has recently delivered four large Donkin manufactured coke oven valves to the integrated iron and steel works in Port Talbot, South Wales. Whilst the news of British Steel's demise has hit the headlines, it is important to note that significant investment continues in other areas of the UK iron and steel industry.

*By Andy Hatton,  
Renewable Gas Sales Engineer,  
AVK UK Limited*

Blast furnaces are fundamental to the creation of iron and steel. They are used to create iron which is then smelted to make steel. The blast furnaces need coke as part of the iron making process. The coke is created by heating coal to temperatures of 1200-1300C° in the absence of oxygen for a period of around 18 hours, a process called pyrolysis. The hot toxic gases and impurities from the coke ovens are extracted through a network of pipes and used for a variety of purposes including heat recovery.

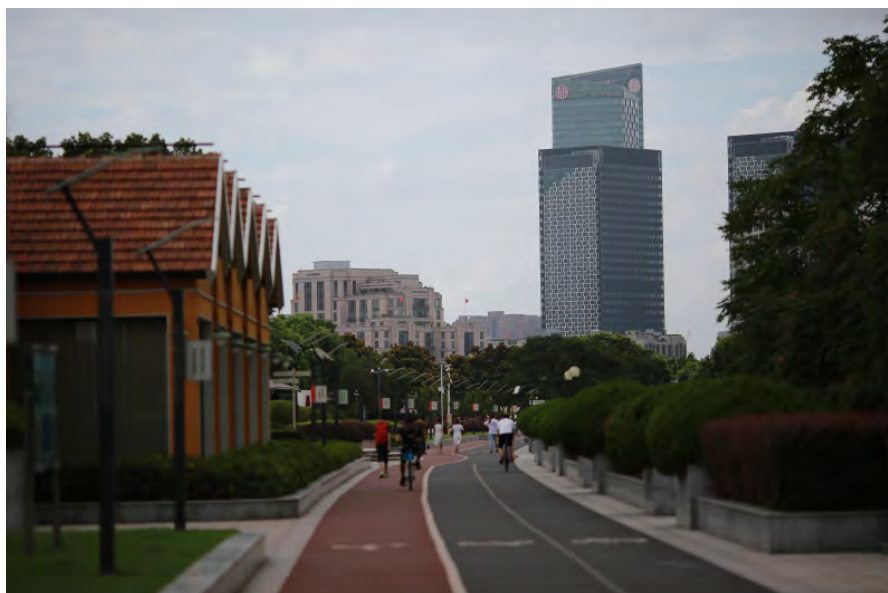
AVK's Donkin manufactured coke oven valves act as isolation valves on the pipe network, cutting off the flow of gases. The valves are critical but used infrequently, during shutdowns or emergencies for example. The toxic environment in which they operate, including the presence of 'tar', has led to the evolution of a design which is unique to coke oven valves.

On a typical gate valve, the stem and yoke are housed within the body and bonnet of the valve. In a coke oven valve, to avoid the potential of corrosion from the toxic environment, the stem and yoke sit outside the body. To eliminate the build-up of tar and other impurities on the face of the gate, steam flushing ports have been incorporated into the body of the valve. A jacking point has been inserted below the valve seat to enable the gate to be opened should its movement be compromised after a long period of being in the closed position.

Coke ovens are large, often up to 20m in length and 10m high. The pipework is on the same scale. At Port Talbot, for example, two of the valves are DN1200mm and the others are DN900mm. As with all AVK products, quality is paramount. There is 100% quality control and traceability with every casting and component individually stamped.

# GREEN REVOLUTION: AIMING FOR BLUE SKIES

# CHINA



Decades ago, the Chinese government started looking into the misty phenomenon, which was first thought to be a type of fog lingering in especially larger cities. It turned out to be intense air pollution, or what we refer to as smog – tiny, emitted particles posing severe health risks and climatic impact.

*By Lei Dai,  
Sales Director,  
AVK Shanghai Sales Office*

Committed to change, China has introduced numerous game-changing alterations under an umbrella-project known as the Blue Sky initiative; an extensive shift to greener methods aiming to bring back the blue skies.

To prioritise their efforts, the Chinese government conducted research to determine the primary sources to the harmful emissions. They found that about one third of the generated smog was connected to heating; more specifically to the heavy use of coal gas throughout the country.

## **From coal to natural gas**

The smallest particles found in dense smog are too small to be seen with the naked eye. Being less than 2.5 microns in diameter, they are small enough to not only reach the lungs

but to cross into the bloodstream as well. The World Health Organization (WHO) sets the maximum safe limit of exposure over a 24-hour period to 25 of the smallest (PM2.5) particles in every cubic metre of air. Regularly, and especially during winter, this level exceeds well above 200, forcing public institutions, schools and work places to close. A reality that the Chinese population would no longer accept. Starting off with the bigger cities, the dedicated goal is to switch the entire country's heating sources to natural gas. As the installed coal gas pipes cannot carry natural gas, entire pipelines and equipment are being upgraded.

So far, the AVK Group has delivered more than 27,000 valves to upgrade projects and expects to increase its contributions in the years to come. Primarily, these contributions include series 36 and 46 from AVK International A/S and ball valves from AVK Plastics.

Positive results are already seen in the Chinese sky, and at AVK we are proud to assist in the many transformative activities.



## **Facts**

Regarding transportation, which in general is accused of contributing vastly to the issue, China has placed huge investments in the electric car industry. In 2018, more electric cars were produced and sold in the country than in the rest of the world combined.

# AVK PROVIDES TRAINING TO 10 WATER AUTHORITIES

# TURKEY

AVK in Turkey teamed up with their local partners to provide training for water and wastewater authorities during November and December 2019. The program included AVK presentations about valve selection criteria and new technologies to 10 water and wastewater authorities in different settings.



*By Ismail Sincik,  
Country Manager, Turkey,  
AVK International A/S*

The training was aimed at both management teams and site personnel and was based on the UN Sustainable Development Goals with specific focus on Goal no. 6. Communicating the environmental and social benefits of water loss reduction and combining it with the benefits for the authority, such as reduction in both the electricity spend and the number of pipe bursts, provided much more effective results.

The management teams were mainly interested in pressure management solutions to reduce water losses. AVK's calculation tool for pressure reducing valves was the centre of attention in almost all presentations. Understanding the underlying principles for diameter selection for PRVs was helpful for the authorities and in the long term, it will help them improve utilisation of their pressure management systems.

The site personnel was very interested in the Supa Plus™ and the Supa Maxi™ series which was clearly expressed in the hands-on approach during the presentation of the demo products.

All in all, the feedback from the authorities attending the training was very positive, and AVK in Turkey is committed to expanding the training to over 30 cities within 2020 to help the reduction of water losses.



# NON-REVENUE WATER AND CORPORATE SUSTAINABILITY ON THE AGENDA OF UTILITY COMPANIES

# BELGIUM

*By Ellen Jansegers,  
Marketing Responsible,  
AVK Belgium nv*

## **Corporate Sustainability Report for public tenders**

In 2019, AVK Belgium competed for a multi-year framework agreement, both in the Dutch-speaking (Flanders) and the French-speaking (Wallonia) area of the country. For most of the public tenders, a Corporate Sustainability Report (CSR) is required. The AVK Belgium CSR report focuses on several aspects such as quality management (ISO 9001), environmental management (ISO 14001), energy management (ISO 50001), the UN sustainable development goals (SDG's) and AVK's contribution to this, circular economy and cradle-to-cradle initiatives within AVK.

In Belgium, utility companies are bound by the government to operate in a sustainable and durable way. This means that for 4-8-year framework contracts, suppliers must prove that sustainability is an integrated part of their daily business. One of the conditions for competing for such a public tender is providing a CSR policy. Most tenders are assessed on three criteria: price, quality and CSR. The CSR currently amounts up to 7.5% of

the total score but will become even more important in the near future.

From experience, it is known that utility companies assess the supplier's efforts in terms of working environment (green electricity, social equality, etc.), management of waste streams in production (i.e. recycling of surface boxes at AVK Plastics), choice of transport company (whether they have an ISO 14001 certificate, trucks acc to EURO 6 standards), etc.

Most of the framework contracts are divided into several lots. AVK Belgium generally wins one or more of these lots.

## **White paper on non-revenue water**

Besides developing a CSR, AVK Belgium has published a white paper on non-revenue water (NRW). The paper is based on the available corporate brochures, the Green Paper of State of Green and local governmental reports such as the Water Balance Report of the Flemish Environment Agency.

The white paper is published on the new website of AVK Belgium, promoted via e-mail and LinkedIn campaigns, and is reflected on separate pages on our website. The white paper was referred to as "the most important source on non-revenue water in Flanders" by the head of the

materials technology department of the most important water company in Belgium.

Additionally, non-revenue water was the main topic of our booth at the Aquarama trade fair, the biggest exhibition within the drinking water industry in Belgium. We presented a test installation including a control valve, a pressure management device, a smart air valve, a remote pressure sensor, solenoids and video display. The test installation was set up together with Business Development Manager at AVK Holding, Karsten S. Nielsen, who was also available during the exhibition to give demonstrations to booth visitors. These demonstrations were very well received, and we can honestly say this edition of the exhibition was our most successful one since the start of our participation seven years ago.

Focusing on topics such as non-revenue water, smart products and corporate sustainability, we at AVK Belgium want to take up a leading role in the green transition by putting sustainability on the agenda of utility companies within our country.

# CASTING FOUNDRY RUN ON 100% HYDROPOWER

## NORWAY

At our casting foundry in Norway, we are committed to taking care of our nature, and in making an active choice of reducing the climatic footprint of our business.



*By Frode Amundsen,  
Control & QHSE-Manager,  
Furnes Jernstøperi AS*

### **Production based on sustainable energy**

For our casting production, where we cast and mould many different types of industrial products, we use an energy provider that produces renewable energy in the nearby hydropower plants in Hallingskarvet and Hardangervidda, Norway.

By attaching a guarantee of origin to our electricity contract, we can ensure that the corresponding amount of electricity consumed is produced

from energy sources that are 100% renewable. At an additional NOK 0,025/kWh we can make an active choice for renewable energy.

With our consumption last year, a guarantee of origin will cost us an extra NOK 400,000,- a year, in addition to the cost of the electricity.

At the moment, we are working to establish an environmental accounting for our business, where this issue will be furtherly discussed.

# BOOSTING EFFICIENCY IN PRODUCTION WHILE REDUCING THE ENVIRONMENTAL IMPACT

# CHINA

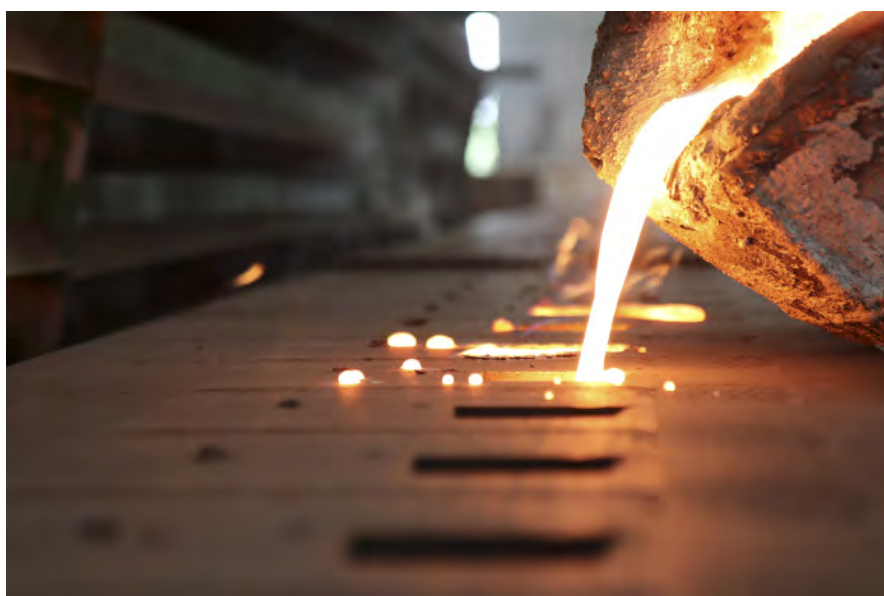
At our AVK Advanced Castings (Anhui) Co., Ltd foundry, which is supplying the AVK Group with valve, hydrant and other metal castings, we use the innovative lost foam method.

*By Torben Bo Hansen,  
General Manager,  
AVK Advanced Castings (Anhui) Co.,  
Ltd*

## **Environmentally friendly production**

The lost foam method refers to the process of creating a foam model of the desired casting, embedding it in binder-less molding sand and finally replacing the foam with molten metal. This opens a world of design opportunities and offers longer tooling life, as foam tooling can last for hundreds of thousands of cycles, corresponding to millions of components.

The process allows the creation of complex parts with near net shape and with no use of cores, making it possible to reduce or eliminate the material waste. Production allows low wall thickness and draft angles, which helps reduce the component weight.



The sand used to embed the foam model is ceramic sand, and no use of binder is required. This makes demoulding easy, and the sand can be reclaimed to a very high degree; in general, above 99% in total. The process therefore leaves no toxic sand waste and only little dust.

The process allows an improvement in performance, reducing the energy consumption and particle emissions into the atmosphere. Also, it helps to create a safer working environment in our production.

We use recycled steel scrap as the main material in our castings, constituting 85-90% of the total melt. Melting is done in electric induction furnaces.

At AVK Advanced Castings (Anhui) Co., Ltd, we have a safety-oriented culture and are renowned for our clean working environment. Our foundry is regularly visited by other foundries and government officials looking for updated knowledge and valuable experience.

# GLENFIELD INVICTA MERGER

## UNITED KINGDOM

Glenfield and Invicta, two of the most respected and longest-established AVK brands in the water sector, have announced they have merged their operations from January 2020. The new organisation will carry the name: Glenfield Invicta.

*By Paul Boyden,  
Managing Director Commercial, and  
Andrew Izod,  
Managing Director Operations  
Glenfield Invicta*

### **Why two become one: clarity, service and growth**

Both Glenfield and Invicta are subsidiaries of the AVK Group which has more than 100 production and sales companies worldwide.

Paul Boyden, currently Managing Director of Glenfield, becomes Managing Director – Commercial and Andrew Izod, currently Managing Director of Invicta, becomes Managing Director – Operations.

Paul Boyden and Andrew Izod are clear on why the merger will deliver significant benefits for the collective Glenfield Invicta customer base:

'We believe there are significant growth opportunities in the core markets serviced by Glenfield and Invicta: clean and wastewater, environmental and flood defence, dams and reservoirs, hydro-power and non-utility infrastructure. In order to unlock that potential, we need a clear message that customers and prospects value and engage with. The message is that,



as Glenfield Invicta we can harness our collective engineering and project delivery resources to deliver truly outstanding service for our customers.

The Glenfield Invicta offer is simple: we will engineer a range of solutions for all of your valve and penstock applications and projects. This is true whether your challenge is simply product manufacture and supply, or whether you require total project delivery from inception to completion. We can also refurbish or replace any valve or penstock regardless of the original manufacturer, offering our customers unrivalled versatility in what is a very specialist field.

From our sales engineers, through to our design engineers and project delivery teams, there is a collective knowledge and experience that gives customers the confidence that we can deliver on time and to budget anywhere in the UK and Ireland.

The announcement of the Glenfield Invicta merger may be news to the market, but it is the culmination of almost two years of planning,

investment and reorganisation. Over that period, the Glenfield and Invicta project teams have been working together, sharing skills and expertise; this 'cross-fertilisation' means we can offer a broader range of services. The merger also creates a national network of engineering facilities and project teams that enable us to deliver comprehensive services at a local level across the UK and Ireland.

It is a really exciting time to be working at Glenfield Invicta, and the energy and enthusiasm generated by the merger is evident. Our mission over the coming months is to ensure that customers and prospects are as excited about what the future holds as we are!

### **Background notes:**

Between them, Glenfield and Invicta have almost 200 years of experience. Some of Glenfield's valves have been in service for over 150 years. Glenfield Invicta's technical library includes an archive of over 600,000 product and project drawings. The drawings are a living asset. They contributed to over 100 projects in 2019 alone.

# HIGH QUALITY VALVES ARE THE BACKBONE IN ANY WATER DISTRIBUTION SYSTEM



*By Ken Yan,  
BD & Marketing Director,  
AVK Holding A/S*

The Hangzhou Qiandao Lake water distribution and supply project lasted five years, and was completed in September 2019. The project has a total length of approx. 113 km, an estimated investment of about 10 billion yuan, and a planned annual water distribution of 978 million tonnes. It is a major project to ensure the safety of water supply in Hangzhou and to improve the quality of drinking water.

A project like this requires high quality of equipment which needs to be suitable for various working conditions.

AVK offered large diameter double eccentric and double flanged butterfly valves and resilient seated gate valves to ensure stable operation and maintenance of the entire pipelines.

Due to the huge investment in the project, the safety of the water supply should be the primary task. Therefore, investing in high-quality products for

the distribution network is particularly important. If the equipment fails or begins to leak, it can take a long time before it is discovered: Additionally, the cost of repair or replacement is high.

Through AVK's advanced manufacturing processes and excellent rubber material, AVK double eccentric double flanged butterfly valves and

resilient seated gate valves guarantee optimum sealing performance of the valve under any severe working conditions.

AVK valves are of exceptional quality and have been designed to last for more than 50 years. We strive to provide a 10-year warranty on all products.



# GLENFIELD INVICTA REMOVES AND REPLACES DN1500 BUTTERFLY VALVE

Glenfield Invicta has successfully removed and replaced a 9 tonne DN1500 butterfly valve at the Environment Agency's strategic Kennett pumping station in Cambridgeshire.

*By Jason Dunk,  
Contracts & Installation Manager,  
AVK UK Limited*



Glenfield Invicta's client was ECS Engineering Services, a framework contractor for the Environment Agency.

The DN1500 butterfly valve is the main isolation valve upstream of the pumping station. The removal and replacement of the butterfly valve, gearbox and actuator was one of the final pieces in a major refurbishment of two of the station's high-performance pumps.

Glenfield Invicta's engineers used scaffolding to access the valve chamber. At the heart of the operation was the removal of 104 x 1¾" flange bolts. The bolts had corroded over the fifty years since the construction of the pumping station and most required an angle grinder to remove them. In areas where access was particularly restricted, flame cutters were used. The main pipe was cut to allow for easier removal of the valve which weighed over 9 tonnes.

engineer will tell you, even with all the pre-planning and design work, it is still a relief when a new valve and pipework fit into the line!

Once the replacement valve was in place, we torqued up the flange bolts and fitted the new gearbox and actuator. The main was recharged and no leaks were identified. We then returned to site and completed the permanent support structure for the valve. The successful removal and replacement was completed within the designated two-week time window."



"The butterfly valve is a critical element of the pumping station's infrastructure and we undertook a detailed engineering survey of the site before removing the valve. However, as any

Glenfield Invicta site engineers and support personnel are amongst the best in the UK Water Industry, highly skilled, experienced and qualified – their safety and that of all stakeholders is of paramount importance on projects and as such, all site personnel receive relevant training, certification and safety passports, including confined space.

# 30 LUXURY CRUISE SHIPS EQUIPPED WITH EXHAUST GAS PURIFICATION SYSTEMS

## ITALY

In a joint project with Ecospray Technologies installing exhaust gas purification systems, InterApp provided high-quality solutions and first-class logistics. At the same time, it helped strengthening ecological values in the cruise ship industry.



*By Guido Baldini,  
CEO Group Management,  
InterApp*

Ecospray Technologies is specialised in developing innovative high-performance purification systems for regulating the production of exhaust gas in a variety of industries. The Italian company is committed to the climate requirements of our times. Through its innovations, it enables system operators to

reduce both their emissions and their environmental impact.

Ecospray has made a real name for itself, especially in the cruise ship industry, by providing multi-stage exhaust gas control systems to purify air. They prevent nitrogen oxide, sulphur, carbon hydride, heavy metal, soot and ash from being released into the atmosphere. This is one benefit that has an extremely positive impact on mankind and the environment, especially in port and coastal areas.

For its latest project, which involved equipping 30 luxury cruise ships with exhaust gas purification systems, Ecospray was seeking a reliable technical partner capable of supplying the entire range of butterfly valves. It opted for InterApp, since its products met the project's ambitious targets in terms of quality and material requirements. InterApp has been providing Ecospray with support since the development phase and supplied everything from one source.

The cooperative partnership between the two companies was further strengthened during the new project. Faced with the major challenge of supplying butterfly-, check- and ball valves of different types within a limited period of time, InterApp put together a project management team for the specific purpose of fulfilling the Ecospray order. Additional capacities were also booked in the InterApp plant, which ensured that the project could be successfully concluded on schedule.



# RUNNING POLAND'S GREEN TRANSITION ON WASTEWATER SLUDGE

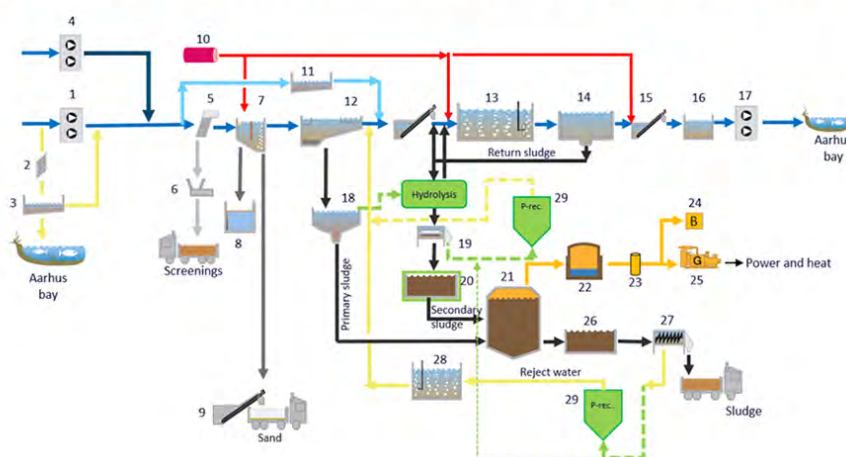
Poland includes as many as 2,700 water utilities and 3,200 wastewater treatment plants. Of these, only 120 plants use the remaining sludge from the treatment processes to produce biogas; a source that can be converted into electricity and heating.

*By Michael Ramlau-Hansen,  
Global Brand Manager,  
AVK Holding A/S*

According to the Polish Water Association Izba Gospodarcza Wodociagi Polskie (IGWP) this is far from optimal. Such as many other European countries, Poland is facing the extensive task of green transition, and there is an increasing pressure from the European Union to move faster and show greater initiative.

Therefore, the water association accepted the initiative from AVK, suggesting a Danish delegation visit to share the latest knowledge and technologies. The visit included a presentation of our experiences in Denmark, where parts of the water infrastructure is energy neutral due to the utilisation of wastewater sludge as a source to energy. The delegation included representatives from DANVA (The Danish Water Association), Aarhus

Marselisborg WWTP – Main Flow Diagram



Vand A/S, Danfoss, Grundfos, DHI (Danish Hydraulic Institute) Nissen Energi and AVK.

Like in many other countries, you need to pay to get rid of waste products in Poland. Today, the Polish wastewater treatment plants send most of the sludge, as dewatered or dry substance from the treatment process directly to farmland or to a landfill site. Some sludge is also incinerated. For the future, they want to obtain total availability of the produced sludge and utilise the full potential, with a calculated output of as much as 0.5-0.6 TWh annually. Additionally, IGWP advice the Polish government to build more than 100 new energy producing units at treatment plants all over the country.

## The water situation in Poland

Poland aims at fulfilling the European directive called "Right to Water", as around 10% of the country's households still do not have direct access to the public water network. Periods of drought is a common issue in some parts of the country, where water resources are further limited, and the average non-revenue water level is between 18 to 23%. Naturally, there was a great interest in learning about the Danish experiences and solutions among the audience.

The program was kicked off with an introduction to Danish legislation and regulation which has had an immense impact on bringing the Danish water

Article continues on the next page >

supply to its current frontrunner position. Afterwards, Aarhus Vand delivered insights to how it is possible to turn a treatment plant into a net energy provider, not only running its own processes but delivering power to the water supply network as well.

The audience were taken on a holistic journey where the aim was to

emphasise how Poland can contribute in a much greater perspective, and how water management has a vast impact on our climate worldwide. They were introduced to a step-by-step guide of transforming a traditional treatment plant into an energy producing facility, and to the essential goal of a maximum 10% non-revenue water level.

Thanks to IGWP and Mr. Stryjski, AVK Armadan, for arranging the seminar and welcoming the Danish delegation. The future will tell if it has triggered great ideas for change, and we are looking forward to following the development.

---

# ENABLING GREEN POWER GENERATION AND MARITIME TRANSPORTATION

# DENMARK

*By Anders Jensen,  
Managing Director,  
AVK Tooling A/S*

Harnessing the wind continues to be one of the fastest growing industrial segments in the world. In the landscape of more than half of all countries worldwide, you'll find wind turbines including key components from AVK Tooling's factories in Denmark and Poland. The components comprise a steel insert, which is used at the root connection of the turbine, making sure that the blade is firmly secured to the wind turbine.

Within the wind industry, AVK Tooling's biggest customers include Vestas and Nordex, who has a combined experience of more than 75 years.

## **Single suppliers to leading engine systems**

Through a long-term cooperation, we have achieved the status of being single supplier of machined bronze parts for Volvo Penta's IPS propulsion



system. Every year, more than 2000 parts are delivered to their assembly lines.

The IPS system is used within both luxury and commercial boating and can be found in harbors all over the planet.

## **Direct delivery**

For various industries, AVK Tooling deliver items in various materials such as cast iron, aluminum, bronze and

from steel bars. Our services cover raw-material, machining, surface treatment and final assembly if required.

As tier 1 suppliers, we produce and deliver directly to the assembly lines. All customers are supplied from fully automated production lines, covering both machining and surface treatment. Quality is always documented through a state-of-the-art quality department.

# AVK IS VALVE PARTNER ON SOUTH WEST WATER FLAGSHIP PROJECT

September 2020 will mark the 400th anniversary of the Pilgrim Fathers' intrepid journey from Plymouth to America aboard the Mayflower. The same pioneering spirit is reflected in South West Water's new Mayflower water treatment works (WTW).



*By Stuart Montgomery,  
Project Sales Manager,  
AVK UK Limited*

Located at Roborough, just north of Plymouth, Mayflower WTW uses a combination of suspended ion exchange, inline coagulation and membrane microfiltration to treat the water. It is the first time this combined technology has been used in the United Kingdom. Once it is fully operational, the facility will have the capacity to produce up to 90 megalitres (90MLD) of high-quality drinking water every day.

The Mayflower WTW project took over six years from concept to completion, including two years of construction works on site. Over that period, the AVK Projects team worked alongside South West Water and consulting engineers to ensure the correct valves were specified on the project. Valve specification was critical in ensuring that the flow of water through the process was accurately regulated.

Through its global supply chain, AVK was able to provide a single source of supply across all valve products; AVK products used on the Mayflower WTW project include gate valves, butterfly valves, plug valves and non-return valves. The AVK Projects team also partnered with actuator specialists AUMA and Rotork to supply the specialist actuated valves.

The plug valves on the Mayflower WTW project were located at height. To simplify operational access, the valves were fitted with umbilical cords. The umbilical cords enabled the valves to be operated from ground level thereby eliminating the health and safety complications of working at height.

Mayflower WTW required seven kilometres of pipeline to connect to the existing South West Water mains network, including 1.6 km of pipeline installed using trenchless technologies to minimise impact on ancient woodland.

The AVK response was led by Stuart Montgomery, Water Projects Sales Manager:

'Mayflower was a really exciting and challenging project. It drew on the extensive specialist engineering expertise of our projects team, built up over many years of working on utility projects both in the UK and worldwide. If the treatment technologies used at Mayflower are proved to be cost-effective, then I can see them being replicated in other new WTW facilities. AVK Projects will be ideally placed to assist and advise on valve specifications and configuration if this is the case.'

# POWERING GROWTH: ABU DHABI GAS NETWORK PROJECT

## UNITED ARAB EMIRATES

*By Anurima Roy,  
Marketing Manager,  
AVK Watecom*



Abu Dhabi National Oil Company (ADNOC) is one of the world's leading energy producers, and a primary catalyst for the growth and diversification of Abu Dhabi. For over 46 years, ADNOC has played an integral role in Abu Dhabi's economic development, managing, producing and preserving the Emirate's hydrocarbon reserves on behalf of the Government of Abu Dhabi. In brief, ADNOC has been the principle catalyst of growth in the Emirate.

### **The gas project in detail**

As of May 2016, ADNOC has undertaken the development of the city gas network project, in various areas of Abu Dhabi. An extensive project estimated to as much as US\$ 80m – contracted value US\$ 60m. The project aims to lay a 64 km natural gas distribution pipeline network in the emirate of Abu Dhabi, and includes installation of fibre optics, cathodic protection works, a SCADA system and associated facilities with mechanical and civil works.

### **The initial phase**

Phase 1 of the contract primarily involves the construction of the 4 bar 64 km gas distribution pipeline network. This task was awarded to the EPC contractors Al Fanar Gas and Petrojet in 2016 and is due for completion by December 2026. The scope of work includes design, construction, operation, maintenance, emergency activities and communication network, including high-pressure gas pipelines and natural gas distribution network ending at residential, commercial and industrial customer's appliances in the Emirates. Strong relationships with both EPC contractors and proven track record in the region opened doors for the supply and testing of cast steel gate valves (series 555) and accessories from Donkin, PE fittings from Fusion and PE ball valves from AVK Syntec.

### **Solution: cast gate valves ruling out ductile iron products**

To keep the AVK promise – expect solutions, not just products – Adam

Tkacz (Donkin/Fusion) and Raj Nair (AVK Watecom) set upon carrying out a number of presentations and meetings with ADNOC focusing primarily on specifying cast steel gate valves. Differing from the competitors offering only ductile iron products in their solutions, their combined effort won the project.

### **Product Supplied in Phase 1 [Packages 1-4] completed by Dec 2018:**

- cast steel gate valves: DN300-400, 7 bar pressure.
- ball valves & accessories: DN50-150, 7 bar pressure.

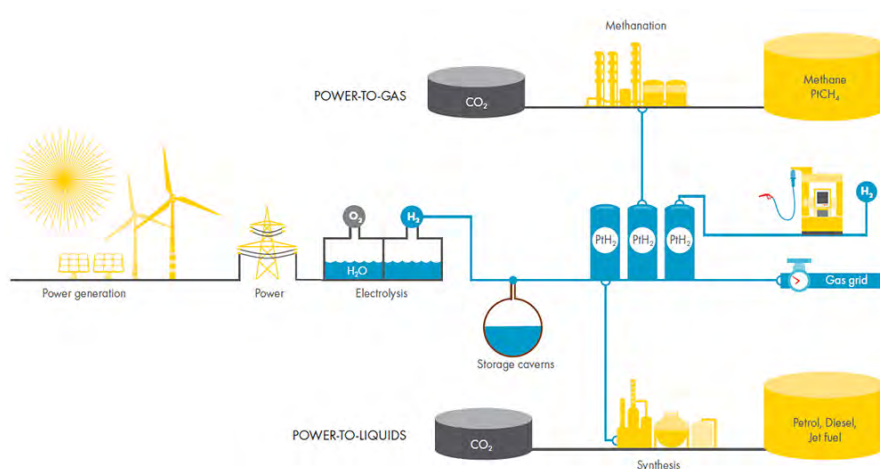
### **Product Supplied in Phase 1 [Packages 5,6,7 &11] ongoing.**

- wide range of PE fittings, DN63-400.

# AVK CONTRIBUTES TO THE TRANSITION TOWARDS A GREEN ENERGY FUTURE

## GLOBAL

Power-to-X: You might as well get used to the expression, as it will be one of the buzzwords that pops up in future discussions about green power, green fuels and greenhouse gas.



By Mikael Thybo Søgaard,  
Project Manager, Tech Service,  
AVK Holding A/S

and

Jesper Kallehauge.  
Product Manager, Gas supply,  
AVK International A/S

The “Power-to-X” concept covers the activities of taking surplus renewable electricity from wind, solar or water and convert it into other energy carriers (the “X”) to be able to store the energy for later use and absorb energy fluctuations.

The first step of the process is to convert the renewable power into hydrogen ( $H_2$ ) by electrolysis. Hydrogen, the smallest molecule we know, does not emit  $CO_2$  when burnt. It can be

used immediately, or it can be stored in pressurized tanks and retrieved when supply is low.

There are several different utilisation pathways: Feeding hydrogen into the gas network, displacing some of the  $CO_2$ -containing natural gas (Power-to-Gas), or through a methanation process with  $CO_2$  converting the hydrogen into methane. The methane can be injected into the natural gas network replacing the fossil natural gas (also Power-to-Gas). The  $CO_2$  source for the methanation process could i.e. be biogas produced from biowaste in biogas plants or wastewater plants.



Article continues on the next page >



costly delivery infrastructure during the early market development phase.

In the UK and in the Netherlands, the possibility of converting the regions' existing natural gas network (used primarily for municipal heating supply) entirely to hydrogen is being explored.

In Denmark, Energinet is testing a small closed natural gas network with pressures ranging from 3 to 65 bar with up to 15% hydrogen. AVK visited the test facility in November 2019.

AVK in the Netherlands is supplying valves to a project at Arnhem Nijmegen University where 100% hydrogen is being tested.

AVK UK and AVK Donkin is involved in a project (H100) where they are supplying S310 flow limitors to a test network with 100% hydrogen. The flow limitors are used to secure the network in case of a pipe burst, where it will cut off supply to avoid accidents.

To AVK, embracing the future in Power-to-X includes being able to confirm and to document that our products meet the rising needs of this industry. Among other factors, we type test our products to make sure that they keep tight and make risk assessments.

Other concepts include production of methanol or ammonia to be used in fuel cells in cars and ships, or synthetic fuels to be used in conventional car and jet engines (Power-to-Liquids). This is all achieved through synthesis that involves hydrogen and a CO<sub>2</sub> source that could, again, come from the process of converting waste into biogas.

The generated "green hydrogen" from renewable energies can also be used in fuel refining (hydrogenation) in conventional refineries as well as a basic chemical in many different industries (Power-to-Chemicals, Power-to-Plastics).

Finally, the stored hydrogen can also be converted back into electricity when required via fuel cells (Power-to-Power).

### **Where can AVK contribute to the concept?**

Many countries are looking at adding hydrogen into the existing gas networks to decarbonize natural gas.

Gas at concentrations of up to 20% hydrogen can be transported in the existing natural gas network without the risk of damaging gas installations, distribution infrastructure etc.

Until well into the 20th century, hydrogen-rich town gas with a hydrogen concentration above 50% was distributed to households in i.e. Germany, the USA and England via gas pipelines. It could be assumed that many of the gas transport networks, distribution lines and storage facilities that were operated in the past are still in use today.

Blending hydrogen into natural gas pipeline networks has also been proposed as a means of delivering pure hydrogen to markets, using separation and purification technologies downstream to extract hydrogen from the natural gas blend close to the point of end use. As a hydrogen delivery method, blending can defray the cost of building dedicated hydrogen pipelines or other



# WASTE TO RAW OIL: REPLICATING NATURAL PROCESSES IN 15-MINUTE TECHNIQUE

## DENMARK

Nature has spent millions of years producing raw oil from organic material. Oil that has helped facilitate – or has maybe even been a requisite for – the extensive industrialisation of our planet. While oil and other fossil fuels have obtained bad standing due to carbon emissions, the chase is on for alternative energy sources that have less or zero environmental impact.

*By Michael Ramlau-Hansen,  
Global Brand Manager,  
AVK Holding A/S*

According to the UN, 80% of all human induced wastewater is led directly into nature without any treatment. This alone leaves a gigantic impact on the environment through gasses such as CO<sub>2</sub>, methane and nitrous oxide. The International Energy Agency suggests that untreated wastewater leaves a three times bigger footprint than if treated. Also, it is a known fact that the remaining sludge from the treatment process can be used for biogas production and be converted into electricity or heating. Basically, there is every reason to collect and treat wastewater. And as new research confirms, there is more to sludge than initially assumed.



Under the headline “Production of sustainable fuels from sludge and waste”, scientists from i.e. Aarhus and Aalborg universities are working together regarding the so-called HTL-technique (Hydro Thermal Liquefaction); a pressure-cooking based process which converts biomass into raw oil. They each have their pilot facility where different organic materials are tested. The materials count i.e. straw, grass, miscanthus, food waste and wastewater sludge from the treatment plant.

### **From millions of years to 15 minutes**

Recently, AVK visited the AU test facilities in Foulum, Denmark, to experience the process in action. At the facilities, the scientists prefer

sludge to other materials, as it is easy to pump and has a dry matter content of 1-5%. The second-best option is household waste after it has been mixed with water and pulped.

The facility processes around one litre every minute. It takes 15 minutes from the material is added in one end until raw oil drops out at the other. By combining high temperature and pressure, the scientists have been able to shorten a million-year long process to a quarter of an hour and still maintain a reasonable efficiency in the end-product. 80% of the added energy is re-used in a counter current set-up, and one tonne of sludge gives about 400-500 kg oil.

Article continues on the next page >

This specific type of oil has been given the name biocrude. This oil can be refined in a typical refinery where 10-15% can be used for petrol, 60% for diesel or kerosene (used for air fuel) and 30% heavy oil fuel for use in maritime transport. The remaining can be used for bitumen which is a material used in asphalt production.

#### **Goodbye to flight shame**

The world is drowning in waste, and many places in the world have problems with overloaded waste deposits. Therefore, it makes perfect sense to sort household waste

into fractions based on recycling possibilities. One of these fractions is organic household waste. If sorted separately and sent to the local wastewater treatment plant instead of incineration or the waste deposit, it can be mixed with the sludge and contribute to the energy production process; for either biogas for electricity or heating/cooling, or for biocrude.

While we are increasingly seeking greener ways of transporting ourselves around and feeling conscious to book a flight or cruising down the highway, this is good news. And while it is rather

complicated to revert or limit people's traveling habits, the fact is that they can now be fuelled with materials that are causing massive issues elsewhere in our society. Our waste should be considered a valuable resource, not an insurmountable problem.

# DELIVERING PRODUCTS FOR SUSTAINABLE WASTE SEPARATION

# DENMARK



When the citizens of Vejen municipality start separating organic waste in their daily waste sorting, it will be in new plastic containers from AVK Plast.

*By Gert Boysen  
Financial Manager  
AVK Plast A/S*

Vejen municipality has decided to expand the current household waste sorting and include the separation of organic waste, meaning they will need new waste containers fit for the purpose.

The municipality issued a call for tenders, and three companies submitted their bids. AVK Plast scored the most points on quality and was still able to offer the most economically beneficial proposal, which conclusively won the deal with the municipality. The project has a total enterprise value of 2.1M EUR.

By March 2020, the new containers from AVK Plast will be put into use across the municipality.

Last year, AVK Plast and their 55 employees delivered a gross profit of more than 5M EUR. The company is situated in Ribe, Denmark.

#### **Circular economy in your waste container**

If separating organic waste is possible in your area, you might have wondered what your food leftovers can actually be used for. If transported to a biogas plant, it can be put into an anaerobic digester where micro-organisms break down food waste in the absence of oxygen. This process produces biogas, a mixture of methane and carbon dioxide which can then be used to produce heat, cooling or electricity. Or, as you can read more about in the article on your left, it can gain new life as oil for transportation fuels (biocrude).

# SMART SOLUTIONS TO MANAGING OUR WATER

# GLOBAL

Water is the foundation for all life on the planet - directly and indirectly. Humans and other living organisms need drinking water in order to survive, but our food supply is just as much dependent on water.

*By Michael Ramlau-Hansen,  
Global Brand Manager,  
AVK Holding A/S*



72% of the earth's surface is covered with water, of which almost all is salty and therefore not fit for drinking or irrigating. In fact, only 1% of the complete sweet water available can be used for these purposes. Of this one percentage, around 70% is used in food production.

By 2030, the UN predicts that we will be as many as 10 billion people populating this planet. This means an increasing food supply of 70%, only adding to the pressure on available water reserves.

We have every reason to take good care of our water, and use it efficiently and with sustainable methods in our distribution. This includes drinking water supply, but certainly also water for irrigation purposes.

A great challenge within irrigation is timing. To reach optimum efficiency, it is crucial to only irrigate when the soil

is dry, no rain is approaching soon, and the sun isn't out to dry up the water immediately. For these reasons, it makes sense to rely on a data collecting system.

## Smart Water Management

Smart water has become one of AVK's topics. We offer products built for a digital control system, both within drinking water and irrigation distribution. Areas, where it is crucial to only deliver the necessary amount at the correct time.

HYDROPASS is the ultimate surveillance- and controlling system for irrigation, where the user can optimise based on proper planning. The system can be connected to national geo-data, delivering information about the soil's status at the time of planned irrigation, and about the local weather forecast carrying valuable data about approaching rain showers.

HYDROPASS also keeps track of water usage, and in case of alerts, it can shut down any activated irrigation.

## Did you know, how much water is used for the products you consume?

- An apple: 125 litres
- Carrots (1 kg): 131 litres
- Potatoes (1 kg): 225 litres
- Avocado (1 kg): 1800 litres
- Chicken (1 kg): 1972 litres
- Cheese (1 kg): 5000 litres
- Pork (1 kg): 5450 litres
- Tea (1 kg): 8062 litres
- Coffee (1 kg): 17,186 litres
- Beef (1 kg): 31.000 litres

(source: UN)

# SMART IRRIGATION: CONTRIBUTING TO A MORE SUSTAINABLE INFRASTRUCTURE

# ITALY

In cooperation with Consorzio di Bonifica Sannio Alifano, AC.MO S.r.l. has completed an extensive modernisation of irrigation systems.

*By Paolo Sebastiani,  
Director,  
AC.MO*

In the Sannio Alifano area, which is situated around Naples, Italy, the local rural areas have had an upgrade to meet the future needs and challenges of the farming business.

The main goals of the project were to upgrade the existing network of open channels to a complete piped pressurized network, to be able to achieve more productivity, to reduce the total water consumption, and to be able to manage the climate changes.

## Using data and calculations

Knowledge is power. This also goes for crop farming, where the more helpful information available, the higher water efficiency and the more yield as end-product.

The irrigation networks have been equipped with remote control systems and automated delivery groups for regulating water distribution to the users by means of an electronic card.

To manage water resources more efficiently, an irrigation advisory system (IRRISAT) offers farmers the



opportunity to receive “irrigation advice” on the optimum moment to irrigate, and the appropriate amount of water.

It integrates remote sensing and agrometeorology, and produces maps of crop water requirements:

IRRISAT puts data in the farmers’ hands within 36 hours from the satellite pass, following this sequence:

- monitoring the crop growth through the analysis of satellite data in the visible and near infrared wave lengths,
- acquisition of meteorological data,
- processing of images for the estimation of crop water requirements by using F.A.O. models,
- integrating the data into a geographic information system (GIS).

The remote control architecture consists of four levels; a field transmitter, a gate way, a server for network management and data acquisition, and the HYDROPASS software.

Data is made available to the end user by e-mail, SMS and via a dedicated web-page.

## Project results

To the project, which was realised in 2015, AC.MO S.r.l. delivered about 2,000 electronic hydrants. The complete management software is connected to satellite control and the existing billing system.

The project results show water savings of about 25-30% without loss of production, energy savings and community costs, Increased farmer competition within the market and detection of unauthorized irrigation and over-consumption.

And in a larger perspective, efficiency in farming encourages biodiversity in production and can help revert the depopulation which is a big issue in the area. Also, it will assist in securing the landscape and the necessary food supply.

The project is also an example of a perfect cooperation between the AC.MO technician, the water company and the end users i.e. farmers.

# SMART WATER IN GEORGIA: NEXT LEVEL PRESSURE MANAGEMENT



Over the past years, AVK International has had an amazing corporation with the water supply company in the capitol of Tbilisi, Georgia; Georgian Water & Power. Especially since 2016, where they started using our s859 control valves to reduce pressure and maintain overall balance in their supply network.

*By Martin Børsting,  
Product Manager (Control Valves),  
AVK International A/S*

The pressure management project has led to savings of around \$15 M on water savings alone. Additionally, the project has led to huge savings on the electricity bill, far less pipe bursts and longer network equipment lifetime. All in all, a project that has allowed the company to build a solid trust in AVK products and has clearly demonstrated the importance of quality in both products and solutions.

The next step for Georgian Water & Power is to initiate a higher level of digital control, regulation and surveillance of the pressure in their

network, which until now has been controlled manually by the use of AVK control valves (series 859).

Therefore, we have introduced them to our pressure management device (PMD), which is a PLC control able to electronically control the valves. The PMD is part of our growing Smart Water range and will be introduced on the IFAT event in Munich this September. With this device added, Georgian Water & Power will gain better control of their water supply, and an even better balance throughout the network; a step that will certainly lead to further savings and improvements for the company and their customers.

In the fall of 2019, it was first agreed to include the product, and in January

2020 Elmira Haansbaek and I went to Georgia to implement and activate the first PMD. The PMD is a fairly new product at AVK, and to be as well-prepared as possible for the project visit, I have invested much time into testing and obtaining experience in how to best use the product. Our preparation paid off, and everything went according to our plan of having the PMD installed.

The “Smart” development journey with Georgian Water & Power has now been kicked off, and Elmira and I have scheduled a new project visit this summer. This time, the plan is to establish online communication with the installed PMD and at the same time introduce more Smart Water products.

# AVK SMART WATER

# DENMARK

*By Karsten Nielsen,  
Business Development Manager,  
AVK Smart Water*

## **Revealing all the embedded information – to learn, to adapt and to make smarter decisions**

Growing populations, water scarcity, and global warming are hot topics which we all have to deal with in one way or the other.

At AVK, we have been supplying reliable products for decades; products that function as vital bricks in the puzzle of sustainable and long-lasting water distribution networks. While this will also be the case tomorrow, we must meet the increasing demand for digitalisation in our markets, keep track of new technologies and embed these in our core products.

This way, we are able to deliver smart products which, at the end of the day, will support the fight against environmental challenges at an even bigger scale than they currently do.

This brings us back to growing populations, water scarcity and global warming. Needless to say, with growing populations the demand for clean water is only increasing. A higher demand entails an increasing power consumption for pumping water from the water works to the consumers, as well as power consumption for cleaning wastewater; power, which in many areas of the world is not generated in an environmentally friendly way, leading to even more global warming.



## **Learning through transparency in the water network**

In most countries of the developed part of the world, the companies responsible for delivering clean water to the consumers have SCADA-systems (Supervisory Control and Data Acquisition-System), controlling and monitoring their water works. They also have customer meters installed in most households, so they can bill the consumers based on actual consumption. However, between the water works and the consumers, there are in fact so few sensors installed that this area can be considered a black box.

Within this box, thousands of valves, fittings, combi-crosses, hydrants etc. are installed, functioning as points where data, potentially, can be acquired. Thus, by implementing smart technologies in our core products, AVK will be able to deliver our well-known, blue products with sensors and communication equipment attached. This means that our customers can acquire data from their assets and turn their black box into a crystal-clear

box where they get an overview of what is actually going on in the water distribution network.

For sure, this comes with a cost, and it requires serious investments in an upgrade of the distribution network. But it is not money down the drain. It is a good business case, as obtaining a crystal-clear box means knowing where water is lost due to leakages etc., enabling the water company to efficiently lower their amount of non-revenue water. Furthermore, they will be able to save energy by optimising the pumps, so they only pump with the needed capacity. These are just two of the many possible advantages from digitalising the water distribution network.

All in all, the focus of AVK Smart Water is to make sure that our products and solutions take active parts in lowering the amount of water loss, lowering power consumption, and minimizing the operational costs – each working as bricks in the puzzle of solving the environmental challenges on a global scale.

# AVK VALVES DELIVERED TO MULTIPLE DISTRICT COOLING PLANTS

## UNITED ARAB EMIRATES

In securing an energy efficient future, district cooling plays an important role. Energy use for space cooling in buildings by conventional air conditioning has more than tripled since 1990, making it the fastest growing energy use in buildings. This has led to a steep increase in CO<sub>2</sub> emissions, up to as much as 1,130 million tonnes globally — a major environmental impact.

*By Anurima Roy,  
Marketing Manager,  
AVK Watcom*

District cooling can save around 50% on the electricity bill, hence reducing the pressure on local power grid. In turn, it helps reduce power production and saves on power plant capacities.

Over the last few years, AVK InterApp butterfly valves have been selected for supply to several district cooling plants, networks, energy transfer systems and rooms. As an example, AVK has been successful in securing the contract for supplying valves to the district cooling plant at Jumeirah Village Circle, built for 49,600 TR (tonnes of refrigeration).

### The project in details

Jumeirah Village Circle community, situated in the heart of New Dubai, offers the city's large population an unusual combination of urban living in a tranquil village setting. It is set amidst



landscaped gardens and boasts of a range of amenities making it a favorite for the residents of Dubai. It is home to over 2,000 housing units and the development is fashioned as a series of towns connected by parks and canals, sports field and mosques with a mix of apartments, villas and townhouses built around green stretches of community area.



Products delivered to the project include Desponia butterfly valves from InterApp, manual and motorized from DN200 to DN600, PN16, 164 pieces in total. From AVK Anhui, series 756 motorized butterfly valves DN1600, 6 pieces.

Similarly, AVK valves are installed in TECOM C and Mirdiff district cooling plants in Dubai and in chilled water network Masdar city, Najmat Community Al Reem Island and Dannat Abu Dhabi.

### Conclusion

Down time or unscheduled maintenance, especially during peak summers, is highly unpleasant to hotels, retailers and residents creating negative impact on daily lives and businesses. Hence, AVK is a preferred manufacturer by most of the clients in UAE prioritising durability and superior quality in products and solutions.

# BIG REPICO® REPAIR COUPLINGS DN1200(PN10) FOR THE MIDDLE EAST

*By Rob Bisschop,  
Account Manager,  
Rewag*



Recently, we received an order for 57 big Repico® repair couplings, varying in sizes DN1200, DN900 and DN600. These Repico® couplings will be supplied via our distributor AC.MO in Dubai to a big water company in the Middle East.

One of the requirements of this water company was that the Repico® couplings must withstand a pressure

rate of 10 bar. To fulfill this demand, we produced the strongest configuration of the Repico®, called type RSDFL (consists of two shells) and RHFL (with hinge construction) completely AISI316 with bodies up to even 5mm thickness. Another requirement was an engraved label, providing all details of the Repico® coupling. The Repico® couplings are quick and easy to install but are also a durable solution.

## **Our promises:**

- # Expect quality in every step
- # Expect a prompt response
- # Expect it to be effective and easy

For more information about our Repico® couplings: <https://www.avkrewag.com/products/repico-pipe-couplings-and-repair-couplings/>



# GATE VALVES WITH PE ENDS IN FOUR NEW SIZES

# GLOBAL



A fully welded PE pipe system offers a lot of benefits such as reduced risk of leakage, ease of installation and a high durability. We have recently launched gate valves with PE ends in four new sizes with outside pipe diameters of 450, 500, 560 and 630 mm, so with AVK gate valves with pre-mounted PE pipe ends you can now design a fully welded pipe system up to 630 mm.

*By Lene Mark,  
Marketing Manager,  
AVK International A/S*

## **Advantages of PE pipes within water supply**

For most applications, PE (polyethylene) pipes have advantages over pipes of more traditional materials like PVC or cast iron. Primarily it gives you a fully welded pipe system with no bolts, no mechanical joints and thereby a much lower risk of leakage and defects.

The welding processes provide a joint even stronger than the pipe itself and allow for the pipes to be welded above ground, rather than in the trench, for easy installation. PE pipes are flexible and follow the terrain, and the soft PE material allows the pipes to be squeezed together for a temporary shut-off during repair. Also, the

relatively light-weighted PE pipes are easy to handle and transport.

## **A fully welded PE pipe system**

The advantages of using PE pipes are many, and valves with PE pipe ends will be an integrated part of the PE pipe system. To obtain the full advantage, the PE pipe ends on the valve must though, be made of the same PE material as the PE pipes used in the installation. Then the same welding parameters can be used for all joints and the same PE pipe approvals will be valid throughout the entire system.

The demand for PE pipe systems has increased due to the obvious benefits. Due to global climate changes and water scarcity, water must be transported over long distances and





therefore, the demand for PE pipe systems in large sizes is also on the rise.

#### **Renowned AVK valve design**

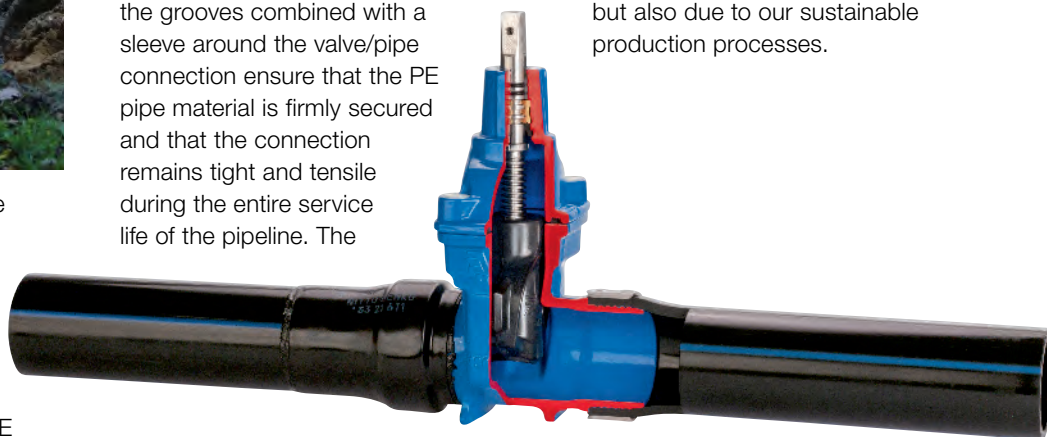
Our valve design with no bolts allows us to mount all standard PE

pipes on the valves, and thus you can obtain a pipe approval that covers the entire PE network including valves. The extra-long pipe ends even leave room for an additional weld, if needed.

In our production process a piece of standard PE pipe is pressed directly onto the grooved valve end, and the grooves combined with a sleeve around the valve/pipe connection ensure that the PE pipe material is firmly secured and that the connection remains tight and tensile during the entire service life of the pipeline. The

connection is sealed with a shrink hose to provide corrosion protection.

Our valves comply with the highest standards and hold worldwide drinking water approvals for coating, rubber and brass materials and for the valve itself. They are a sustainable choice primarily due to our high quality and durability but also due to our sustainable production processes.



# WATER AND EFFICIENCY WORKSHOP FOR SUSTAINABLE CITIES

*By Anurima Roy,  
Marketing Manager,  
AVK Watcom*

Our climate challenges require partnerships and global thinking. This is exactly what was discussed with The Federal Electricity and Water Authority (FEWA) and the utilities in the Northern Emirates at a workshop organised by the Trade Council of Denmark MENA at the Fairmont hotel, Ajman on February 3rd February 2020.

Creating awareness and visibility of Danish water businesses in UAE, AVK and Grundfos presented key solutions to the complete water cycle with an overarching theme of sustainability and water conservation. During the workshop, recent cases and discussions gave insights into how



we – with the right technologies, and a holistic view on the water cycle – can work towards climate neutrality.

The presented cases covered areas such as water intake, distribution efficiency, desalination plant work, water treatment and transportation,

smart water management and smart irrigation for crops. A great day with valuable inputs from authorities and utilities and promising future opportunities. The workshop was appreciated by all fifty key officials who attended. The workshop concluded with networking and a gala lunch.

# REDUCING THE RISK OF ERRORS IN PROJECTS

CZECH REPUBLIC



In larger projects including calculated budgets and time frames, human errors can have an enormous effect on the progress. To ease project planning and save time, products and solutions should always be designed for easy use, installation and maintenance.

*By Eva Dabolkova,  
Sales manager North Moravia,  
AVK VOD-KA*

## **Prioritising easy solutions and competent product training**

The Czech water sector is highly fragmented; there are thousands of small infrastructure owners, as well as a large number of operators who lack mechanisms to ensure proper infrastructure maintenance. Moreover, the requirements of the European environmental legislation are increasing, functioning as great possibilities for AVK to take part in future upgrade projects.

When the plan for a new distribution network in the Bohuňovice-Starnov municipality was first announced, AVK VOD-KA was quick to take initiative and offer their assistance. They contacted all the implicated parties and presented the threadless Supa Lock™ system which excels by quick, efficient and easy assembly.

Both the municipal office and the design institute agreed that the solution fits perfectly into the current trend; a design that focuses on easy management, efficiently lowering the risk of human errors.

AVK VOD-KA won the project based on the innovative concept. Additionally, it was agreed with the contractor that AVK VOD-KA participated in the education and training of the workers. The training was conducted on site and was highly appreciated by both the workers and the contractor. It helped them feel more confident with the product and its installation, leaving them better equipped for their pending tasks.

The threadless Supa Lock™ system is built on a slightly different technology than they are used to in Czech Republic, as it includes side tapping and connection of main pipe and service line with a minimum use of tools. The only necessary device is

a regular spanner for connecting the tapping saddle to the main line.

## **Saving valuable time and efforts**

AVK VOD-KA delivered a large number of Supa Lock™ spigot end/PRK (side drill) and free flow underground hydrants. The customer appreciated the solution with a minimum requirement for tools and easy installation with optimum time savings as the first clear results.



# EXPECT AVK: MAINTAINING AND GROWING OUR CUSTOMER RELATIONS

SAUDI ARABIA

By Ali AlHarthi,  
Assistant Product Manager,  
AVK Saudi Valves Manufacturing



@RasTanura\_mun



For an upcoming pump station upgrade, AVK SVMC will provide latest technologies and products for a future-safe storm water solution.

15 years ago, the storm water pump station in Ras Tanura municipality was built including valves and penstocks from AVK. On February 5th, 2020, the product development and sales teams of AVK SVMC visited the station to perform a follow-up and inspection visit.

As global leaders and manufacturers, we feel obliged to keep supporting our valuable customers before and after they buy our products; our way of practicing the AVK #8 promise of delivering solutions and quality products.

The time for renewal of the station is approaching and based on the inspection visit AVK SVMC will suggest the municipality of Ras Tanura with

an advanced study of the station possibilities. The study will include smart solutions and control systems for the water network, enabling the municipality – and the environment – to benefit from the numerous advantages of smart water management. Among other aspects, the study will include a risk assessment and a plan to take advantage of rain water for irrigation systems, which could be automatically and efficiently controlled through the use of a SCADA system.

We will keep supporting the municipality in their progress, and in achieving their 2030 vision for an overall network upgrade.

# COMPETITION



We are happy to announce that the winners of the competition in AVK Interlink no. 52 are:

- Ellen Jansegers, AVK Belgium nv
- John Jap, Tirta Corporation
- Pratik Ghimire, AVK Australia Holding Pty Ltd

Gifts are on their way.

The correct answer is: 11-23 August 2019 in Denmark

New competition:

How many minutes does it take to produce raw oil from waste at the AU test facilities in Denmark?

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: [lios@avk.dk](mailto:lios@avk.dk)

Choose between:



Krenit bowl, black with red or yellow inside Ø12.5 cm



Picnic grill in a cooler bag



Ocean bottle

## AVK Holding A/S

Bizonvej 1  
Skovby  
8464 Galten  
Denmark

Tel.: +45 8754 2100  
Fax.: +45 8754 2120  
[www.avkvalves.com](http://www.avkvalves.com)

Copyright©AVK Group A/S 2020

Expect... **AVK**



MIX  
Paper from  
responsible sources  
FSC® C134689

