

Aquamarine Water Solutions extends services and reach

Clive Govender, executive responsible for strategy development and implementation for Aquamarine Water Solutions, a Murray & Roberts Group company, talks about a new approach to servicing water needs in Africa.

Originally headquartered in Cape Town, Aquamarine started out some 20 years ago to supply custom designed and locally built containerised treatment plants, mostly for filtering and desalinating seawater and brackish borehole water. "The company was privately owned and focused on producing desalination units for farming, industrial and commercial use, mostly small to medium sized membrane-based desalination plants that could be quickly deployed," begins Govender.

In 2014, the company was acquired by Murray & Roberts, which operated it relatively unchanged until last year. "Since early 2019, we have been on a mission to find ways of improving our offering to make it more relevant to the varied needs of the South African and African markets," Govender tells *MechChem Africa*.

Murray & Roberts operates from three platforms: Oil & Gas; Underground Mining; and Power & Water, which is where Aquamarine sits. Water plants and solutions are part and parcel of every one of these industrial platforms, however. "In principle, the Power & Water Platform operates in the SMEIPP (Structural, Mechanical, Electrical, Instrumentation, Piping and Plating) project space, and our water plants are no different. Aquamarine engineers operate in the same way as all of our other engineers and the Groups' extensive experience lends a lot of gravitas to Aquamarine's water solutions," he suggests.

In looking for ways to upscale and expand

Aquamarine's business, the first decision taken was to incorporate the components needed to construct containerised water plants into the company's supply chain. "The providers of many of the components needed for our water plants exist outside of South Africa, and so we saw an opportunity to become the local partner for these technologies. Over and above using the components to manufacture according to our own designs and customer needs, we saw the opportunity of importing and promoting the products of some of the best suppliers in the world," says Govender, adding that all water plants require components such as membranes, pumps, valves, pressure vessels and tanks.

In addition, by standardising the components used, it becomes easier to improve the overall engineering underpinning the plants, while achieving fitness for purpose and economies of scale. "It also enables us to offer engineering support, servicing and long term maintenance solutions for our plants, giving operators the assurance of support across the lifetime of each plant," he adds.

In addition to components, Aquamarine has added the chemicals routinely used in water plants to its offering, starting with reverse osmosis membrane cleaners and anti-scalants. "We have recently been appointed as the sole distributor of the Aquatech range of MEMGARD® water treatment chemicals in South Africa and sub-Saharan Africa. These patented anti-scalants from the USA effectively control scaling species such as calcium carbonate, calcium sulphate, silica, barium



sulphate and strontium scales, among others, and have shown to achieve up to 10% savings compared to alternative formulations," Govender points out.

In addition, Aquamarine has ventured into the chemicals needed to maintain cooling systems and boilers, which are needed to keep process water pure enough and to limit the scaling on heat transfer tube bundles.

"We have also added an auditing service for evaluating the effectiveness of coolers or boiler systems and to recommend on-going treatment solutions. We are now in position to supply the chemicals as well as the dosing pumps required to keep the concentration levels ideal and we can also take care of the ongoing monitoring and management of the cooling and boiler water quality.

"These services can be uniquely tailored to enable operators to run their plants more efficiently and at significantly lower costs – and we are able to show how the costs of our services will be quickly recovered through cost savings," Govender assures.

These services are available for cooling systems for small to large and boilers from industrial packaged boilers all the way up to the utility scale boilers used to generate our electricity. "They have been particularly well received in hospitals, but we are also tendering on some of our grid-connected boilers for power generation," he adds.

A fourth arm of Aquamarine's extended service offering is maintenance for plant operators. "For the containerised plants that we deploy, we offer lifetime maintenance and we already have a very active team in Cape Town predominantly servicing water plants for the medical industry. The new maintenance option is now available to clients in any industry and this includes plants that were not initially ours. We have already picked up contracts to maintain plants where others have dropped the ball, which points in an encouraging direction with respect to how our engineering reputation and service has grown," he says.

Returning focus onto Aquamarine's own

Above: As part of its relaunched offering to the African water industry, Aquamarine's head office has relocated to Johannesburg, South Africa.

Right: The company is now using its experience to design a small standard range of brackish water plants; seawater plants; and solar powered plants that can quickly be customised and assembled to meet clients' specific requirements.

containerised plants, Govender says that the new philosophy is to use experience of purpose engineering to develop a modular, cost-effective range. "In the past we engineered individual plant to the nth degree, which has an advantage in that each plant becomes uniquely suited to its applications. But the approach it also expensive and difficult to scale.

"Now, we have used our experience to design a small standard range of brackish water plants; seawater plants; and solar powered plants that can quickly be customised and assembled to meet clients' specific requirements.

"These are all designed and tested and largely ready for deployment. When a client comes to us with a specific requirement, we can simply choose the number of standard modules needed to meet the capacity and then add any special requirements not included in the standard design," he explains.

"This is the beauty of the modular approach. We now have a manageable range of solutions able to meet over 80% of current and immediate future needs," Govender says, adding that Aquamarine still offers bespoke solutions that respond to specific customer requirements not met by the modular range.

The offering will soon be extended to include recycling and reuse plants. "Underpinning this strategy is the move towards local collection and reuse of onsite water, that is, keeping water onsite for as long as possible to reduce the load on municipal treatment plants and to prevent the costs and losses associated with transporting water from the point of collection to the point of treatment and then back to the point of use.



"We see long-term growth at commercial sites such as shopping centres where rainwater can be collected off the building's roof before being treated and reused in the bathrooms and kitchen facilities. We are leveraging off a US water reuse specialist to establish this range of plants, a company with an impeccable history in this area, having deployed hundreds of plants in several different countries around the world," Govender notes.

To make it easier for service providers across Africa to implement Aquamarine solutions, the company is offering a range of finance options to soften upfront investment barriers to implementation. "Of course, we can still offer Capex sales to customers wishing to invest upfront and take full ownership of our plants. In addition, however, we are offering two additional financing options," Govender reveals.

"Our design, build, operate and transfer option (DBOOT) is available to customers who prefer not to invest upfront. Instead, we agree a handover period and a monthly cost structure in advance. Aquamarine then constructs the plant and continues to own and operate it in a long term partnership for the duration of the agreed period, which reduces the risks to the operators and gives them access to our latest technologies. Ownership is then

transferred at the end of the agreed period.

"An in-between finance option called design, build, transfer, operate (DBTO) is also available. Here, the operator takes ownership of the plant on installation, but responsibility for ongoing reliable operation rests with Aquamarine, which completely removes the risk of the owner ending up with an unreliable and unsuitable solution," he says.

Another key overall strategy, according to Govender, is to become significantly more responsive. "With respect to spares, we hope to be able to deliver within 48 hours from our warehouses in Gauteng to anywhere in South Africa, and in cases nearer to Gauteng, we hope to be to offer a same day delivery service.

"Also, though, with the standard modular plant offering, we are going to be holding pre-assembled sub-assemblies so that we can very quickly assemble and deploy a solution, hopefully within a few weeks of the initial order being placed.

"And because the solutions are mostly containerised, we avoid the uncertainty and risk associated with onsite construction. Pre-assembled and tested units simply have to be transported to site, offloaded, piped up and connect to power – and even this may be unnecessary if one of our solar options has been chosen," Govender concludes. □



Aquamarine has a long history of producing desalination units for farming, industrial and commercial use, mostly small to medium sized membrane-based plants that could be quickly deployed.