

## **SAPPMA HOSTS QUALITY WORKSHOP ON SEWER SYSTEMS: PLASTIC PIPES ABLE TO SURPASS THE DEMANDS PLACED ON MODERN SEWER SYSTEMS**

**Johannesburg, 3 August, 2020.** The Southern African Plastic Pipe Manufacturers Association (SAPPMA) hosted the fourth instalment of its very popular Quality Workshops on the 22<sup>nd</sup> of July 2020, focusing on various aspects related to sewer systems.

“Due to the COVID-19 restrictions that are still in place, we decided to host this workshop as an online webinar. Although we lost some of the personal interaction that we usually enjoy when we host our free-to-attend workshops at the Plastics SA Head Office in Midrand, Johannesburg, the virtual platform afforded us various other benefits,” says Ian Venter, SAPPMA Technical Manager and organiser of the Quality Workshops. These included the privilege of having local and international experts in sewer systems present and share their expertise, and being able to accommodate a larger group of delegates from outside Gauteng than would usually be the case.

Explaining the reason for focusing specifically on sewer systems during this workshop, Venter said: “Maintaining functional and efficient water and sewer networks requires an adherence to stringent design and product standards that extend the life of these vital assets. It is therefore important to look at the various elements that go into developing and maintaining such a network and the important role plastic pipes play in ensuring the effectiveness of these systems”.

“The Sewer Systems Quality Workshop offered valuable insights to both members and non-members of SAPPMA alike. By critically assessing the different aspects that go into a successful sewer pipeline design, installation and maintenance, the presenters all touched on the fact that thermoplastic pipe is a vital component of modern systems that are able to meet the needs of the communities they serve for 100 years or more,” said Ian.

### **Plastic pipes are long-lasting, practical and affordable**

Vollie Brink, a professional registered civil engineer with 64 years’ experience in practising as a wet services consultant, was the first guest speaker at the Quality Workshop. His presentation focused on sewer design and standards for buildings and building premises.

“Water and sanitation infrastructure, alongside housing, are pressing priorities in South Africa today. Local and national government has a crucial role to play in uplifting communities by addressing inequality gaps and the implementation of effective sewer and waste management systems for all its citizens – including the poorest of the poor,” Vollie said.

When installing pipelines for water and sewage systems, he stressed that municipalities must ensure they adhere to engineering and product standards that deliver the best results, yet are practical and cost effective.

“PVC and HDPE pipes offer a solution that is long-lasting. Compared to steel and concrete, plastic pipes are well-suited to labour intensive construction techniques. Unlike with steel, there are no concerns about costly cathodic protection requirements when using plastic pipes,” he said.

### **Plastic pipes are sustainable**

Albert Vaartjes, the Global Sales Manager RBlue PVC-O at Rollepaal in the Netherlands and an international expert in PVC pipe manufacturing was the second presenter. His presentation focused on the benefits of using multi-layer PVC pipes when designing sewer systems.

“Sustainability and promoting a circular economy are of utmost importance and therefore play a key role in the conceptual approach. Multi-layered PVC pipe systems allow us to reuse post-consumer and own-inhouse recycled material in specific applications. In addition to their lower environmental impact, multi-layer sewer PVC pipes also have the required properties to design life,” he says.

According to Albert, non-pressure systems (multi-layer pipe) and pressure systems (PVC-O pipe) are currently two of the key areas of focus at Rollepaal. The company’s R&D team embraces the use of modern, low volume die-heads, automatic thermal centring, inline production systems and continuous process improvements to address the need for reducing the carbon footprint.

“Years of experience in PVC pipe has allowed us to develop more effective pressure and non-pressure pipe joints and pipe components to deliver reliable piping systems. These reliable systems have proven to be the preferred pipe system choice and offer all the added benefits of PVC that end users are familiar with,” he said.

### **Plastic pipes are resistant to corrosion**

Having been involved with many of the major outfall sewers in South Africa for over 40 years, Alaster Goyns shared some of his experience in the development, introduction and launching of cementitious and inert lining systems for sewer pipes in the South African market.

“Different types of pipelines require different types of material. It is important to understand the needs and the conditions of the specific community before you start designing or specifying which material will be used. Each application should be fit for purpose, with a major emphasis on minimising maintenance and a corresponding focus on optimising lifecycle costs,” Alaster said.

Corrosion is one of the biggest issues with sewers that can render them structurally unsound and no longer watertight. Traditionally, high-pressure pipelines were made from steel with coatings bonded to the steel pipe in order to protect them. On the other hand, sewers that were gravity pipelines of 300mm and larger in diameter were traditionally made from concrete.

“Under certain combinations of hydraulic performance and the effluent being conveyed, these traditional sewers systems are subject to biogenic corrosion due to the formation of hydrogen sulphide within the effluent and its subsequent release into the sewer atmosphere, where it is biologically converted into sulphuric acid. The latter then attacks the alkalinity of the pipe, causing it to deteriorate,” he explained.

With aged sewers rehabilitation is generally the preferred option, rather than replacement. Alaster stressed that it is important to bear in mind that these pipelines are generally placed at depth and follow natural water courses, where they are subjected to external water pressures.

“Concrete pipes are permeable. Whilst with steel pipelines it is possible to bond very thin coatings onto the host pipe to provide corrosion protection, the bond between the coating and a host concrete pipe is not strong enough to resist the external groundwater pressure,” he warned. Bearing these and other factors in mind, Alaster explained that the rehabilitation of these pipelines with plastic linings designed to resist the groundwater pressure that developed between the host pipe and liner presented a long-lasting solution with a design life of 100 years or more.

### **Plastic pipes allow for trenchless technology pipe rehabilitation**

Johann Wessels, a registered professional engineer specialising in alternative sewer pipe materials and the effective utilization of alternative construction techniques, focused on sewer condition assessment and rehabilitation making use of trenchless technology.

“Trenchless technology is ideal for the servicing, rehabilitation and replacement of existing public utilities and other services underground without the digging of trenches. It also includes the development of all kinds of underground mapping techniques, tunnelling devices and specialist machinery, materials and equipment,” Johann said, explaining the various different rehabilitation methods that are available for existing services.

For non-conventional construction of new pipelines one can consider using pipe jacking, micro-tunnelling, auger boring, horizontal and directional drilling, pipe ramming or impact molling as alternative trenchless techniques, rather than conventional open excavation. Further rehabilitation-options include pipe bursting, slip lining, spirally wound lining, and cured-in-place pipe. Many of these techniques are done effectively and efficiently making use of thermoplastics or thermoplastic pipes.

### **The role of SAPPMA and IFPA in ensuring quality plastic pipe systems**

The importance of long-term partnerships and establishing a transparent supplier development programme cannot be over-emphasized. For this reason, manufacturer product and process audits are important in ensuring that quality is never compromised. A level of proof of compliance and quality assurance is achieved by conducting unannounced plant visitations to sample products for compliance testing.

SAPPMA as an independent association that plays an important role in ensuring the understanding and effective implementation of standards in the Southern African landscape. Only once members have passed their audits and successfully proved that their pipes adhere to the strict quality guidelines set out in the Association’s Code of Conduct, are they awarded SAPPMA membership.

“We have developed a list of commonly required procedures, documents and process controls that are assessed during our factory audits to achieve consistent and repeatable results. This is vital for specifiers when they order products for infrastructure projects. In the same way that a chain is only as strong as its weakest link, a pipeline is only as good as the integrity of the pipes, joints and fittings that are used. Seeing the SAPPMA logo on a pipe and fitting is considered to be a major differentiator in an industry where shortcuts are all too easily taken. We believe it will continue to play a more prominent role going forward as it allows our members to show their clients their commitment to quality and offers the end-user the product assurance they need,” Ian concludes.

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