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IN THE PIPELINE



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A new product emerging onto the world market is setting the bar much higher for pipe construction. Huachuang steel reinforced HDPE pipe can deliver significant financial and environmental savings

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Sulfuric acid pipeline

A quiet revolution in technology has been emerging from China over the last few years. Huachuang steel reinforced high density polyethylene (SR HDPE) pipe has become a standard product across Asia for construction projects, oil and gas installations, mining, manufacturing, water and sewerage applications—in fact anywhere where fluids and gases need transporting from A to B. Because of its unique structure and design, it is lighter and more durable than either traditional steel pipe or HDPE pipe. It is quicker and easier to handle and install, significantly cheaper than the traditional alternatives and has the added benefit of having a much smaller impact on the environment.

So what is special about Huachuang SR HDPE pipe? “It’s a new kind of high density polyethylene pipe which is reinforced by a steel wire mesh skeleton,” explains Alan Stothard, managing director of IQS International, the company that is introducing the product into Africa. “This combination makes the pipe far stronger than standard HDPE pipe and more flexible and corrosion-resistant than steel pipe.”

Many of its inherent characteristics are far superior to those of HDPE or steel pipe. The product complies with the South African SANS 370 and 371 standard for steel mesh reinforced polyethylene (PE) pipes and fittings for water supply. This is the only product currently able to meet these rigorous standards.

Exhaustive testing demonstrates a product range which performs perfectly at



Sulfuric acid pipeline for copper mining



Oil and water separator



Alkali pipeline

10 bar working pressure, has a maximum operating pressure of 40 bar and a safety factor up to 120 bar depending on pipe diameter. It has excellent anti-corrosion and anti-abrasion characteristics and does not warp out of shape in extreme temperatures ranging from -20 to 80°C. This versatility and durability make it eminently suitable for even the most challenging applications and it's already proving its worth carrying

sulphuric acid in China, sulphuric acid for copper processing in the Democratic Republic of Congo and transporting highly abrasive ore slurry in the mining sector.

It is, however, the sheer ease of handling and installation combined with its low cost and good environmental performance that makes this the product of choice in so many projects in Asia and Africa. "The steel reinforcement gives the product its strength.

This in turn enables the manufacturers to reduce the pipe wall thickness and save on raw material of HDPE, reducing the weight of the product so that it can be handled much more easily and quickly."

The cost and environmental benefits flow directly from this.

Transporting significantly lighter loads reduces fuel consumption while handling the pipe in transit and on site requires significant less craneage, time and labour.

Installing and joining sections of pipe is very different with SR HDPE. Steel pipe, for example, requires welding which is

100KM

Length of Hauchuang pipe used in Terminal 3 extension to Beijing Capital International Airport

labour intensive and energy hungry. "We use electro-fusion coupling to bond segments of pipe together," Stothard continues. "The two sections of pipe are pulled together inside the coupling, which is then programmed automatically using a barcode system.

It heats the joint to the required temperature and then releases it after about 20 minutes for example for the 400ND pipe, when the bond is complete. That's a great time, energy and labour saving over standard HDPE which requires a heavy portable bonding machine that heats both segments of pipe and has to be

"SR HDPE PIPE IS A NEW KIND OF HIGH DENSITY POLYETHYLENE PIPE WHICH IS REINFORCED BY A STEEL WIRE MESH SKELETON"

moved out of the way before the segments can be pulled together and held until the bond is formed. This complete process can take up to two hours.”

The bonding process with SR HDPE can also be carried out quickly in-situ at height, whereas conventional steel or HDPE pipe is bonded and tested before being manoeuvred into its final position. “The actual joint area with SR HDPE can

be up to 300mm of reinforced joint, which is much greater than the 10mm butt joint on a standard HDPE pipe, and doesn’t require non-destructive testing on each joint. We simply do a pressure test on the pipe at the end of installation.”

Some of the biggest benefits of SR HDPE over steel piping are linked to its anti-corrosion and anti-abrasion properties. Steel piping requires corrosion protection,

“HUACHUANG IS THE LARGEST MANUFACTURER OF SR HDPE PIPE IN CHINA AND IN THE WORLD WITH ALMOST 80 PER CENT OF THE MARKET SHARE”



Phosphorous acid pipeline



Brine pipeline

which can take a week to apply depending on the situation in which it is going to operate. This is costly, time consuming and has environmental implications. The inner wall of a steel pipe is also far rougher than HDPE and either needs lining to reduce wear and erosion, or the piping system life can be extended by using thicker wall pipe. With SR HDPE the smooth inner wall enhances flow, and the stronger structure can withstand higher pressure compared with that of the standard HDPE pipe. It can result in a fewer number of pumping stations being required. “So we can achieve better equipment, power, labour and maintenance efficiency,” confirms Stothard.

Developed and produced in China by

Huachuang Tianyuan, part of CASIC (China Aerospace Science and Industry Corporation), the pipe is manufactured continuously on an automated extrusion line. “At any one time there is at least five kilometres of each size of pipe available in stock,” Stothard says. And this can be delivered to customers in the growing African market within five weeks of receipt of order.

In Asia, the Huachuang brand pipe is in use in many prestigious industrial and civil developments. The vast Terminal 3 extension to Beijing Capital International Airport, built for the 2008 Olympic Games, incorporates about 100 kilometres of Hauchuang pipe. The product supplies water to the population of more than 20

Tailings pipeline



cities in China and is now used for the same purpose in Sumatra. It's widely in used in new mining applications, carrying water, ore pulp and chemicals, and can be seen in the nickel mines of Burma and those of the Jin Chuan Group in China, and in the salt mines of the Chong Qing municipality, and a very large beer plant in Angola. In the oil and gas industry the Chinese petroleum company Sinopec uses it for long distance gas and chemical piping, oil collection, and oil and water separation, as well as for municipal gas supply in over 20 cities.

At the moment, IQS is the authorised representative for Huachuang SR HDPE in southern Africa, and its offices can be found in Johannesburg, Cape Town, Durban, Namibia and Botswana. This footprint will soon be extended to include Tanzania and Mozambique, and the company is exploring the possibilities in Ghana and further afield. Of course, should the market take off in Africa as it has in Asia, there will be a great demand for the pipe.

"Huachuang is the largest manufacturer of SR HDPE pipe in China and in the world with almost 80 per cent of the market share. With a large yearly output capability of 3,000 kilometres of different-sized pipes, Huachuang is well-prepared for market growth and to meet the potential demand from all over the world," Stothard concludes. **BE**

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