REFURBISHMENT
Sika MonoTop®-4400 MIC FOR MICROBIAL INDUCED CORROSION IN SEWERAGE SYSTEMS

FOR OWNERS

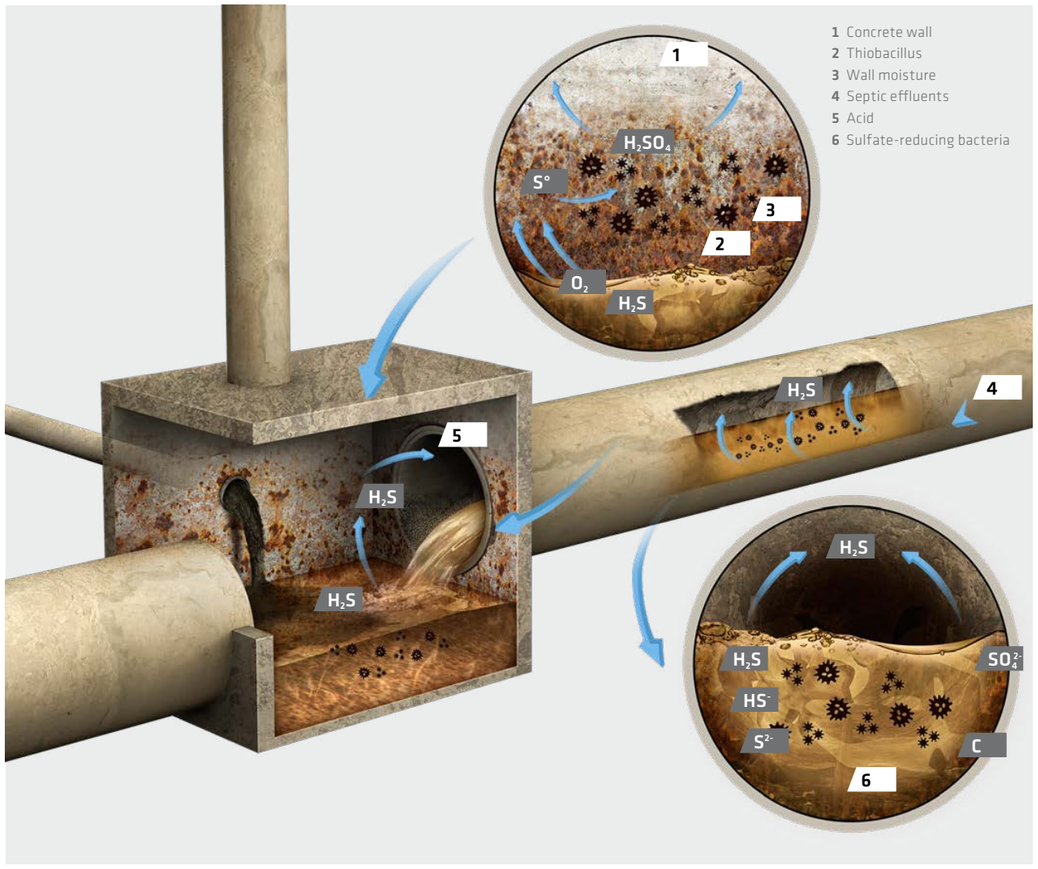
EXTENDING THE SERVICE LIFE AND MAINTENANCE CYCLE

SEWERAGE SYSTEMS HAVE BEEN an important part of our cities since the 19th century. At this time the growing urbanization and general lack of sanitation, including the removal of human and animal effluent with surface water from the streets along open sewers into our waterways, had disastrous consequences for the environment and public health, with frequent outbreaks and epidemics of diseases.

Municipal sanitation systems were therefore developed for the efficient evacuation and treatment of this effluent and waste water. Sewerage system designs have evolved a great deal, but microbial induced corrosion of the structures remains a growing problem for the responsible authorities and their engineers throughout the world.

Microbial induced corrosion happens when sulphates in biological waste are converted into sulphides through a biological process under the anaerobic conditions below the waste-water line in the sewers. Above the waste-water line, the hydrogen sulphide gas that is released in this process forms aggressive and corrosive condensates with water such as sulphurous and then sulphuric acid.

MICROBIAL INDUCED CORROSION PRINCIPLES



1 Concrete wall
2 Thiobacillus
3 Wall moisture
4 Septic effluents
5 Acid
6 Sulfate-reducing bacteria

Even though these processes and the resulting corrosion and maintenance problems on concrete and steel structures are really well known, including the bad smell of rotten eggs that is given off, our sewerage systems still suffer constantly from it.

Manhole sewer entry after only 3 years in service exposed to biogenic corrosion.

Manhole entry to storm water network after 3 years of service showing no deterioration.

THE USE OF EFFICIENT, DURABLE MATERIALS IS ESSENTIAL TO REDUCE ANY NECESSARY DOWNTIME AND TO EXTEND THE SERVICE LIFE

As a consequence of the continuing sanitary improvements for much of the world's population, the sewerage systems have to accommodate and transport more and more waste and waste water every day. In addition, any downtime or diversions for this essential infrastructure, due to essential maintenance work, is very difficult and expensive.

An additional issue nowadays is the trend to reduce the volume and load on sewage treatment plants by creating separate storm water collection and holding / disposal systems. This has several important advantages in reducing cost and possible pollution, but also concentrates effluent in the sewerage system and accentuates the problem and severity of microbial induced corrosion.

In the past, epoxy resin coatings were used to provide some degree of additional protection against chemical attack including microbial induced corrosion, but in many situations this solution has also failed due to the extremely onerous application conditions in this environment. Many years of experience have now shown that in many situations the only reliable solution is to provide the necessary additional protection to the concrete surfaces with specially designed calcium aluminate cement based mortars.

In these severely exposed, highly stressed and critically important structures, the use of efficient, durable materials is also essential to reduce any necessary downtime and – wherever possible – to extend the service life and maintenance cycle.

SEWPERCOAT®
100% Calcium Aluminate Technology Inside

SIKA SOLUTION

Sika MonoTop®-4400 MIC helps to increase the durability of structures in and along the sewerage system. Its key characteristics include:

- Acid neutralization, increasing the durability of the concrete
- Promoting a bacteriostatic environment, stopping the bacterial production of acids

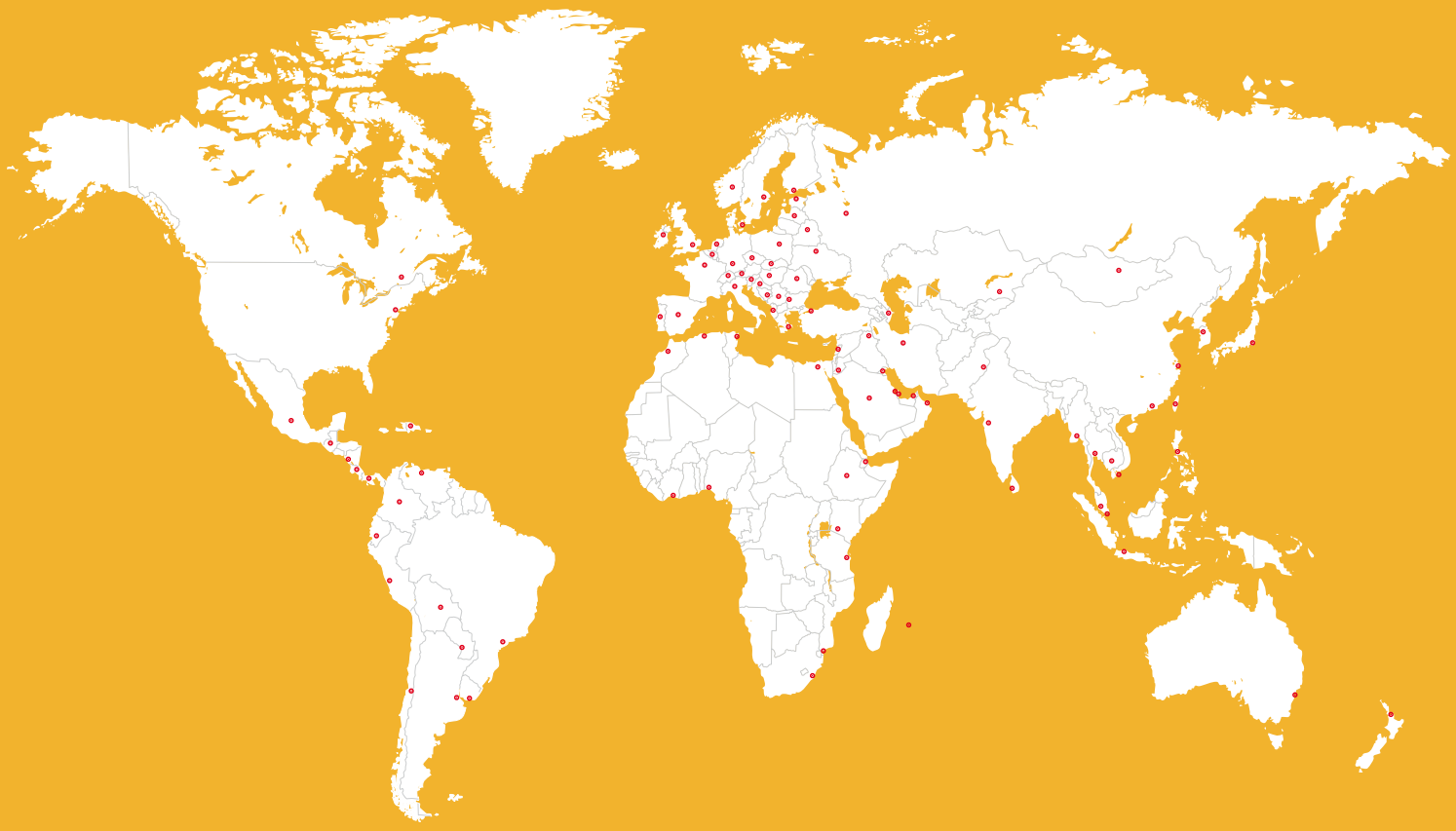
Sika MonoTop®-4400 MIC is particularly suited to the repair and refurbishment of sewerage system structures, including manholes, inspection galleries, lifting pits and stations, the main trunk sewers and other steel and concrete structures and pipes etc. Sika MonoTop®-4400 MIC is produced using the unique 100% Calcium Aluminate Technology that has been developed and used since 1940 for the protection of sewerage and waste water systems worldwide.

1

2

1 Example of polymer lining failures under H_2S microbial induce corrosion conditions.
2 Example of polymer lining having failed to protect a moulde from H_2S corrosion.

GLOBAL BUT LOCAL PARTNERSHIP



FOR MORE REPAIR AND PROTECTION INFORMATION:

WE ARE SIKA
Sika is a specialty chemicals company with a leading position in the development and production of systems and products for bonding, sealing, damping, reinforcing and protecting in the building sector and the motor vehicle industry. Sika's product lines feature concrete admixtures, mortars, sealants and adhesives, structural strengthening systems, industrial flooring as well as roofing and waterproofing systems.

Sika Hellas ABEE
15, Protomagias str.
GR 145 68, Kryoneri,
Attica, Greece

Contact
Tel. + 30 210 81 60 600
Fax + 30 210 81 60 606
Mail: sika@gr.sika.com

Technical Support:
801 - 700 - 7452

BUILDING TRUST