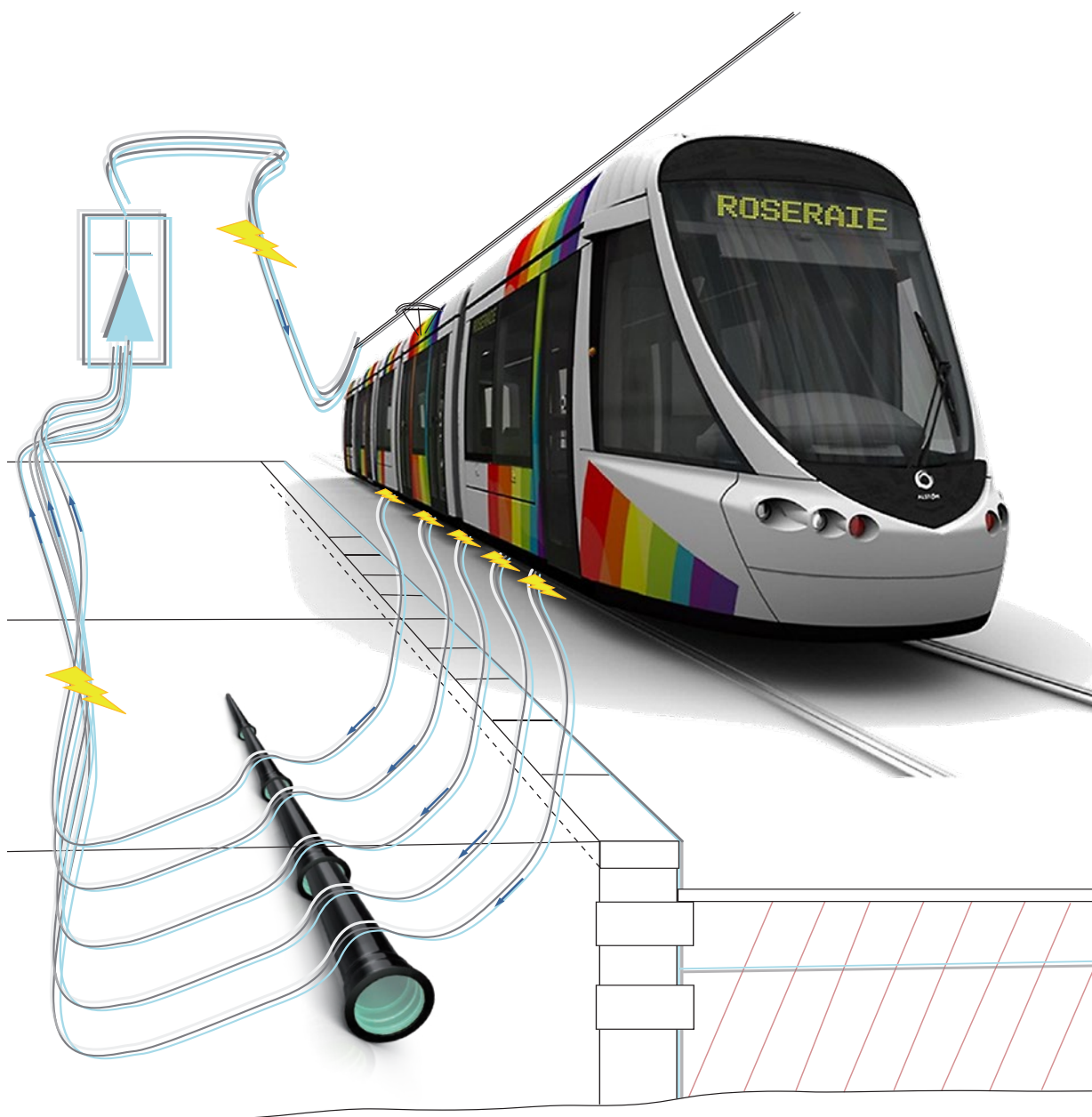


STRAY CURRENT – THE SOLUTION!

The ECOPUR polyurethane coating effectively protects cast-iron pipes that are close enough to a direct-current railway to be affected by stray current



Stray current

Metallic structures in the ground around direct current railways are put in danger by stray current.

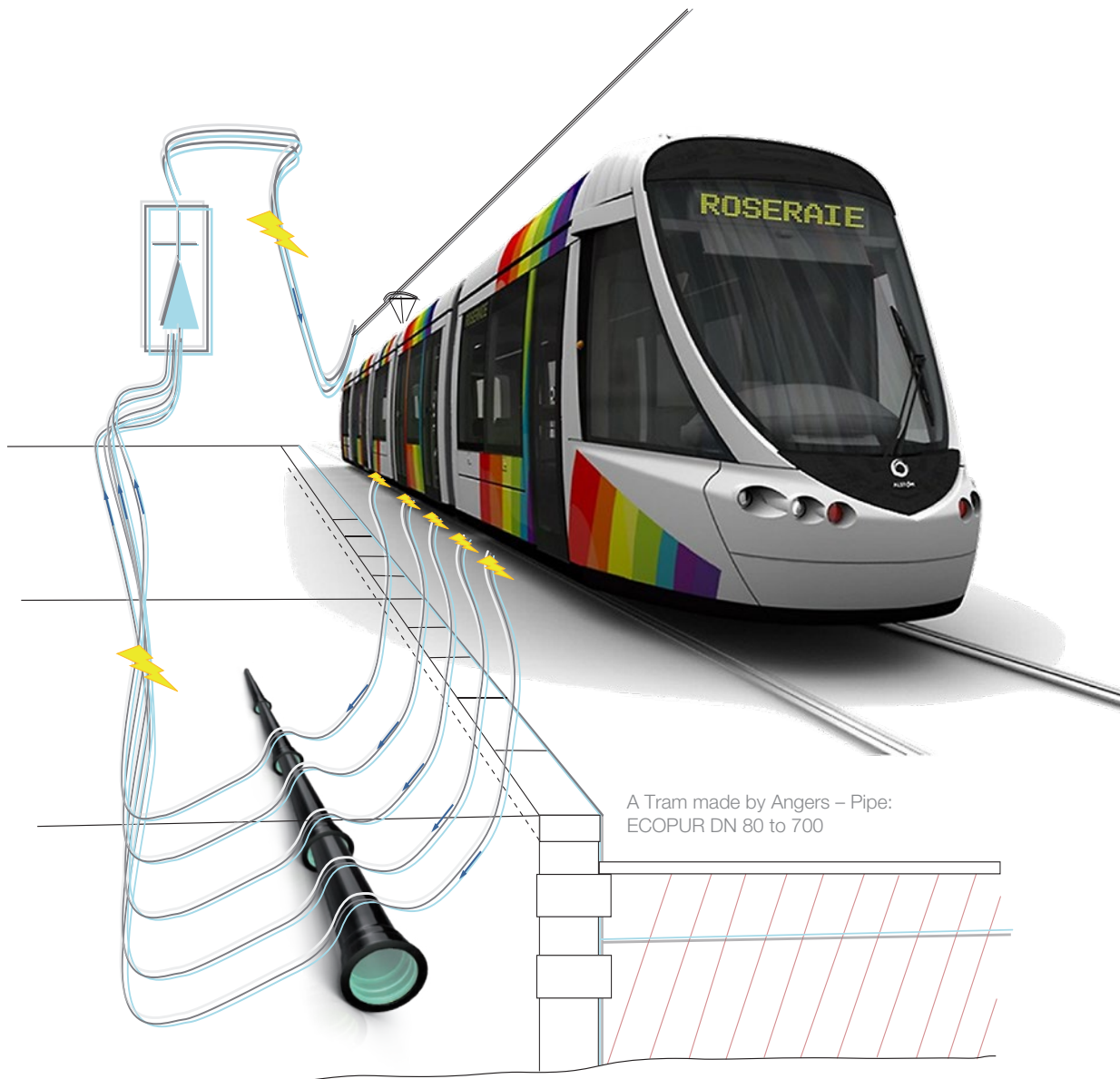
This stray current is caused by reverse current between the drive carriage and the power supply rectifier, which produces a drop in longitudinal voltage in the tracks. As the earth is shifted parallel to the tracks, part of the reverse current flows back through the earth as stray current to the power supply rectifier.

If the stray current reaches buried metallic structures in this way, it can enter these structures and exit once again in the area of the power supply rectifier.

When the stray current enters, a partial cathodic reaction takes place. An anodic partial reaction occurs on exit, meaning the metal is eroded.

The risk of corrosion by stray current is particularly high on earth termination systems, as they are often connected electrically to one another over larger distances (earth wires, cable coating, water pipes, etc.).

For this reason, they can absorb massive voltage drops that are caused by the stray current in the ground.

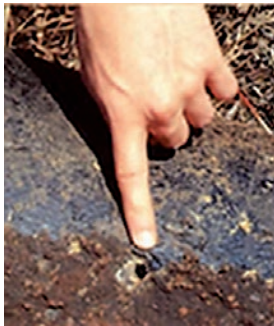


The ECOPUR pipe with complete integral protection is the simple and effective solution for stray current problems

Insulation against corrosion caused by stray current

Insulation with integral PUR coating enables:

- Improved monitoring of water supply costs (due to the removed risk of corrosion, no interruptions and bottlenecks in the water supply have to be recorded).
- Increased service life for water pipes



Typical perforation of a sewage system that is insufficiently protected against stray current.

Polyurethane (PUR) coatings offer the highest quality

In 1972, PUR coating was developed by vonRoll and since then it has been continually improved. It protects cast-iron against corrosion and guarantees impeccable quality drinking water at the same time.

PUR coating is certified in accordance with Swiss and German Technical and Scientific Association for Gas and Water (SVGW and DVGW) standards. Compared to other linings, it offers a universal range of applications. Ductile cast-iron pipes with PUR coating can be used for drinking water, waste water (H₂S), demineralised water, service water, across the pH scale from pH1-pH14 and for gas.

The PUR coating protects ductile cast-iron pipes against corrosion, such as that caused by stray current. Ductile cast-iron pipes with PUR coating are suitable for all types of soil with any degree of aggressiveness, and can also be used in ground or brackish water



If the pipe becomes deformed, the coating remains intact due to the elasticity of the polyurethane.

Simple to lay

The ECOPUR pipe is the only completely protected pipe in the world that guarantees complete protection immediately after a connection with shortened pipes is put together. Further operating steps during installation (such as peeling away the cement or PE coating, applying an epoxy coating to the entire insertion depth or sleeve protection with rubber or shrink fit sleeves, etc.), which are essential with other systems, are no longer required. The same applies to the range of ECOSYS fittings with a thick integral epoxy coating of at least 250 µm.

In this way, construction progress is greatly accelerated with an extremely high level of reliability and the highest installation quality.

The ECOPUR pipes with the reliable and proven HYDROTIGHT connection technology can accommodate longitudinally friction-locked operating pressures of up to 100 bar. With the ECOSYS complete pipe protection system, no cathodic pipe protection is required.

It is possible to reuse all excavated material with ECOPUR. Excavated material with a particle size of up to 6 cm (largest 10 cm) can be reused for the pipe coating. Large-scale excavation for filling the trench.

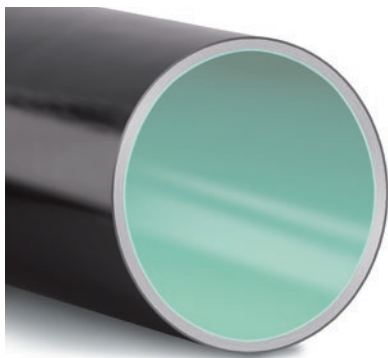
Bedding ≥ 10 cm. The cost of expensive gravel and of transporting material no longer applies.



Simple to lay

Technical data for the ECOPUR pipe

Pipes with push-in socket Dual chamber/Single chamber DN 80 to 700



Standards

vonRoll pipes meet the following standards:

EN 545/EN 598: Pipes, fittings, accessories made from ductile cast-iron and their connections for water pipes/waste water disposal – requirements and testing procedures

EN 15189: Pipes, fittings and accessories made from ductile cast-iron. Polyurethane coating for pipes – requirements and testing procedures

EN 15655: Pipes, fittings and accessories made from ductile cast-iron. Polyurethane coating for pipes and fittings – requirements and testing procedures

Mechanical properties of pipes made of ductile cast-iron:

Minimum tensile strength:	R_m > 420 MPa
Yield strength:	R_{p0.2} > 270 MPa
Minimum elongation:	A > 10 % - (vonRoll means at 19% - min. 15%)
Brinell hardness:	< 230 HB
Carbon content (mean):	3.5 % C

Properties of the Polyurethane coating:

Specific electric Resistance of PUR :	> 10⁸ Ω m²
Dielectric strength :	35 kV/mm
Chemical resistance :	Acids up to pH 1 and bases up to pH 14
Hygiene :	Approved for drinking water (SVGW / DVWG)/no accumulation of biofilm/no chlorine absorption
Deposits, incrustations :	None

Requirements of a pipe that is exposed to stray current

A pipe that is exposed to stray current must :

- Be electrically insulated to stop any concentration and absorption of stray current and conductivity across several pipes
- Be coated integrally
- Possess a non-porous coating
- Be stable in the long-term

