



**37TH INTERNATIONAL
No-DIG
FLORENCE 2019**

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„New Performance of the No-Dig Technology Pipetronics' eMULTI - one Robot-System with multifunctional extended applications“

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Introduction



Mostly different systems and technologies for the necessary required works.

Required Work	Systems
Removing deposits, incrustations and others especially to prepare the pipe for liner installation	Electrical, hydraulic or pneumatic driven milling robots with different properties
Stop water infiltration before CIPP hose liner installation	No existing system! Done mostly with Partliner
Technical connection of CIPP hose liner to the lateral pipe	Pressurised injection or grouting systems
	Hat profiles with ambient, heat or light curing supported by rubber or silicone packer/bladder
Filling of cracks and holes or joint displacements	Pressurised injection or grouting systems
Measurement pipe diameter for preparation CIPP hose liner	Calibration systems

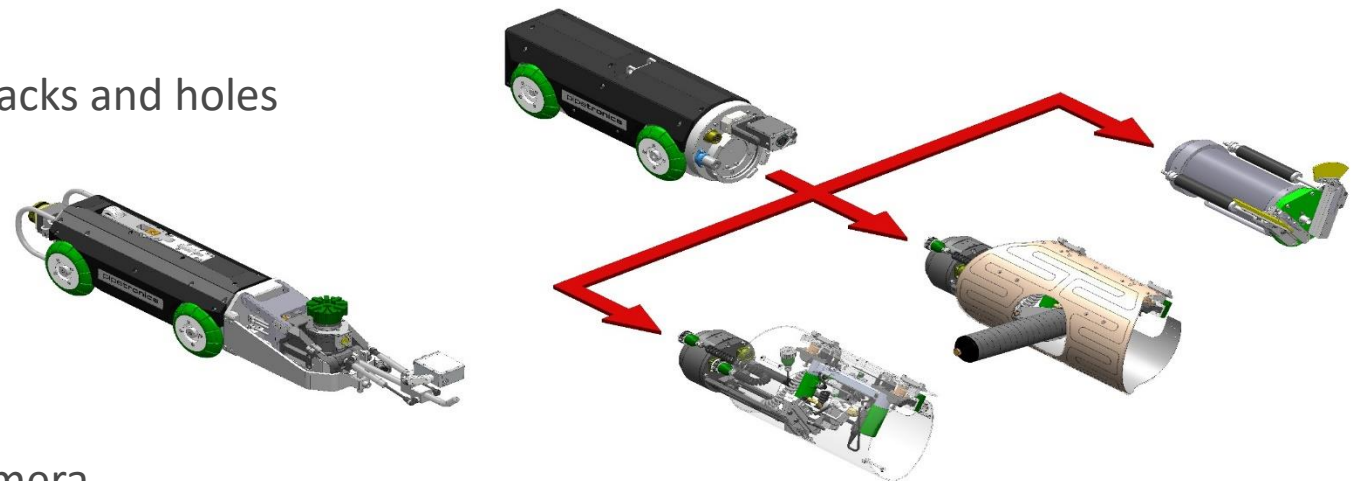
eMULTI – Robot System multifunctional

Modern electrified robot system with following fully compatible elements:

- Milling robot '**eCUTTER**' for removing deposits, incrustations and others
- Shield Injection system '**PI.TRON-Shield Injection**' to connect CIPP hose liner with the lateral opening
- Hat profile '**PI.TRON-Hat Profile**' to connect CIPP hose liner with the lateral opening
- '**PI.TRON-Filler**' apply with a spatula for filling of cracks and holes

Next:

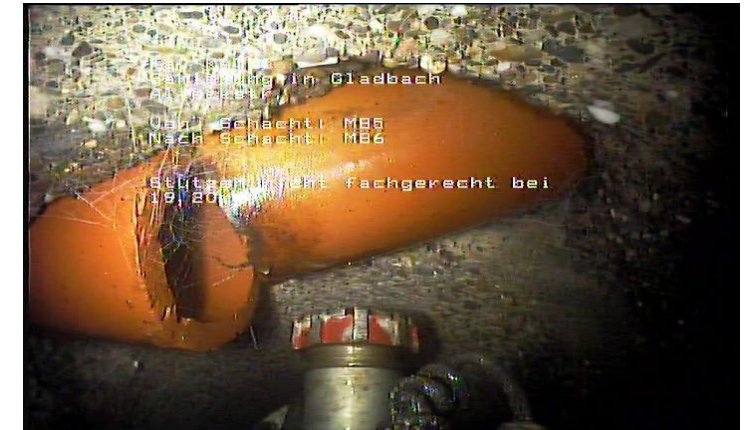
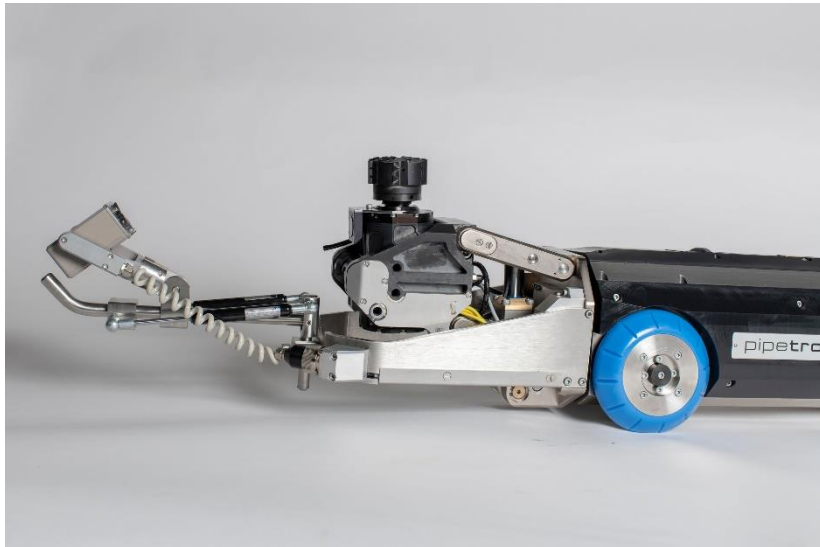
- '**PI.TRON-Water Stop**' for temporary stop of water infiltration during liner installation
- '**PI.TRON-Laser Sensor**' for measurement pipe diameter with laser sensor at the TV robot camera



pipetronics[®]
Intelligent Pipe Robots

Milling robot 'eCUTTER' for removing obstacles, deposits, incrustations and others

- Main sewer DN150-800 (circular and egg-shaped profiles)
- Powerful as hydraulic driven milling robot
- Battery-operated



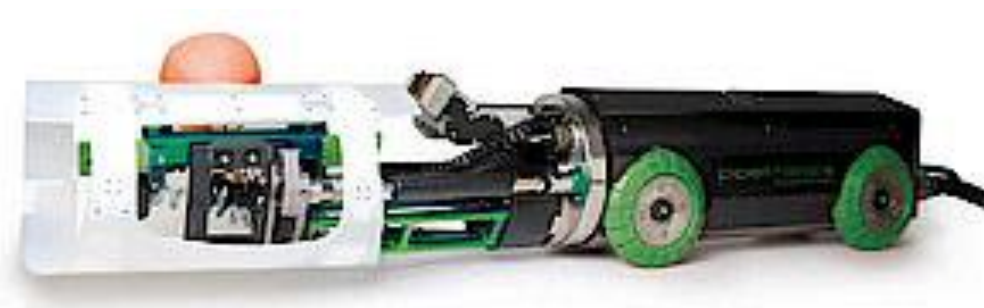
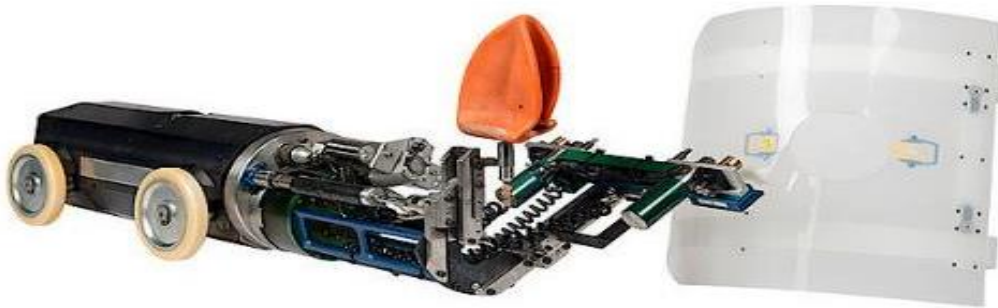
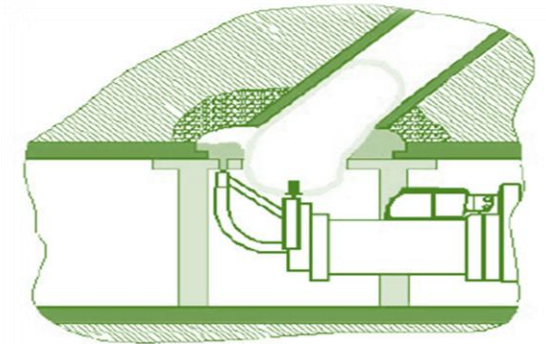
PI.TRON – Shield injection System



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‘PI.TRON-Shield Injection’ - Technical connection of CIPP hose liner to the lateral pipe

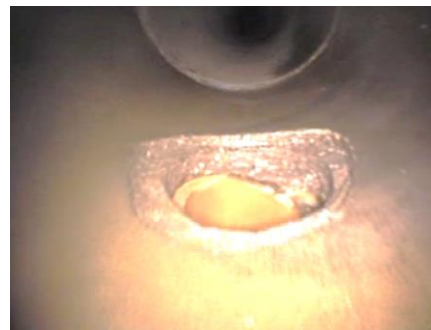
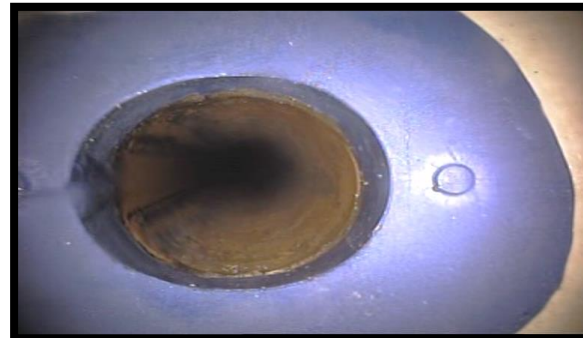
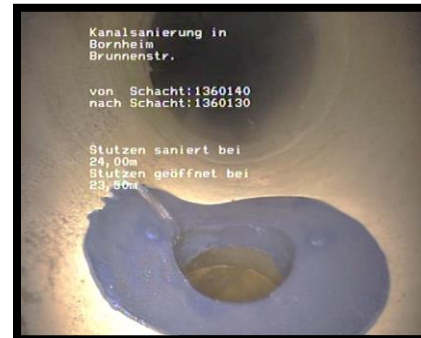
- Main sewer DN 150-800 (circular and egg-shaped profiles)
 - Leaktide new connection between CIPP hose liner and lateral opening
 - Repair of damaged pipe joints
 - Special developed 2-component epoxy resin PI.TROC21 or similar ones with a lower viscosity
- Available in cans and 700ml tubular bags and mixed in automatically mixing and dosing system



PI.TRON – Shield injection System

Examples:

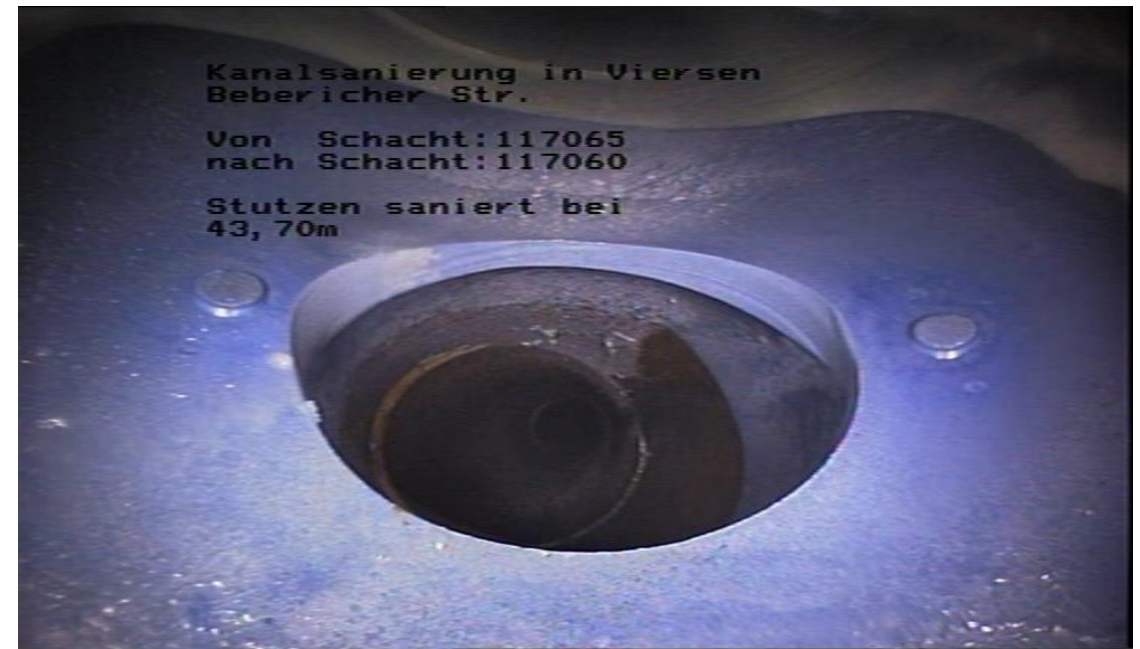
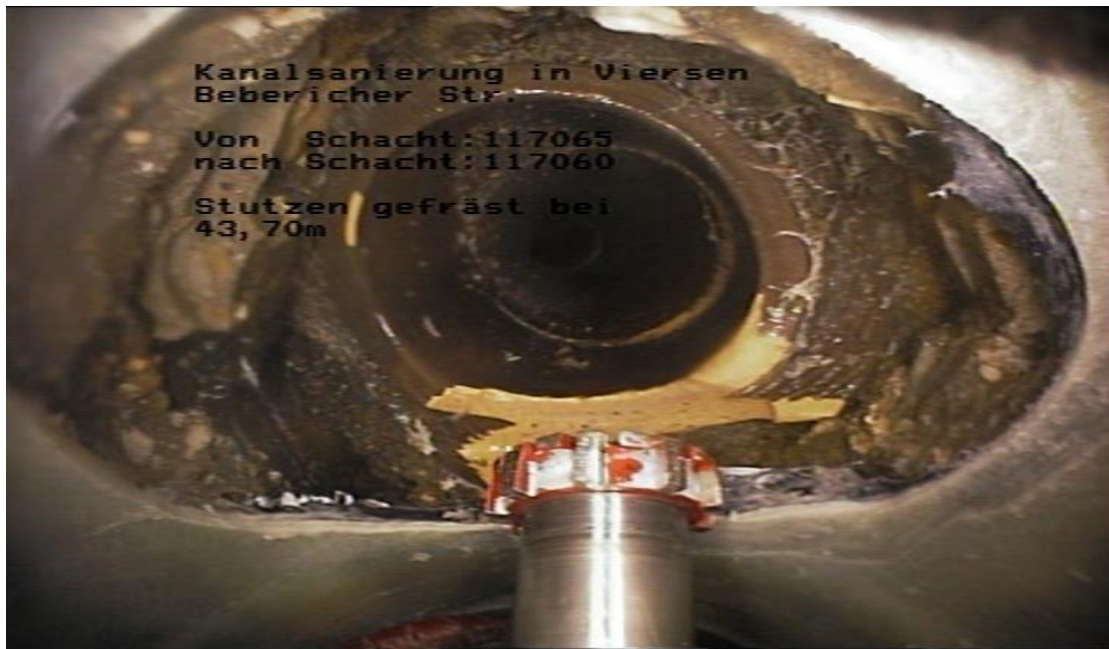
Standard lateral connection in circular main pipes



PI.TRON – Shield injection System

Examples:

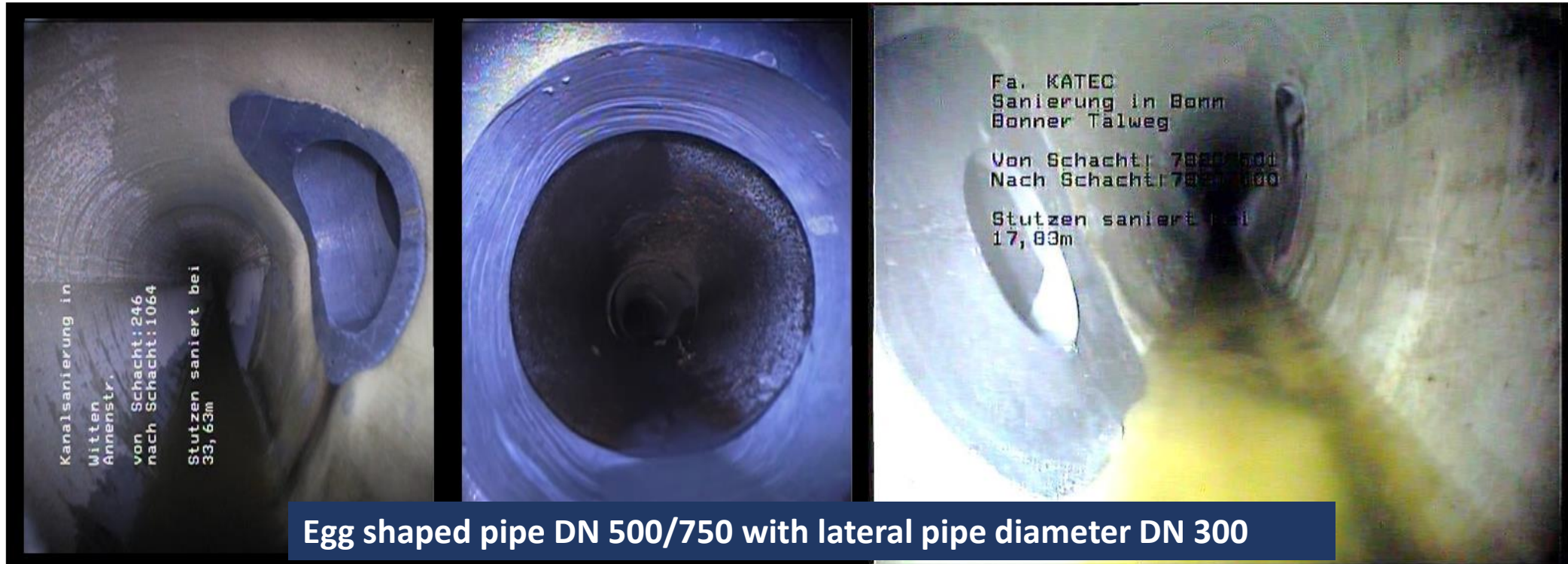
Lateral connection in circular pipes; strongly broken opening, approx. 60° angled arriving



PI.TRON – Shield injection System

Examples:

Standard lateral connection in egg shaped pipes



PI.TRON – Shield injection System



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Examples:

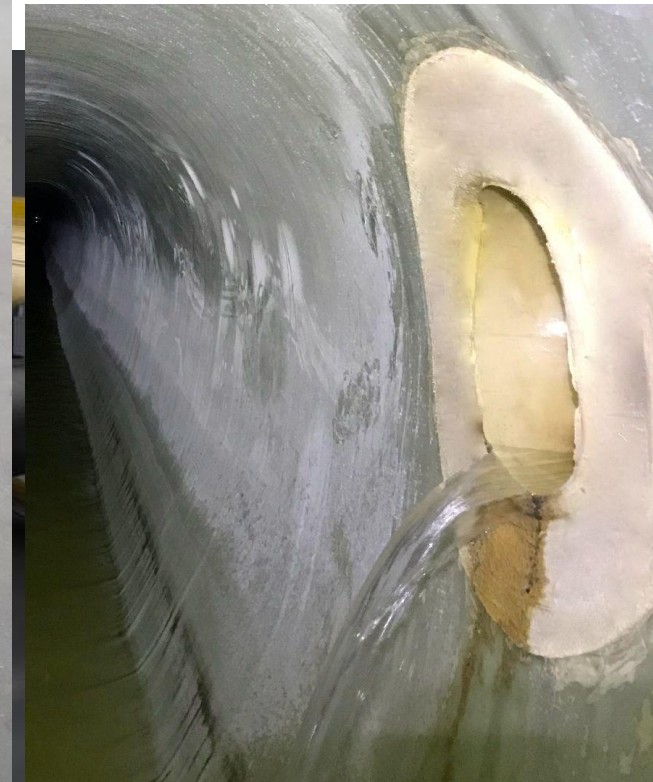
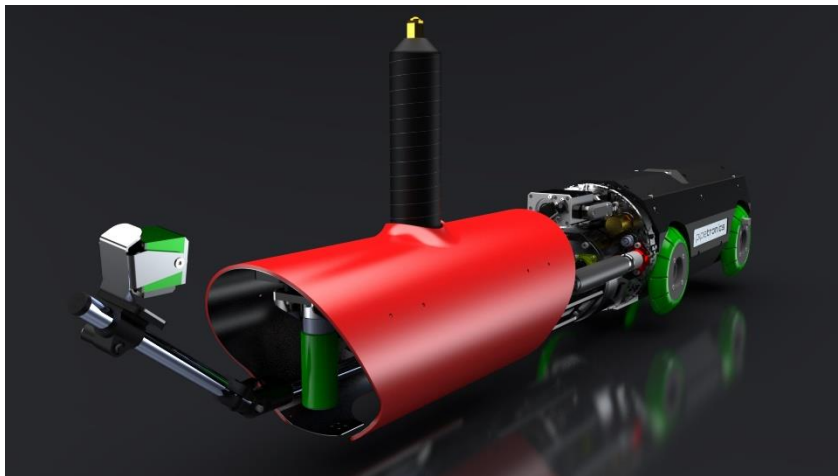
Targeted to the pipe with a pipe diameter of 300mm with missing part of the pipe



PI.TRON – Hat Profile

‘PI.TRON-Hat Profile’ - Technical connection of CIPP hose liner to the lateral pipe

- Newly established into the **Pi.TRON-technology**
- Main sewer DN 150 – DN 800
- Shield and blatter heated



PI.TRON – Filling System

‘PI.TRON-Filler’ apply with a spatula and a high grade Epoxy resin

- Main sewer DN 150 – DN 800
- Filling joints
- Filling cracks and holes
- Special developed epoxy resin PI.TROC SP or similar ones with a high viscosity



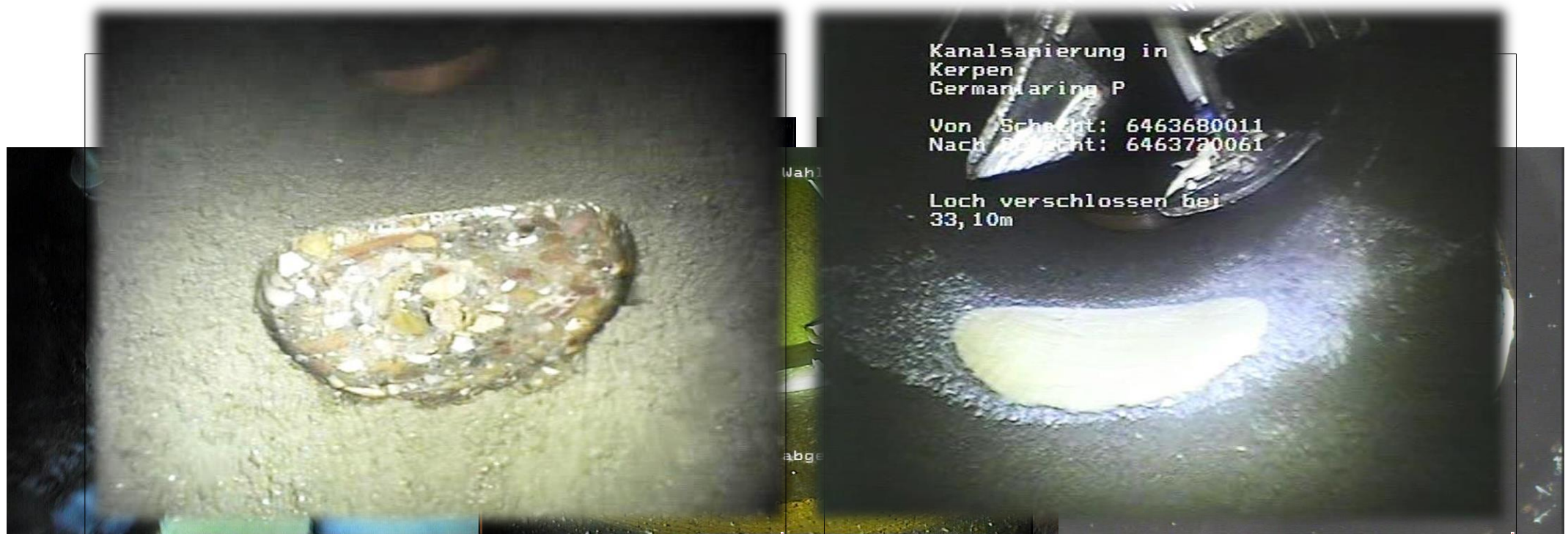
PI.TRON – Filling System



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Examples:

Partially damages in clay/concrete pipe



Introduction

Examples:

Damage in a clay pipe: missing part of the pipe wall of approx. 500cm²

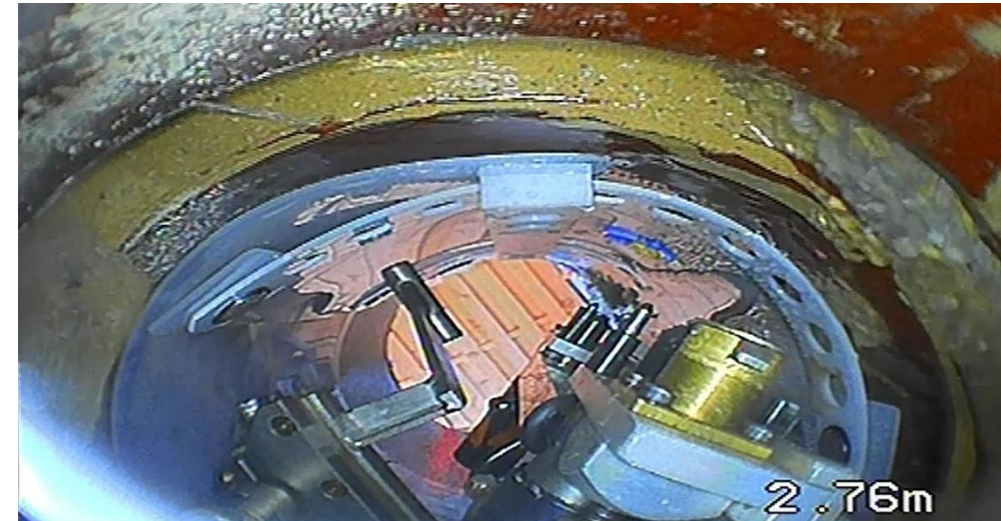
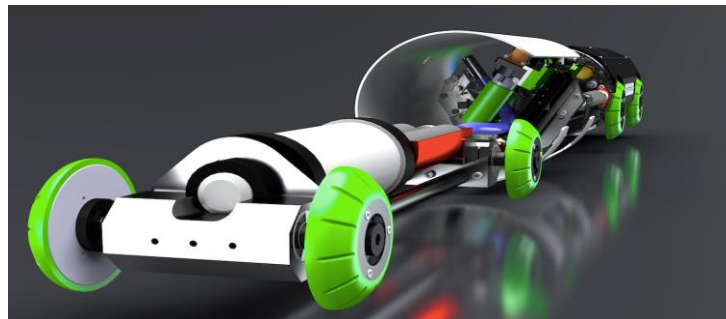


PI.TRON – Water Stop

PI.TRON-Water Stop for temporary stop of water infiltration during liner installation

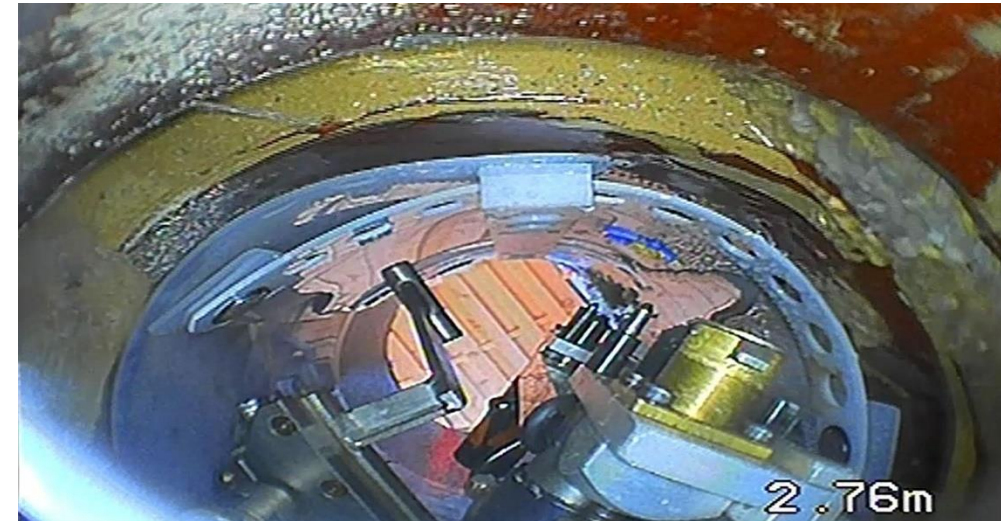
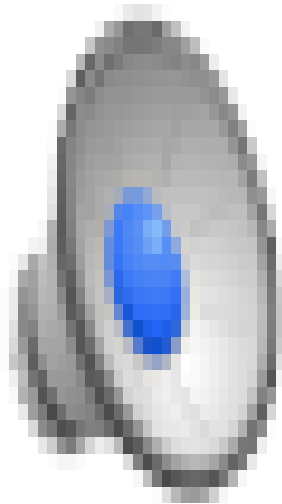
- Temporary sealing of water infiltration shortly before CIPP hose liner installation
- 2-component sealing material with volume expansion of 1:10
- Adaptable to all **Pi.TRON** Systems

Worldwide unique!



PI.TRON – Water Stop

PI.TRON-Water Stop for temporary stop of water infiltration during liner installation



Laser Sensor to measure the real diameter before installation of CIPP

- Adapted to the eCUTTER – mounted at the CCTV camera
- The real pipe diameter varies minimum +/- 5% - risk of wrinkles or gaps
- Best control during the preparation of the pipe before relining

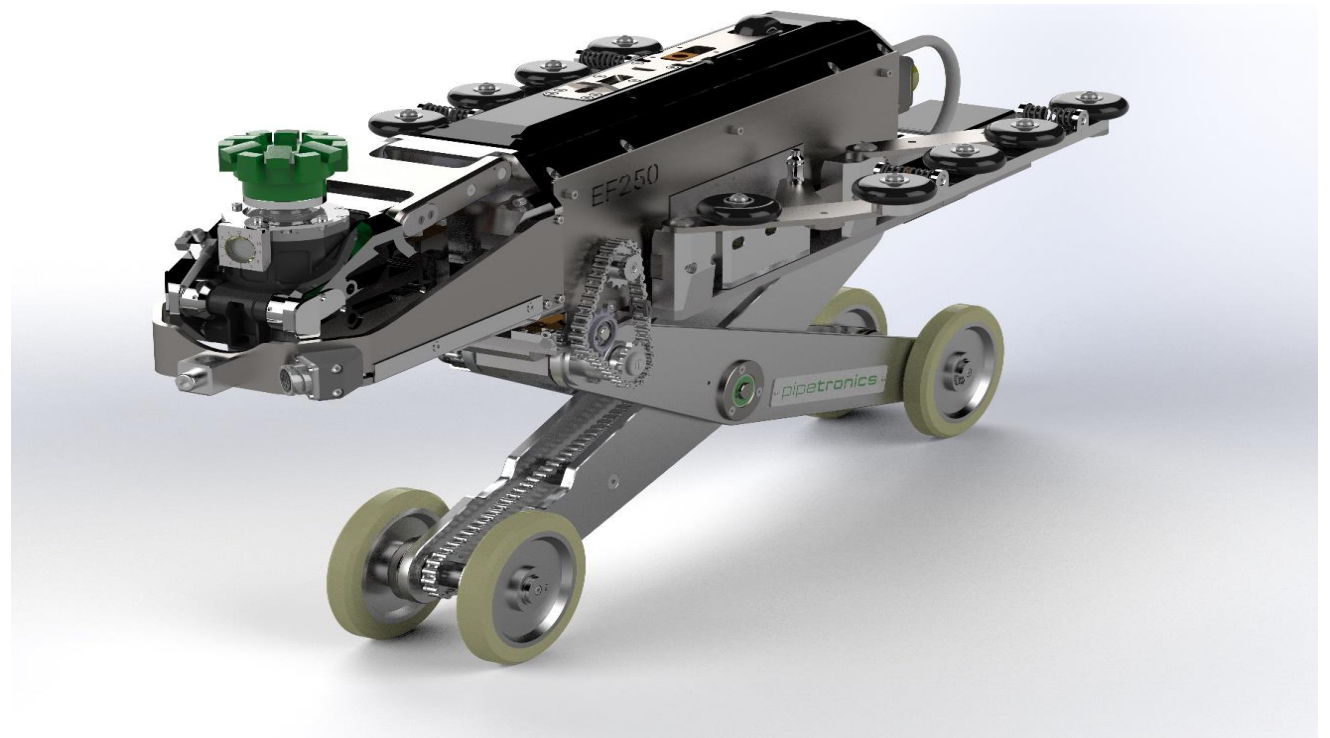
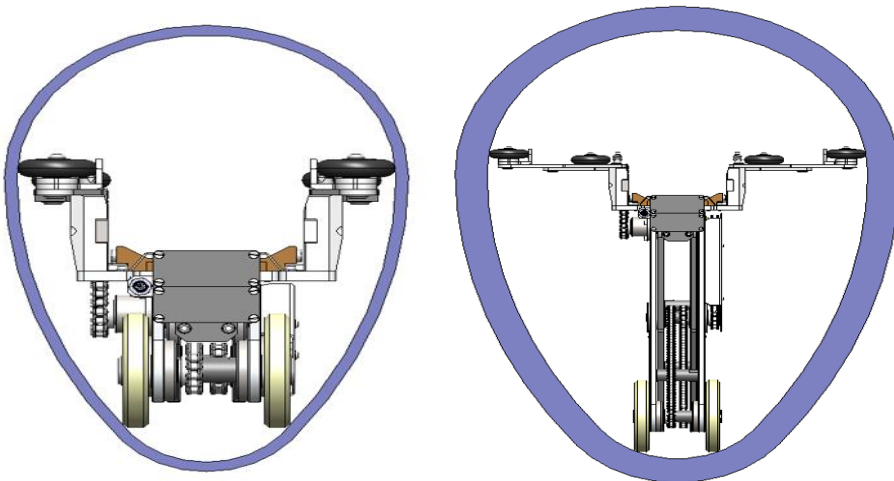


Chassis for Egg-shaped pipes

Egg shaped profile chassis for robots

New carriage for egg-shaped pipes up to 600/900
Electrically adjustable

For eCUTTER and PI.TRON-System (Grouting, Filler
and Hat profile)



Mobile or box mounted version

Pipetronics Robots mounted on sprinter or trucks





Thank you for your attention!



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Intelligent Pipe Robots