



Service for  
the Future

# Your easy solution for round tunnel drainage pipe cleaning



FCC developed the HIPPO 600 and HIPPO 1500 tunnel cleaning devices to provide an efficient solution for prolonging the lifetime of your installations and drainage pipes.

The HIPPO 600 and HIPPO 1500 are intended mainly for the cleaning of closed, round drainage pipes in tunnels of arterial roads such as streets and railways.

**The biggest advantage of our solution is that cleaning can be carried out during full tunnel operation of the site, with only short interruptions during set-up and dismantling.**

## What we offer

- Hydro-mechanical pipe cleaning with only high-pressure water – no destructive technologies, no chemicals
- Cleaning of (closed) ducts and drainage pipes as well as slots
- TV-inspection and documentation in one single step
- Long distance (tunnel) drainage cleaning

## Advantages for our customers?

- Design of individual cleaning concepts
- Competent consulting
- Implementation with trained personnel
- Modern and efficient vehicle fleet and equipment
- Short response time due to location distribution
- Excellent price/performance ratio





## **Drainage pipe cleaning in arterial roads such as street and railways tunnels**

Tunnels all over the world are equipped with drainage systems which drain off accumulated mineral water. However, these drainage systems can easily become clogged or incrustated because of the chalk and other residue contained in the water.

This can quickly lead to negative consequences to the system, including; reduced capacity of pipe cross sections, diminished draining capacity of pipes, clogging of pipe slots and openings and further even tunnel leakages.

To ensure proper and safe tunnel operations it is important to keep the tunnel drainage systems clean, otherwise, significant repair and maintenance expenses can be expected for the tunnel operator.

Right now, there are several solutions available on the market for the cleaning of drainage pipes, all of which can be provided by FCC Austria Abfall Service – both domestically and internationally.

# High-Pressure pipe cleaning system HIPPO

In 2016, ÖBB – the national Austrian Railway Company – published a tender for the cleaning of tunnel drainage systems with a focus on reduced operational down time. The tender was won by FCC, and **HIPPO** – the High Pressure pipe cleaning system – has been in operation cleaning the (closed) drainage systems of the ÖBB railway tunnels since November 2017.





# HIPPO 600

The HIPPO 600 was originally developed by FCC for the cleaning of the Wienerwaldtunnel (a tunnel close to Austria's capital city, Vienna). But HIPPO's flexibility ensures that **it can be used in most round drainage pipe systems with a length of up to 600 m.**

With HIPPO, we make sure that accumulated water in tunnel systems can safely flow through the drainage pipes. Our equipment achieves this by cleaning (closed) drainage pipes – using **only high pressure water**. The HIPPO can also be equipped with a **seeing nozzle for simultaneous smart documentation and cleaning**. Furthermore, the use of an additional **robot unit** is also possible, which can provide minor repairs inside the tunnel drainages. The technology we provide can be operated flexibly and according to our customer's requirements.

The system offers another advantage; **tunnel operations can be continued**

**almost without interruption.** With tunnel closures only necessary during set-up and dismantling of the system – and only when the tunnel is longer than 600 m. Thereby we are able to provide a significant reduction in maintenance costs for our customers.

To meet high safety standards and fulfil the complex requirements for the maintenance of tunnel systems, HIPPO was and is continuously being adapted and improved by us. The system can be set up quickly and operated in nearly all drainage pipes. Due to the simplicity of its components, the parts can easily be replaced in the event of any unlikely mechanical problems.



## Advantages of HIPPO 600:

- Flexible system which can be operated in many areas (nearly all pipe systems)
- Brief interruptions of tunnel operations only necessary when tunnel length is more than 600 m – high cost reduction
- Cleaning and documentation are facilitated in one step with the seeing nozzle
- Water saving technology
- Tried and tested technology



**HIPPO 600 Video**



# HIPPO 1500



– new development in EU-project “Assets4Rail”



FCC participated in the 36 month long Horizon 2020 Shift2Rail Joint Undertaking, “Assets4Rail”, running from December 2018 – December 2021.

During this EU project, we further developed the HIPPO 600 to be able to **clean longer (tunnel) drainage pipes, while maintaining the advantages of the shorter distance 600m equipment.** With adequate tunnel conditions and enough space available, cleaning lengths of up to 1,500m can be achieved. And, with the HIPPO 1500, cleaning and documentation can still be

achieved in one step, but the interruption of tunnel operation is eliminated as the system is operated from outside the tunnel.

Different (tunnel) settings may require different solutions: The HIPPO 1500 system is **highly customisable** and can be assembled flexibly according to the requirements on site.





## Advantages for our customers:

- Flexible system which can be operated in many different areas (nearly all pipe systems)
- No interruptions of tunnel operations – high maintenance cost reduction
- Cleaning and documentation are done in one step
- Water saving technology
- Operational lengths up to 1,500m depending on the setting
- Highly customisable system depending on local conditions



**HIPPO 1500 Video**



# Overview and advantages of the available technologies for the cleaning of (tunnel) drainage pipes

	HIPPO 600	HIPPO 1500 (customisable)
<b>Setup</b>	Flexible setup – outside or inside* the tunnel (*when longer than 600 m)	Setup outside of the tunnel, customisable – depending on site requirements
<b>Cleaning Length</b>	High cleaning length – up to 600 m	Even higher cleaning length – up to 1,500 m
<b>Cleaning and documentation</b>	Cleaning and documentation in one step	
<b>Duration of closure of the tunnel</b>	For tunnels up to 600 m – no closure necessary For tunnels longer than 600 m – closure only during setup and relocation	No closure necessary for tunnels up to 1,500 m
<b>Necessary detergents / chemicals</b>	No detergents / chemicals necessary	
<b>Flexibility</b>	Systems can be operated in almost all (round) drainage systems	

## References

### **HIPPO 600:**

- Regular cleaning intervals performed in the Wienerwald tunnel, Austria
- Several cleaning intervals performed in the Pummersdorf tunnel, Austria

### **HIPPO 1500:**

- Assets4Rail pre-validation at the harbour in Enns, Austria
- Assets4Rail validation in the Pummersdorf tunnel, Austria



# FCC sewer cleaning

FCC Austria Abfall Service - with its waste water and sewer cleaning department – is your expert go-to partner for sewer cleaning as well as waste water treatment plants.

Thanks to our long-term experience, custom-tailored concepts & solutions and our modern and efficient vehicle fleet, we offer you a wide variety of services – including; complex project conception, on-site inspections and cleaning services. Thus we prolong the lifetime of your installations and drainage pipes.

We provide our services to private customers, industrial customers and municipalities.

## Sewer and waste water treatment plant cleaning

For sewer cleaning and waste water treatment plant cleaning, FCC Austria Abfall Service AG operates a fleet of

suction trucks which are perfectly suited for the cleaning of sewers and drainage pipes. Because our trucks don't necessarily need to be refilled with water during their application they can operate mostly independent and flexible.

### Advantages for you as our customer:

- Flexible system
- Usage in many areas due to high mobility (trucks)
- Cleaning and suction of dirty water can be carried out in one step
- Raw water can be recycled – saving of water resources
- Long-standing and proven technology

## Suction trucks on train wagons

Mounted on train wagons, the suction trucks can be used for the cleaning of tunnel drainage pipes – which is the standard-technology currently in use. Cleaning is possible for lengths of up to 300m, however, in this case tunnel operations are blocked during the cleaning interval.

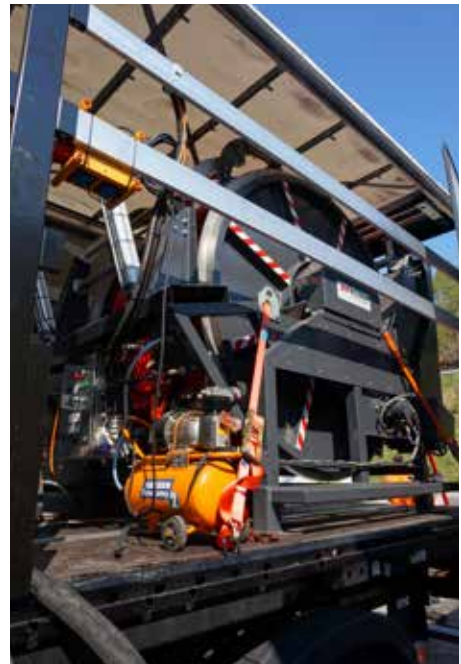
	<b>Suction truck on train wagon</b>
<b>Setup</b>	Flexible setup due to stand-alone base of the truck (electricity, water and wastewater can be handled by the truck)
<b>Cleaning Length</b>	Cleaning lengths up to 300 m
<b>Cleaning and documentation</b>	Cleaning and documentation separate
<b>Duration of closure of the tunnel</b>	During the whole cleaning interval
<b>Necessary detergents / chemicals</b>	No detergents / chemicals necessary
<b>Flexibility</b>	Systems can be operated in almost all round drainage systems

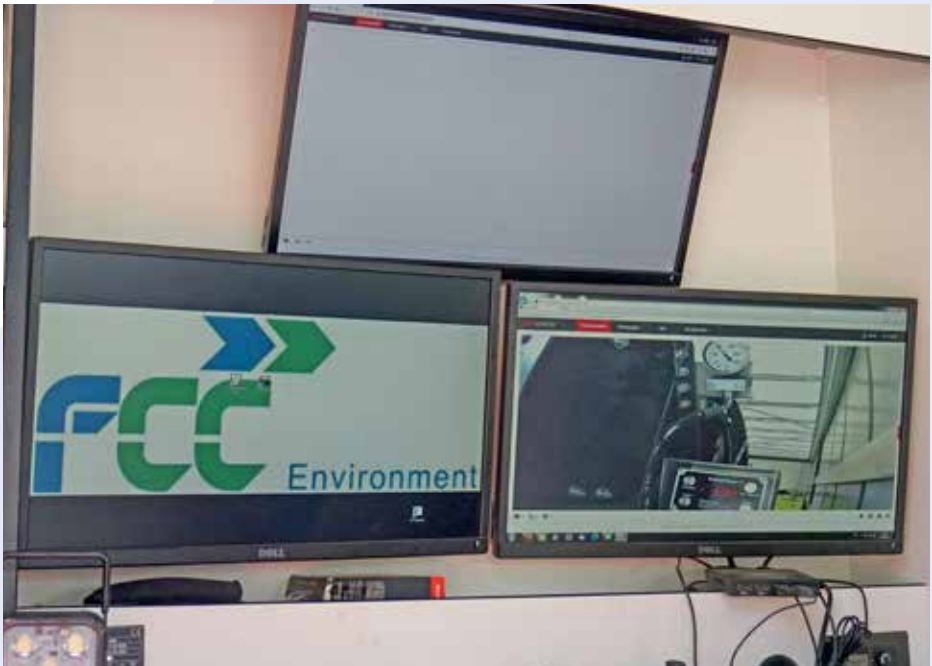


# About FCC

FCC Austria Abfall Service AG was founded 1988 and can presently be found in 17 locations in Austria. We offer overall waste management solutions nationwide – for communities, industry and the private sector. The company leads the FCC Environment CEE group, which operates in more than 100 locations, in 7 countries in Europe. FCC Environment CEE group dedicates itself to modern waste management and is active in the environmentally friendly processing and treatment of highly diverse waste types, as well as operating collection yards.

With its own waste treatment plants, FCC controls the full value chain and relies on efficient and resource-saving processes. Our long-term customer relationships are based on partnership, transparency and quality. FCC Austria is equipped with an implemented quality, environmental and energy management system and – as an officially registered waste collector, processor and handler – FCC Austria guarantees legally compliant and environmentally conscious services.





# Service for the Future

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