

Frequently Asked Questions

Doesn't the introduction of cables or a duct in sanitation pipes disrupt the flow of water?

The EasyFiber® system was designed to use parts of the pipes' volume that are not used for the flow of water, or at least very sporadically. Indeed the EasyFiber® sheath is positioned in the upper part of the pipe, in an area that is normally not affected by the flow. The standards of network construction sanitation provide a reserve capacity enabling in theory for the pipes not to be filled by the flow to which they are sized. In reality the pipes may be filled, and the EasyFiber® system takes this possibility into account: the component parts have been shaped so that the estimated loss of charge is considered to be negligible for pipes, during tests ran in the Fluid Mechanics Laboratory of the ENSAM (Ecole Nationale Supérieure des Arts et Métiers) in Paris. Furthermore, the system doesn't require to install any material in the raft, which is the lower part of the pipe. This provision preserves the pipes' qualities of self-cleansing (phenomenon that sees the cleaning of sewers or sewerage pipes by the sole effect of the flows which occur by spontaneous drive of suspended wastewater when the flow rate is sufficient). The flow of effluent in the lower part, which is precisely where the settling of suspended solids happens, isn't made slower.

We therefore affirm that the introduction of EasyFiber® in sanitation pipes doesn't entail their hydraulic capacities.

Doesn't the EasyFiber® system hinder duct cleaning?

The EasyFiber® system is very robust. Tests were carried out under the expertise of major sanitation operators worldwide, which have shown EasyFiber®'s great resistance to the aggressive action of cleaning tools of all types. The jet cleaning systems, at pressures up to 250 bars, are completely harmless and can be used without restriction. Chain-type "root-cutting" mechanical systems have been tested. They are not recommended because of their extreme aggressiveness, but tests have shown that normal usage of these tools is not enough to endanger the system and EasyFiber® cables in it; actually, it appears that concrete pipes are attacked *before* the EasyFiber® sheath is damaged. The materials used are either very resistant, particularly for the ones made from hardened stainless steel clips, or soft enough, as for ducts cases which can absorb the impact of mechanical cleaning tools.

Does the EasyFiber® system work with all types of pipes?

Pipes of all diameters between 300mm and 800mm can be equipped whatever the constituent material of the ducts is. The FlexyFiber® technology comes to complete the scope of the concept, making it possible to equip ducts of smaller caliber – down to 100mm in diameter.

However, only the circular ducts (which means nearly all of the ducts)

are eligible for this technology. Similarly, we do not recommend equipping pipes that present serious structural disorders. The system can indifferently be installed in “unitary pipeline” (incorporating the wastewater and rainwater in the same pipe) or in a separating system (a pipe for rain water and another for wastewater).

The wastewater pipes from a separate sewer system are *a priori* not suitable (low section, permanent heavy fill) but in these conditions, there almost always is a parallel rainwater pipe.

Does the EasyFiber® system generate operating constraints?

The EasyFiber® technology was designed in partnership with a major sewerage operator specifically to take into account the constraints of waterworks and ensure none of the two uses (hydraulic and Telecom) are hindered and that both work without making intolerable constraints. Indeed the system was created to provide the minimum impact on water flow and does not justify increasing the frequency of cleaning, for instance. The monitoring of the water network is not impacted by the system. Telecom equipment are installed in plain sight in order to preserve access to pipelines by operating agents, and lines can usually be inspected by normal investigative means (direct eye-sight, cameras, periscopes, etc.). The ductwork can be cleaned without reservation with the most powerful jet-washing tools. Finally, the system is fully removable and can be taken out of the pipe in order to run a structural repair thereof when appropriate.

Is there any risk that the EasyFiber® system could cause blockages of the ducts?

The component parts of the EasyFiber system® are designed to show no roughness that may hold back material. The clips’ form has been designed in order for them to adhere completely to the wall as soon as they’re placed in the conduct.

Binding nuts on the clips of the duct are profiled with hydrodynamic forms not likely to retain any material. The assembly is firmly rooted at the head of each section and unlikely to be swept away by the tide of a storm, therefore clogging the pipe.

The system, installed in difficult conditions (pipes with a 45 degree slope in which the effluent is extremely quick) suffered major rainfall events for over a year without problem.

Won’t the cables suffer from the impacts caused by the elements carried in the water?

The cables are sheathed in HDPE (High Density Polyethylene) which provides additional mechanical protection to their own resistance to crushing. The system is securely attached to the head and bottom of each segment with an average of two anchors every 50 ml. This provision ensures that the system is not carried away by the storm and that effluents do not transmit mechanical stress to the cables.

Won’t the equipment installed in the manholes hinder the work of sewage workers?

The equipment installed in the manholes is pressed against the walls and their presence in manholes was reduced and contained within acceptable limits for hydraulic mining. The sheath which receives the cable is led along the perimeter walls in the manhole so as to clear the space necessary in the center for the operating personnel to work. The bevel gears have been specially designed to have a penetration of 145mm in the size of the manhole, for a radius of curvature of 200mm.

The diversion boxes are selected in the range of material available on the market, amongst the flattest ones, so as to have as small a footprint as possible and not jut out in front of the ladder's rungs, sealed in the walls.

How is the system going to grow old?

The materials that were selected to form the parts of the EasyFiber® system were already used for many years in wastewater treatment plants and we can ensure from feedback that aging damage does not happen before decades.

May the EasyFiber® system degrade the pipes?

The EasyFiber® concept was designed from the outset not to undermine the conduits' physical integrity. The sewerage systems are expensive to implement, they represent an important investment for communities. They are subject to mechanical stress due to pressure from overlying land and especially traffic road which generates vibrations that could lead them to ruin since the pipes are cracked. The EasyFiber system® does not include drilling or machining of pipes that would be a potential crack initiation. EasyFiber® system is fixed by its intrinsic elasticity, it is flexible and capable of deformation along with the pipes.

May the fitted pipes risk losing their seal?

The system does not include piercing of conduct that may impair their seal. The sealing of the ducts is important to ensure that they behave as conduits by letting water infiltration or they leak polluted water into the soil. The only piercings done are located in chimneys manholes above the plane load of books.

What if we must repair a pipe equipped with the system?

If disturbances occurred on the pipes (pert, crash, collapse of the centerpiece, etc. ..) and it were necessary to replace a section of pipe equipped with the EasyFiber system®, we would simply make a temporary optical cable bypass across the section as it is done usually in case of a damaged cable trench, and dismantle the EasyFiber® infrastructure. Once released from its moorings, it can indeed be extracted by simple traction. Work repairs can be carried out and it can then be reinstalled after the system work.

Is the system compatible with the technical rehabilitation of pipes?

The methods of re-lining can be implemented once the EasyFiber® system is installed. The latter will be confined between the pipe's wall and the liner after it has been pinned against the wall by the fluid pressure and polymerized.

Techniques by "shotcrete", by pushing or rolling elements of a strip are not compatible with the system but these technologies seem supplanted by lining, which has made great progress in recent years.

Does the installation of EasyFiber® bring constraints to users connected to the sewerage system?

The implementation of the EasyFiber system® can be performed without interruption of the water collection service. It is not necessary to deprive the residents that are connected of water and the use of evacuations. They will not suffer any inconvenience during the implementation of the system, on the contrary. Indeed, the alternative for

performing engineering would be detrimental to the peace and quiet (noise), their freedom of movement (restriction of movement, deviations), environment (pollution of air by earthworks), and their finances (participation by tax to the streets' repairs).

Is the system removable?

Systems EasyFiber® and FlexyFiber® are removable. This responds to problem of a possible change of all or part of a section of the pipe.

To do this, the anchors, located in manholes on both sides of the stretch concerned, are removed. As the sheath, nuts and mounting clips are secured; the whole device can then be extracted from the duct. The ducts are eventually returned to their original state.

What is the legal status of the equipment installed in the system?

All equipments installed with the EasyFiber® system are owned by the operator of telecom networks.

The Council of State determined that the sewerage networks are in the public domain. As such, operators have a right of way and must pay a capped occupancy charge.

The occupation by the operator of the public domain is the subject of an occupation permit in the form of either an agreement regarding the occupation of public off-road space or a highway permit regarding the occupation of public road space in accordance with Articles L.45 and L.47-1 of the CPCE.

What is the daily productivity of a team of installation?

The productivity of an installation team is estimated to an average of 150ml of pipe equipped per day (laying of the sheath, not including the drawing of the fiber).

This value must be compared to the performance of an engineering workshop where productivity is of about 50ml/day. The EasyFiber method® is three times faster. For large sites, it is possible to adopt an organization project which will increase substantially the daily productivity.

In environmental terms, it is worth noticing that at the end of each intervention, manholes of the sewerage network are closed and traffic is made entirely normal again for users.

Does the use of the EasyFiber® technology completely removes civil engineering?

The architecture of a sewerage system that meets the requirements of a slope watershed does not correspond systematically to the telecom network architecture which brings traffic to a hub equipment. Some civil works may be necessary to create links that do not exist at the sanitation network's level.

Civil engineering may also be necessary if parts of conduits are unusable (depending on their condition or type), in order to liaise between manholes.

Examples of implementation show that the amount of residual civil engineering is still very marginal.

Can the EasyFiber system® connect buildings?

The system is intended to EasyFiber® tubing diameter between 300 and 800mm. However, buildings are usually connected with lower diameter pipes. This is why theFlexyFiber® process was developed, that can be fitted to ducts of small cross section, up to 100mm in diameter. The method proposed by SOGETREL is an "end to end" solution based on two technologies, Additional EasyFiber® and FlexyFiber®.

Are all buildings connectable to the FlexyFiber® system?

All buildings are connectable by the FlexyFiber® process if their pipeline connection is accessible.

Inside the building, access to the pipeline is built. This access may be through a manhole or a hole in the pipe for the time of the connection works. This opening is then closed using a special room developed as part of the process that manages the output and the fixing of the cable telecommunications while recreating the tightness of the pipe. Outside the building, the raceway must end up in a manhole or a visitable gallery. The buildings connected to the sewerage system by tapping directly on the pipe are not connectable to the FlexyFiber® system.

How do I know if a line can be equipped?

First, we must ensure that the characteristics of the pipeline are compatible with EasyFiber® and / or FlexyFiber®'s process requirements. For this first approach, an investigation of the plans of the sewerage network and any relevant supporting documents optionally available (reports of interventions, televised reports of inspections lately) is necessary.

In a second phase, a broadcast inspection will reveal the status of ducts, and detect possible problems ("penetrating connections" for instance), which would prevent the passage of the robot.

The treatment of these anomalies leads to the restoration of the network until it can operate normally. Overall, the EasyFiber® project is an opportunity for a sanitation network check-up and can help prevent unexpected disturbances.

What are the benefits the system offers?

EasyFiber® and FlexyFiber® offer the opportunity to save at least 30% compared to the methods of conventional civil engineering. On sites of high volume it is possible to organize the site to improve productivity and increase benefits significantly, compared to civil engineering.

How do we manage the cohabitation between conduits' hydraulic and Telecom use?

An agreement between the owner of the sewerage network (which is generally the community), the operator (when it is not the community itself) and telecom operator (when it is not the community for its own Telecom needs) is made. This agreement governs the relationship between the three actors and defines responsibilities and the management of expenditure for the situation of cohabitation (occupancy fees, repairs, etc.)

What happens if an operator of the sewerage system damages Telecom cables ?

An agreement is made between the parties involved in the situation of cohabitation in sewerage systems (community, operators). This convention is based on the rules of occupation of public roads, it relies on highway permit to be requested by the operator, in accordance with Articles L.45 and L.47-1 of the CPCE, (the sewers are indeed regarded as dependencies of public roads as they drain Water trickling from floor). The convention obliges parties to ensure civil liability for damage caused to third parties. The operator will engage its guarantee towards the telecom operator regarding the damage it would cause to the cables.

Why is the system limited to ducts between 300 and 800mm in diameter?

EasyFiber® is intended for sewage pipes present in the public domain. The minimum diameter of these pipes is statutorily of 300mm at the head thereof when they constitute a network unit or when they collect rainwater in a separate network. The upper limit of the EasyFiber® method is a diameter of 800mm. Indeed, pipes of bigger diameter are accessible by a fitter and the fixing of the Telecom sheath is done by piercing and sealing the clamps. These operations do not hinder the strength or waterproofing of the ducts because the thickness of the latter is sufficient to support them. In addition to EasyFiber®, the FlexyFiber® process was developed to equip pipes with a diameter that is less than 300mm.

Does the system accept the presence of several cables?

The circulation of multiple cables is possible, within the capacity of the sheath placed in EasyFiber®.

The system relies on an EasyFiber® HDPE sheath (outside diameter: 32mm; thickness: 2.5mm or 2.9 mm) for the protection of telecom cables. These ducts are the same as those used in the work of civil engineering.

As a guide sheath EasyFiber® can receive one cable (capacity of 6 to 288 optical fibers) or up to 3x 144 optical fiber cables (total capacity of 432 optical fibers) or up to 3x 8/10mm vials, allowing the sharing of infrastructure and installation of 3x72 optical fiber micro cables (total capacity of 216 optical fibers)

Is it possible to hone cables after installation of a first cable?

Depending on the diameter of the first cable in the sheath, it is possible to hone additional EasyFiber® cables within the capacity limit of the sheath.

Is it possible to install various sheaths (or ducts) using the EasyFiber® method ?

The EasyFiber® method allows the placement of a single sheath, which may be piped through several vials.