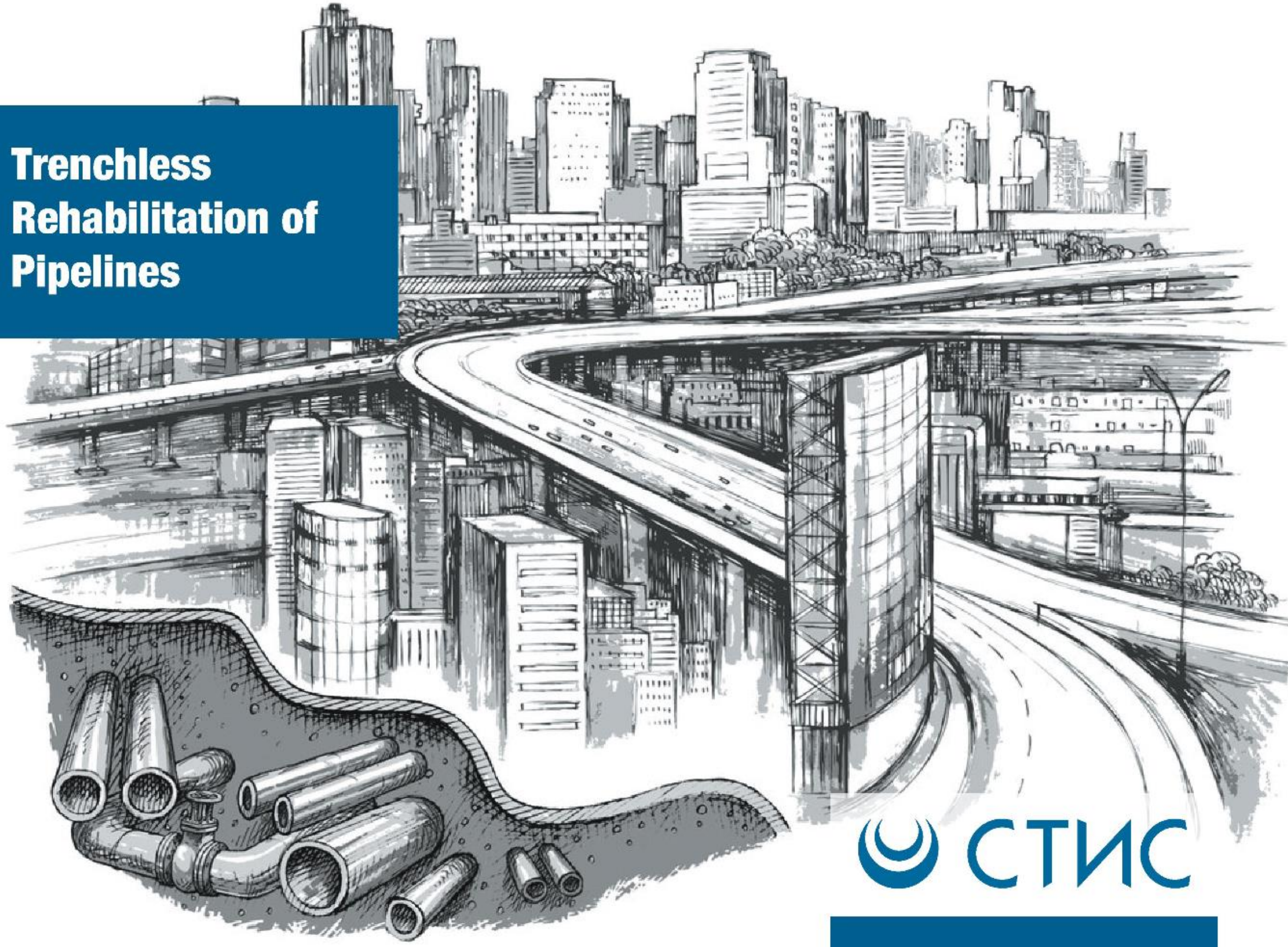
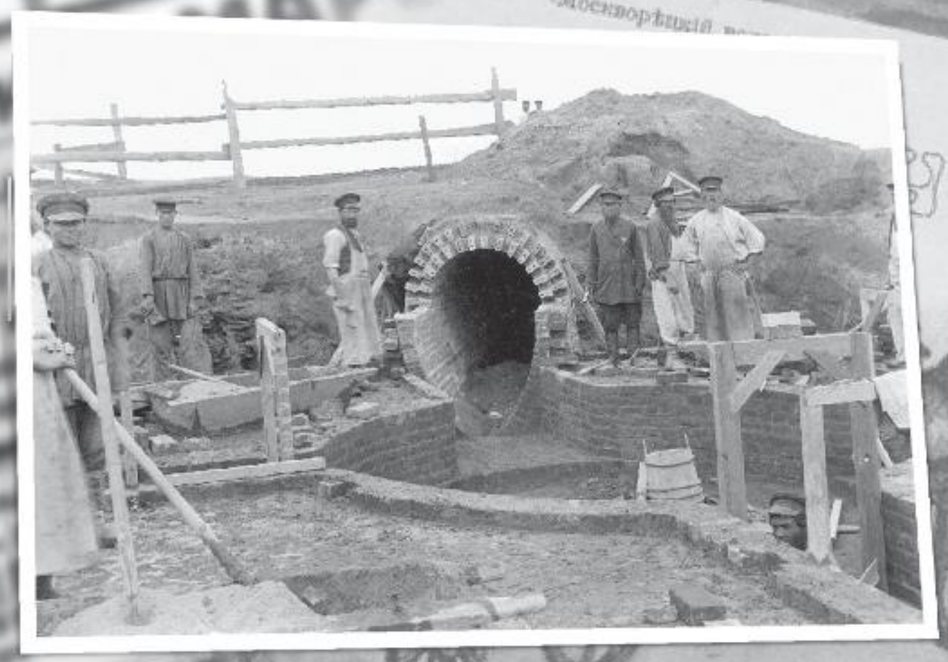
Trenchless Rehabilitation of Pipelines



СТИС



1367

The first Russian drain pipe laid from the central part of the Kremlin to the Moskva river dates back to 1367.

Pipeline transport in Russia began to develop intensively in the second half of the 20th century. Currently our country is among leaders in the length of underground pipelines.

But at the same time pipelines in Russia are quite worn-out. The most part of them is in operation with the wear degree of 70 per cent and more. The accident rate at these networks is high, and leaks lead to economic and environmental damage. The use of the traditional methods of pipeline repair can't remedy the situation, because it is connected with the execution of a significant amount of excavation work, cutting off traffic streams, road destruction and resurfacing, green plant damage and other difficulties. In this case the use of the trenchless technologies when reconstructing pipelines is the only possible solution.

ABOUT COMPANY

The efficient operation of industrial facilities and the quality of human life directly depend on the functioning of pipelines.

15 years on the market

manufacturing complexes with area of

The Production Firm STIS is an actively developing company offering a wide range of services in trenchless repair and construction of external water supply networks, sewer lines, hot water and steam pipelines as well as process pipelines of industrial enterprises.

Many years of experience and a number of successfully implemented projects have secured the company high authority in the field of trenchless technologies, as evidenced by numerous reviews of customers that made use of the company services.

The main competitive advantage of the company STIS is the top quality of pipeline rehabilitation and the high level of professionalism of the company employees.

>15000 m²

more than 100 pieces of special-purpose machines

This result is achieved thanks to its own manufacturing complex, scientific and technical center, modern fleet of special-purpose machines as well as the use of high-quality materials and high-tech equipment.

The complex approach allows the company STIS to ensure the lowest cost of pipeline rehabilitation and long-term efficient pipeline operation after completion of rehabilitation works.

The staff of the company possesses the required professional skills and expertise to achieve the best possible result within performed works and is ready to solve tasks of any complexity according to customer requirements.

STRATEGY

One of the key principles of the company STIS is the maximum efficient implementation of each component of the complex of works, which is required for a particular object. The deep synergy of all segments of the company is the key factor in the success of the enterprise and the quality assurance of the completed order.

All services provided by the company STIS, such as television inspection of pipelines, their cleaning, trenchless rehabilitation and laying of new pipelines, conform with the required regulations and are implemented on the basis of the permits and conformity certificates ISO 9001, 14001, OHSAS 18001, 50001.


KROLL
KROLLcombi

СТИС

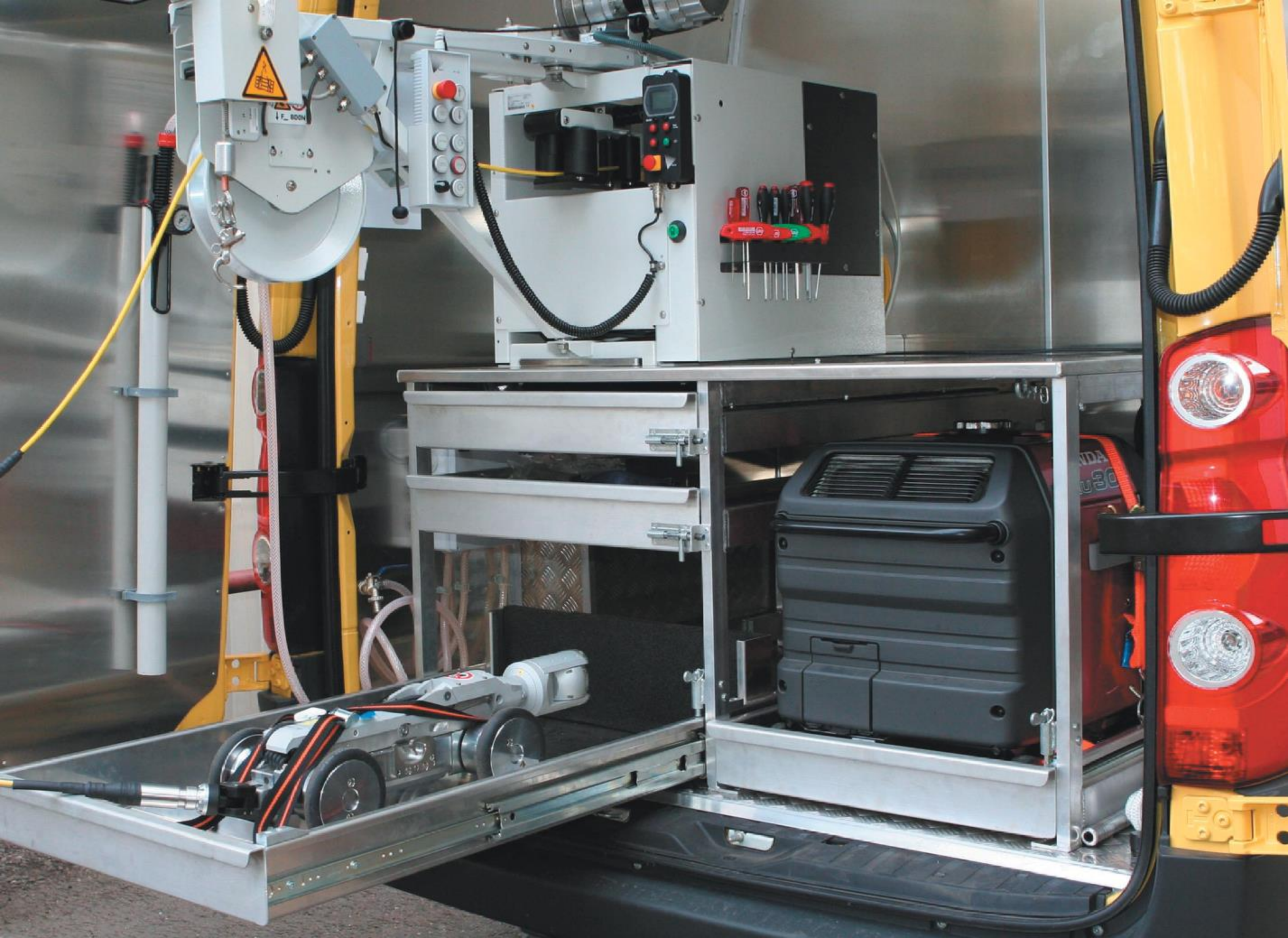
Television Inspection of Pipelines

To find an optimal solution concerning the nature and technology of forthcoming rehabilitation works on a pipeline the method of television inspection is used.

The TV inspection provides objective information on the state of the pipeline inner surface. As a result of the telemetry monitoring a video report is formed where the defects inside the pipeline, such as cracks, leaks, clogs, foreign objects, as well as the nature of damages and general condition are shown.

The company STIS performs the television inspection by means of modern multifunctional complexes that can inspect pipelines with various diameters. The complexes are equipped with the modern software that allows to conduct an analysis and to document the results of the television inspection.

The repeated control telemetry inspection is conducted after completion of the repair in order to show the results of the pipeline rehabilitation carried out by the company STIS to the customer.



Cleaning of Pipelines

One of the methods of the recovery of the pipeline system throughput capacity is its cleaning. An appropriate cleaning technology is chosen depending on specific characteristics of deposits.

HYDRODYNAMIC CLEANING

This technology allows to destroy and grind deposits with high-velocity water jets effectively.

The operation is performed using a set of special nozzles, which form jets and direct them onto the surface to be cleaned and create hydraulic reaction thrust for own motion with the hose through the pipe.

Some modifications of the hydraulic heads for pipelines with different diameters and different deposits are used as nozzles. The company STIS uses the nozzles of the renowned manufacturers USBDÜSEN and ENZtechnik to obtain the best result after deposit removal inside pipes.

The channel-washing complexes manufactured by the German company KROLL and installed on the special-purpose trucks possess the highest performance indicators and allow to solve any task concerning cleaning. The company STIS has ten trucks, and this allows to perform the works both for several customers, and within a single order with a significant amount of work.

The hydrodynamic method is effective when cleaning process pipelines of enterprises, sewer pipes.

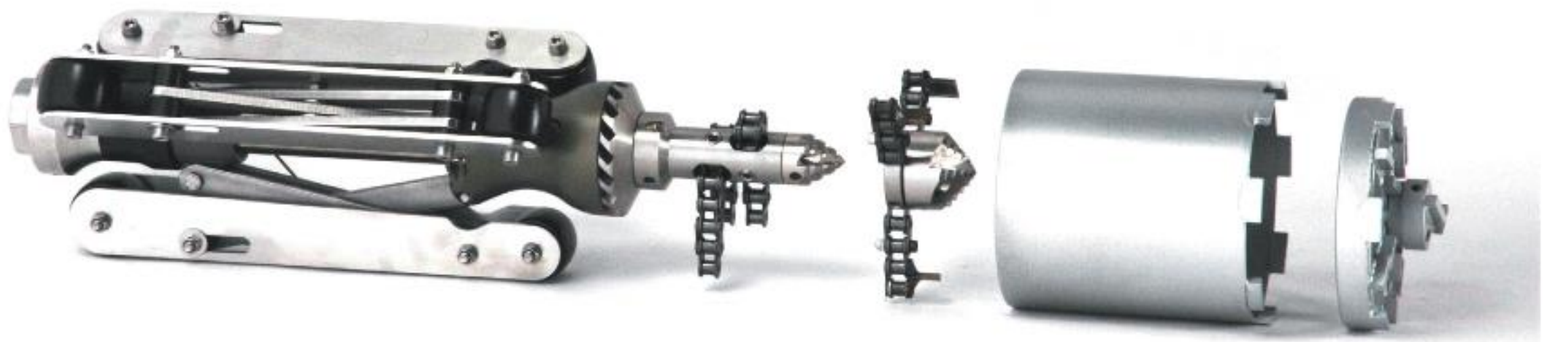
800 bar

400 l/min

СТИС

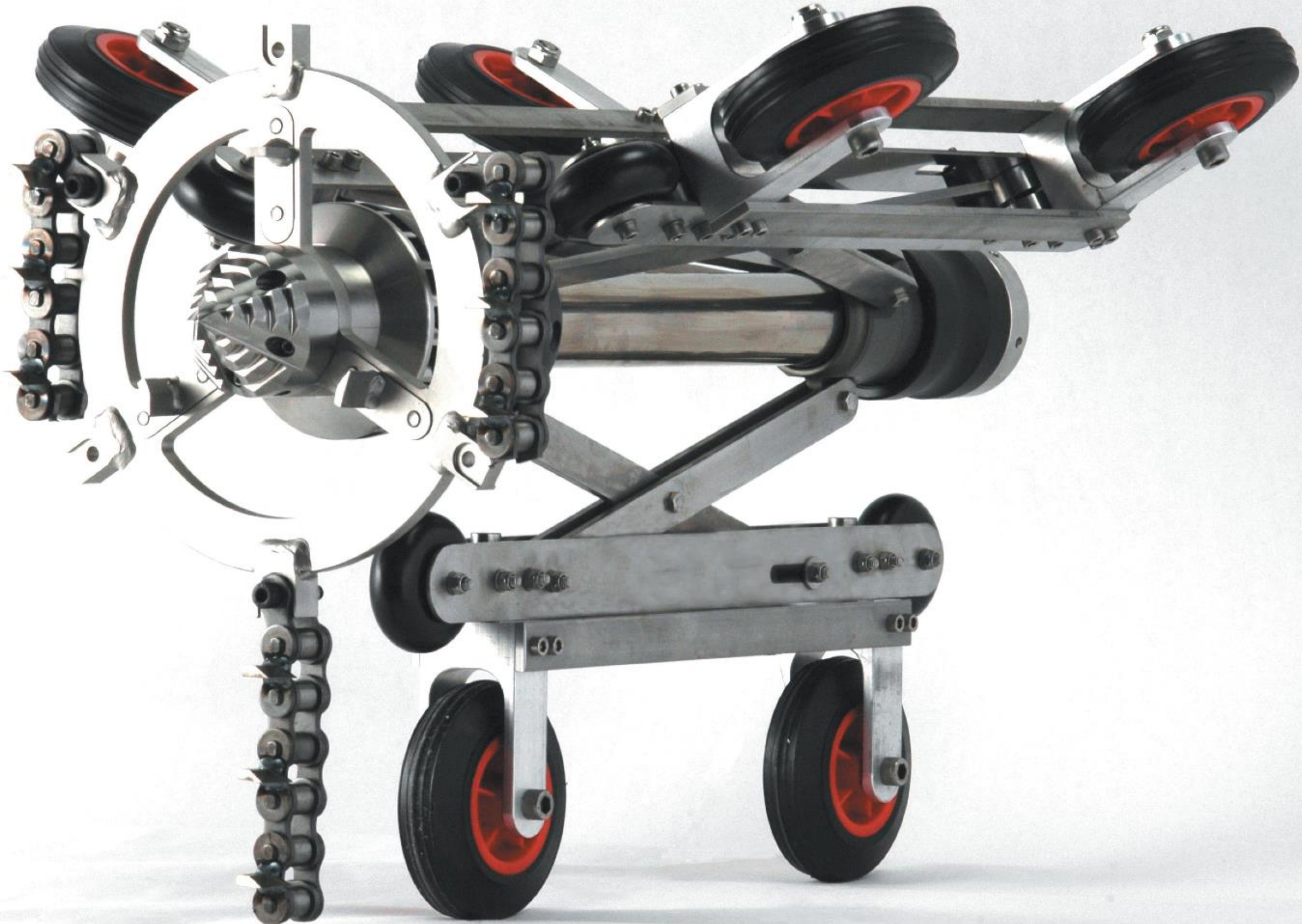
Cleaning of Pipelines

HYDROMILLING CLEANING



This technology is a modification of the hydrodynamic cleaning with the use of the hydraulic motor, that rotates mechanical hard-alloyed milling cutters, which destroy deposits with different hardness and thickness. The running speed through the fully encrusted pipe is 5-10m/h.

The cleaning nozzles and cleaning method are selected depending on the deposit particular characteristics. The technology allows to remove even ingrown contaminations without damaging the pipe structure, it is used for the objects, where other methods are not effective, for example, for process pipelines of enterprises of chemical and steel industries.



HYDROCAVITATION CLEANING

This method is used to remove deposits from the inner surface of pressure pipelines.

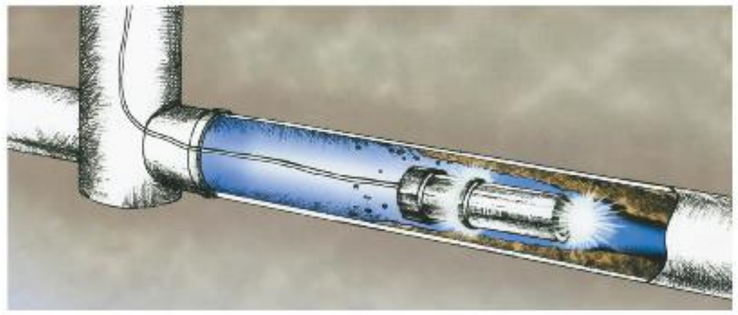
The self-contained cleaning device moves through the pipeline with the liquid that transports it. The cleaning is performed thanks to the cavitation effect arising when the water flow abruptly narrows at the point where the device passes. The technology provides the cleaning of pressure pipes with diameters from 100 to 1400 mm with deposit thickness up to 50 percent of the pipe diameter.

For inserting and removing the device the temporary and stationary launching and receiving traps are used. The speed of the cleaning is 0,5-1,5 km/h. The method allows to recover the designed throughput capacity of the pipeline fully.

СТИС

Cleaning of Pipelines

IMPACT CLEANING



The general principle of this technology consists in creating a local hydraulic impact in the pipe, that leads to the short-term increasing of the pipe diameter and separation of deposits from the walls. We use hydropneumatic cleaning: the hydraulic impact is created by pneumatic explosion caused by the impulsive discharge.

The pipeline cleaning technology based on the pneumatic explosion is used for the recovery of the pipeline throughput capacity, cleaning of gutters and chambers of pumping stations, for the recovery of the water well rate. The method is effective when cleaning steel, cast iron, reinforced concrete, ceramic, asbestos-cement tubes with a diameter up to 2000 mm.

The device moves through the pipes to be cleaned by reaction thrust. The devices do not require lubrication, they are environmentally safe.


SIGMA
KAESER
M 36
RAPID 480
MT 20

Cleaning of Pipelines

MECHANICAL CLEANING

On sites where the approach of heavy-duty special-purpose machines to the work site is restricted, the employees of the company STIS apply a set of the manual cleaning equipment.

Winches with different pulling characteristic are used for the cleaning of process pipelines depending on the complexity of blockages. The winch is used for the pulling and braking of different cleaning devices moving through a pipe.

For the cleaning of the internal communications of blocks of flats or single-family homes the mobile mechanized complexes manufactured by the company ROTHENBERGER are used, that allow to clean pipes with diameters from 25 to 200 mm.


THENBERGER
R600

СТИС

Repair
of Pipelines

TRENCHLESS REHABILITATION OF PIPELINES

Repair of pipelines using a polymer liner.

The method consists in inserting of a flexible polymer liner impregnated with a polymer composition into the damaged pipeline section. Then it is polymerized by supplying hot water or steam.

So when repairing pipelines using a liner inside the worn-out pipe a new polymer pipe is formed, it is tightly pressed to the inner surface of the main pipe and surpasses the old one in a number of characteristics. The liner is an independent construction and doesn't require adhesion to the inner surface of the pipeline.


diameter from 100 mm to 2200 mm

СТИС

Repair of Pipelines

The method of the trenchless pipeline rehabilitation using a polymer liner has a number of advantages in comparison with the traditional method of the replacement of damaged pipes:

- Minimal periods of execution of worksw
- Repair of communications is carried out without destroying the road surface and infrastructure, this is especially important when works are performed on the territory of industrial plants, if there are roads, railways, power lines, buildings, structures
- Rehabilitation of inverted syphons without emptying
- Reduction of heat losses during transportation of hot water or steam by 6-10 times in comparison with a steel pipe. As a consequence 0,3-0,4 kW of heat are saved per each square meter of the pipeline. This is because of the low heat conductivity of the polymer composition
- Reduction of the pipeline operation costs. Smooth inner surface and absence of deposits on the inner pipeline surface reduce the cost of electric energy when pumping the conveyed medium by 25-30%
- Increase of pipeline operation time. Guaranteed service time of the polymer liner is 50 years
- Rehabilitation of pipelines with various cross-sections (round, oval, rectangular, with non-standard diameters) with free passage through angles, rotations
- High mechanical characteristics, resistance to aggressive environments and microorganisms.

TRENCHLESS REHABILITATION OF PIPELINES

During the works different types of liners can be used

SOT-U

is used for the rehabilitation of pipelines with the temperature of the conveyed medium up to 50°C:

- domestic water supply pipelines
- pipelines for industrial use
- sewage pipelines
- pipelines for storm water
- pipelines for fire-extinguishing systems
- main pipelines

SOT-U-T

is used for the rehabilitation of pipelines with the temperature of the conveyed medium up to 160°C:

- domestic hot water supply pipelines
- industrial hot water supply pipelines
- heat pipelines
- steam pipelines

The standard construction of the liner is designed for the operating pressure of 1.6 MPa. Depending on the condition of the pipeline and its technical characteristics the operating pressure can be increased up to 3.0 MPa by reinforcing of the liner.

The hygiene certificates and certificates of conformity were obtained for all the liners.

СТИС

Repair
of Pipelines

METHOD OF PULLING WITH DESTRUCTION

For the rehabilitation of pipelines applying this method the company STIS uses one of the best-in-class plants GRUNDOBURST-1250G. It is designed solely for rehabilitation of buried pipelines.

Thanks to hydraulic pressure produced by the plant the new pre-welded polyethylene pipe strings with smaller diameter are pulled into the old pipes. The maximum pulling-in speed is 120 meters per hour. This technology is also called “pipe-in-pipe”, that reflects its essence. The method allows also to carry out the rehabilitation works on pipelines with increasing the pipe diameter up to 30% when needed.


GRUNDOBURST
1250G

Rehabilitation of Sewage Collectors

СТИС

REHABILITATION OF SEWAGE COLLECTORS WITHOUT INTERRAPTING SEWAGE FLOWS

The scope is gravity sewage collectors.

The method consists in pulling of a new polyethylene pipe into the existing collector. For carrying out the works the technological pits are required. The diversion of sewage flows (interrupting the operation of the collector) is not required. In spite of the fact that the rehabilitated section has a smaller passage section, the throughput does not decrease significantly because of the smooth inner layer of the polyethylene pipe and absence of the possibility of outgrowth appearing in future.

The new pipe has a high ring stiffness that guarantees the integrity of the collector in cases of destruction of the old pipeline.

Rehabilitation of Sewage Collectors

СТИС

HORIZONTAL DIRECTIONAL DRILLING

The process of the horizontal directional drilling is accomplished in several stages. At the first stage the directional drilling of a pilot hole with a small diameter is performed with a special drilling machine equipped with a steering system along the determined trajectory from the surface. At the second and third stages the hole is enlarged to a specified diameter by back reaming and a string of the welded service pipeline is pulled into this hole. When drilling the hole is filled with the drilling mud which cools the tool and strengthen the hole walls.

The company STIS has the HDD machine Vermeer Navigator D16x22a which allows to lay pipelines with a diameter up to 450 mm.

MICROTUNNELLING

The trenchless method of collector construction is applied within a dense urban area and on the territory of industrial plants. This technology does not require the presence of traditional trenches along the entire length of the future pipeline route, that allows to minimize the impact on the environment and customary life of the city during the construction. The essence of the method is that the pipe laying in the ground is performed by a microtunneling shield, that allows to construct new pipelines with diameters from 1000 up to 4000mm.

Permits

36 patented developments


СЕРТИФИКАТ СООТВЕТСТВИЯ
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"Производственная фирма "СТИС"
ЭнергоСистема
СЕРТИФИКАТ СООТВЕТСТВИЯ
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ГОСТ Р 54934-2012 (OHSAS 18001:2007)
СТИС

Feedback

ГАЗПРОМ
ОТКРЫТОЕ АКЦИОНЕРНОЕ ОБЩЕСТВО

The quality of the work of the company OOO PF STIS is highly commendable, and the gas processing plant is interested in further cooperation with the firm.

Director V.V. Bedin

OOO PF STIS has been successfully carrying out the works for cleaning, television inspection and trenchless rehabilitation of pipelines on sites of the enterprise for several years.

Director S.A. Molchanov

РЖД Российские железные дороги

The Production Firm STIS regularly performs the works for the trenchless repair of external water supply networks using the method of inserting the liner SOT-U. The Directorate for Heat and Water Supply System of Severnaya Railway commends the executed works, and plans to continue the cooperation with OOO PF STIS, taking into consideration wide opportunities for the use of this technology.

Chief Engineer D.L. Andreev

ЛУКОЙЛ
НЕФТЯНАЯ КОМПАНИЯ

The Production Firm STIS successfully performs the capital repair of the soil system networks using a trenchless technology.

Head of the Department For Water and Sewer Lines and Waste Water Treatment V.S. Vrublevsky

We thank for the timely and qualitative repair of the networks at our enterprise and hope for further cooperation.

Acting Chief Mechanic S.V. Stepanov

ПромВодоКанал
Общество с ограниченной ответственностью

OOO PF STIS has been successfully executing the works for cleaning, television inspection and trenchless rehabilitation of pipelines for OOO PromVodoKanal for several years. We commend the work of the company OOO PF STIS and have an interest in further cooperation in trenchless rehabilitation of pipelines.

Director S.V. Gavrilyuk

The management of OAO YaroslavlVodokanal commends the work of OOO PF STIS and is interested in further cooperation on issues rehabilitation of external utility networks.

Deputy Director General for Capital Construction V.A. Sharov

Feedback

САТУРН
НАУЧНО-ПРОИЗВОДСТВЕННОЕ ОБЪЕДИНЕНИЕ

In September 2015 the Production Firm STIS executed the works for emergency repair of a drinking water pipeline at OAO NPO Saturn, that passes under the traffic way of the Lenin Avenue in Rybinsk. The works were executed using a trenchless technology without cutting the road surface. The Production Firm STIS possessing a full set of modern equipment and advanced technologies, as well as qualified staff, promptly executed the high-quality work.

Chief Power Engineer Y.A. Grunichev

НИЖЕГОРОДСКИЙ ВОДОКАНАЛ

The Production Firm STIS executed the capital trenchless repair of water pipelines, using the method of inserting the polymer liner SOT-U on sites of OAO Nizhegorodsky Vodokanal. OAO Nizhegorodsky Vodokanal commends the effectiveness of the application of this method for pipeline rehabilitation and expresses its intent to increase the volume of works for capital repair of the external networks of the water pipeline and sewerage executed by OOO PF STIS.

Director for Operation of Networks and Facilities Ch.I. Dziminskas

26 cities

of pipelines are repaired **500** KM

Saint-Petersburg
Petrozavodsk
Volkhov
Mirny
Solvychegodsk
Cherepovets
Rybinsk
Yaroslavl
Bryansk
Moscow
Ivanovo
Kolomna
Ukhta
Lipetsk
Nizhny Novgorod
Vyksa
Voronezh
Perm
RUSSIA
Surgut
Naberezhnye Chelny
Krasnodar
Salavat
Orenburg
Astrakhan
Atyrau
KAZAKHSTAN
Shymkent