



HYDRO

ECOSYS HYDROTIGHT

hightech piping system for a secure supply of water



ZEROWATERLOSS
vonroll-hydro.world

Systems for security and quality

For the operation of piping systems in the water supply area, reliable systems solutions with a long service life are required.

Only such solutions offer both operators and users the highest level of **supply reliability and functional and investment security**.

Today, the security of our water supply goes without saying. Water can be consumed everywhere and at any time of the day.

Functional security and corrosion-protection are the main criteria when judging piping systems. They have to function reliably and continuously, independent of where they are used or the nature of the ground they are buried in.

The economics of piping systems are not influenced by the pipe price itself but rather by taking the costs incurred during the system's operational life as a whole into consideration. From this point of view, **security of investment** is much higher for mature systems.

As the only Swiss manufacturer of complete piping systems in ductile cast iron, vonRoll hydro develops, manufactures and sells the modular, perfectly matched vonRoll ECOSYS full-protection piping system that meets all demands of water and gas supply in the communal area.

Our basic duty is to establish the idea that the availability of water is a primary human right.



Leading compound materials technology



Swiss connection technology with system



Fast and economic pipe-laying



Secure investments



Swiss manufacturing competence



High availability for Swiss quality products

The vonRoll ECOSYS full-protection piping system today already meets all tomorrow's requirements.

The vonRoll ECOPUR pipe, made of unbreakable ductile cast-iron, forms the basis of the system. It is coated inside and outside with corrosion-resistant, smooth polyurethane (PUR). The pipes, which are manufactured using a centrifugal casting process, are highly stable mechanically but are still elastic. vonRoll hydro has a unique, well-tried PUR coating process at its disposal that guarantees

top bonding characteristics on ductile castings and porefree coating surfaces.

The complete vonRoll ECOSYS system includes vonRoll ECOPUR pipes and vonRoll ECOFIT fittings. The product range is enhanced with multifunctional hydrants – these can be fitted with electronic leak detection and permanent piping-network monitoring. All these components are perfectly fitted together using our own connection technology.

System components and connection technology have been specifically developed to meet the high user quality requirements and thus simplify installation in the very heterogeneous topography.

The main components are manufactured using modern equipment at our facilities in Choindex, Wetzlar and Oensingen.



Complete range of fittings



leading hydrants technology



Valves for long-term security



Comprehensive customer service

Long-term corrosion prevention and drinking water protection

Long-term corrosion prevention

The smooth external PUR coating permanently protects the pipes from mechanical and chemical damage. The integral PUR coating provides full protection against electrocorrosion that can arise from neighbouring reinforced-concrete foundations or inhomogeneous bedding.

Due to the electrically insulating pipe connections, each pipe forms a galvanic island in itself and is therefore not electrically conductive.

The PUR coating provides passive corrosion prevention that is maintained throughout the life of the pipe.

Embedment in all sorts of soil

The PUR coating is immune to aggressive soils and is suitable for both neutral, acidic or heterogeneous substrates. Just one type of pipe for all sorts of soil also reduces storage costs.

Protection of drinking water

The hydraulically smooth PUR internal lining is hygienic and prevents incrustations forming on its surface. The amount of disinfectants needed can be reduced dramatically.

Suitable for all qualities of water

The PUR lining is perfectly suitable for soft, neutral and hard water. It is resistant to solvents and scale formation. Also, the internal lining is not susceptible to abrasion. In this way, this full-protection piping system can be used for all water qualities, even saving maintenance costs at the same time.

Maximum net work performance

The absolutely smooth surface with minimum flow resistance ensures best flow performance along with low pumping effort and energy consumption, thus keeping operating costs low.

In comparison with other materials, smaller pipe diameters can be chosen or increased capacity reserves can be enjoyed.

Advantages of PUR

- Long service life
- Complete corrosion prevention
- 100% application area
- Reduced storage costs
- Hygienic
- Excellent flow properties
- Saves maintenance costs
- Lower operating costs

	Coating	Lining	Restrained joint
System 1	Passiv protection (ECOPUR)	Polyurethane	Typ 1: external by friction (Fig. 2806)
System 2	Passiv protection (ECOPUR)	Polyurethane	Typ 2: internal by friction (Fig. 2807)
System 3	Activ protection (DUCPUR)	Polyurethane	Typ 3: internal by friction (Fig. 2807)
System 4	Passiv protection (Zinc + PE)	Cement	Typ 4: internal by friction
System 5	Activ protection (Zinc + cement)	Cement	Typ 5: internal mechanical
System 6	Activ protection (Zinc-Alu + finishing layer)	Cement	Typ 6: internal mechanical
System 7	Activ protection (Zinc + cement)	Cement	Typ 7: internal mechanical

Tab. 2 Type of ductile iron pipes and restrained joints DN 150 used for the test

The vonRoll systems (1, 2 and 3) have the highest level of resistivity and then are considered as electrical isolated connections.

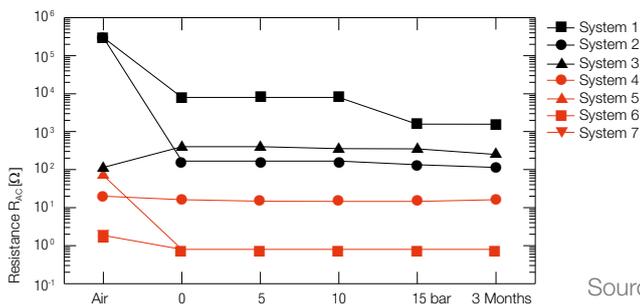
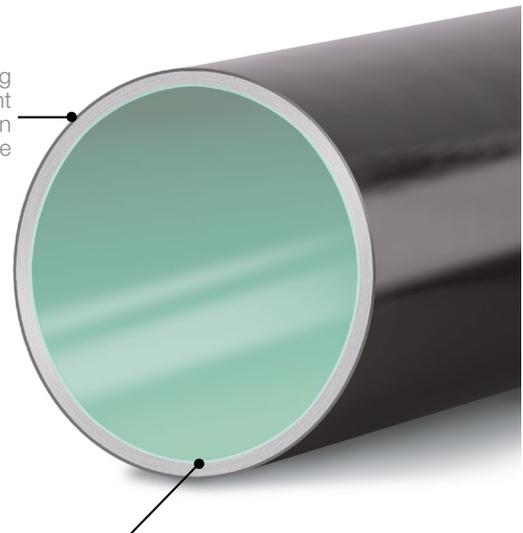


Fig. 4 Graphics about the resistivity of the different systems depending of the internal pressure in the time

PUR external coating
corrosion-resistant
high adhesion
impact-resistance



PUR lining inside:
corrosion-resistant
high adhesion
hygienic
abrasion-resistant

Source: Writing by SGK in the swiss magazine Aqua & Gaz 6/2013 : concepts and protection measures against the corrosion of the water pipeline

Tough all-rounders

Leading-edge compound materials technology

The combination of ductile cast-iron and PUR boasts excellent mechanical characteristics. The very best characteristics of PUR and ductile iron are permanently united.

In urban areas with increasing demands, this compound material turns out to be ideal. The service life of the piping system is thus lengthened considerably.

Unbreakable ductile iron

In ductile iron, the embedded graphite has a spherical shape. This special structure gives ductile iron the elasticity and durability that enable them to take up the loads of traffic, ground subsidence, lateral pressure and shocks. Ductile iron are also fire resistant, so that in the case of tunnel fires, the availability of water for fighting fires is guaranteed.

Robust polyurethane (PUR)

The mechanical and chemical stability of PUR is particularly high as the macro-molecules of this plastic are interconnected in three dimensions. PUR is shockresistant and exhibits no cold fluency. The adhesion between the PUR lining and the ductile iron is checked every day in our laboratory and certified twice a year by the external body MPA NRW.

Advantages:

- Long operational life
- Compensation of ground movements
- High mechanical stability
- Suitable for high operating pressures
- Problem-free cutting and drilling
- Raw material 100% recycled iron, recyclable!



Special applications

Rescue tunnels place the highest requirements on the mechanical stability of suspended pipework, on safety aspects in the case of fire and on flow performance – criteria that are met by vonRoll ECOPUR pipes in the best possible way.

vonRoll ROCK pressure pipes with rock-protection jacket are outstandingly suitable for use in rocky ground; the jacket protects the pipe from being damaged by rocks when filling in.

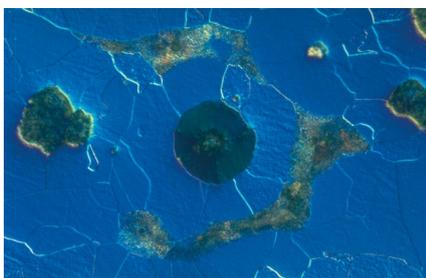
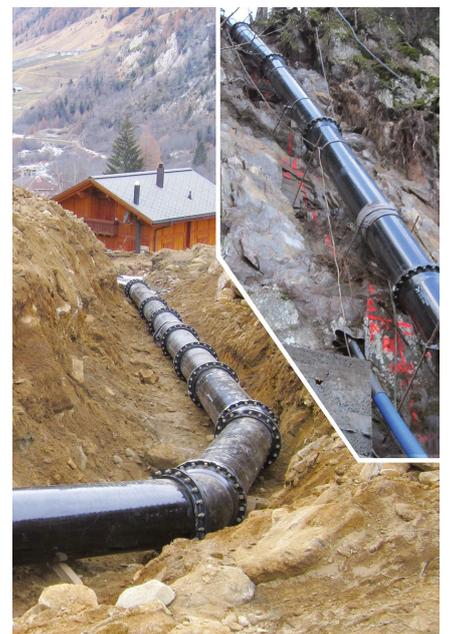


Image source fire brigade Dietikon



Connection with system

Fast site work

As far as making connections with rubber gasket is concerned, secure fastening is important on the one hand and economics on the other. vonRoll HYDROTIGHT connection system – proven in thousands of installations – with its internal and external restrained joint enables fast progress to be made and reliably connects water pipework to form a complete tailor-made system.



Security is important

Restrained joint takes up longitudinal forces. A decisive factor for the security of the connections is the clear separation of tightness and restraining functions.

No more concrete anchor blocks

Longitudinal forces and those associated with changes of direction in mains piping are taken up by vonRoll restrained joint at high pressures. The costly provision of concrete anchor blocks is no longer necessary. Narrower trenches can be dug



Shorter installation time and high degree of flexibility

The pipes and fittings are quickly connected together using vonRoll's Universal laying tool. With the subsequent backwards movement, the teeth of the internal restrained joint bite into the pipe. The tooth segments of the external restraint clamp are activated by tightening screws. A suitable accu screwdriver speeds up the tightening operation and makes installation easy. The connection can easily be released by unscrewing the screws again, which leads to increased flexibility when laying pipes.

Advantages

- Well-ried and secure connection technology
- Fast and flexible installation
- Easy dismounting of the restraint clamps Fig. 2806
- High savings as concrete anchors are no longer needed
- Narrower trenches can be dug



External restrained joint Fig. 2806

- with single and double chambers
- Secure and easy to use
 - Simple and flexible mounting

DN 80 to 400, up to PFA 100

▲ Internal restrained joint Fig. 2807

- with double chambers
- Secure and cheap
 - Simple and fast mounting

DN 80 to 400, up to PFA 40

Uncomplicated, fast, low-cost pipe-laying

The requirements placed on piping systems are constantly getting more and more stringent

In towns and cities, space is getting rare and time is running low. In urban areas, water supply and wastewater systems lie close to each other in the ground.

Traffic must be interrupted or disturbed as little as possible. Out of town, long distances have to be bridged. Here, handling, transport costs and compensation for land damage are important factors.

Installation without digging trenches

Installing pipelines without digging trenches is often the optimal solution when having to tunnel, build siphons or for installations in urban locations. On account of their high loading capacity, vonRoll ECOPUR ductile cast-iron pipes are especially well suited to trench-free pipeline construction. The exterior coating in PUR is extremely robust from the mechanical point of view and its bonding to the cast-iron surface is excellent.



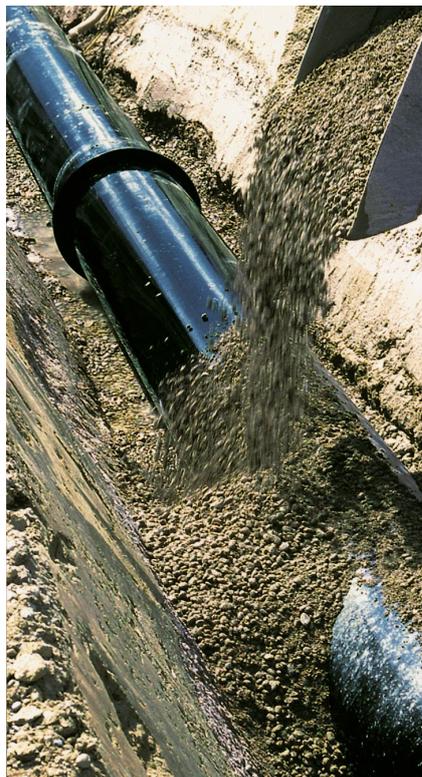
The vonRoll ECOPUR pipe offers decisive advantages for both application areas.

Independent of the weather

Independent of energy sources, weather conditions and temperature, the pipes and fittings can be fitted together using the laying tool. The compact vonRoll ECOPUR pipe can be laid in narrower trenches.

No-problem bedding-in

The sturdy vonRoll ECOPUR pipe requires no special bedding. The pipes can be bedded-in without problems using appropriate excavation material. Expensive gravel beds are not needed. This also saves transport and building costs. The sturdy and impact-resistant PUR coating stands up to even the hardest pipe-laying conditions.



Flexible thanks to deflection tolerance

Our connection technology allows pipe deflections of up to 5 degrees without restrained joint and 3 degrees with.

Pipe-laying made easy

When piping is laid in urban environments, space in trenches gets tight. Often, pipes have to be cut to size or fitted with house mains connections. Shortening vonRoll ECOPUR pipes to the required length presents no problems and can be done without peeling and without damaging the PUR coating. Tapping for a house connection is just as easy.

Advantages

- Faster and cheaper pipe-laying
- Installation independent of weather conditions
- Excavated material can be re-used
- Flexible pipeline deviation
- No peeling of the outside coating
- Problem-free shortening
- Simple house connections



The cheapest way in the short and long term

High degree

Protected investments

The overall consideration of costs incurred during the system's service life is important when examining the economics of a piping system.

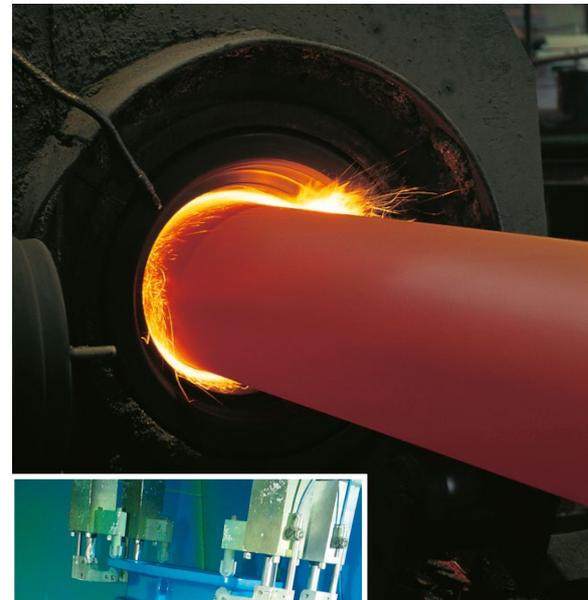
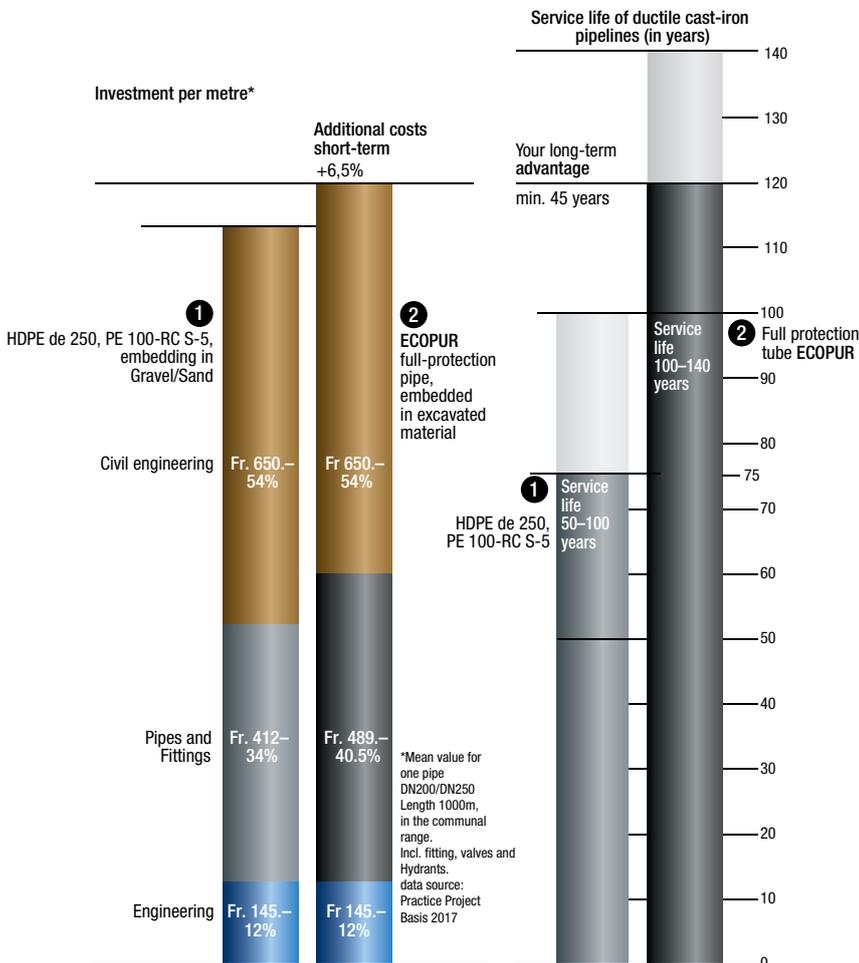
The vonRoll ECOSYS full-protection piping system costs a little more when you buy it, but is the cheapest solution in the short term because of lower pipe-laying costs and, in the long term, because of its longer service life. In the long term, this has positive effects on your investment budget.

Competence in manufacturing

Ductile castings are made to more than 100% from recycled material.

Fully automated centrifugal casting equipment produces up to 25'000 tons of ductile cast-iron pipes a year in diameters of DN 80 to DN 700 with a length of 6 meters. Afterwards, the pipes are coated with PUR inside and outside.

In Oensingen, up to 31'000 valves and 6'000 hydrants are produced every year. The fittings are coated with a thick film of epoxide resin to GSK (association for heavy corrosion protection) standards in a powder-coating plant.



of availability of Swiss quality products for demanding customers

High manufacturing quality and availability from our own works

As the only supplier in Switzerland, vonRoll hydro 320 employees develop and produce the main components of our systems such as ductile cast-iron piping, valves and hydrants in our own manufacturing facilities. In this way, we can guarantee our customers not only system security and high quality but also fast and reliable delivery.



Environment-friendly materials and workmanship

For the production of ductile cast iron we use more than 90% recycled scrap. At the end of their service life, the pipes themselves can be 100% recycled. The use of gas and electricity helps reduce CO2 emissions. The solvent-free PUR coating process also helps us take care of the environment.



Continuous quality

During the manufacturing process, product quality is monitored continuously. Periodically external audits are carried out by the laboratory for material testing MPA NRW.

Approvals and certificates

- SVGW certificate
- DVGW certificate
- Conformity to EN 545
- Lining PUR according to EN 15655 and coating PUR according to EN 15189
- MPA tests on PUR adherence
- ISO 9001 QS certificate
- ISO 14001 environmental management certificate



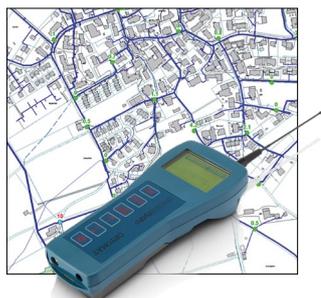
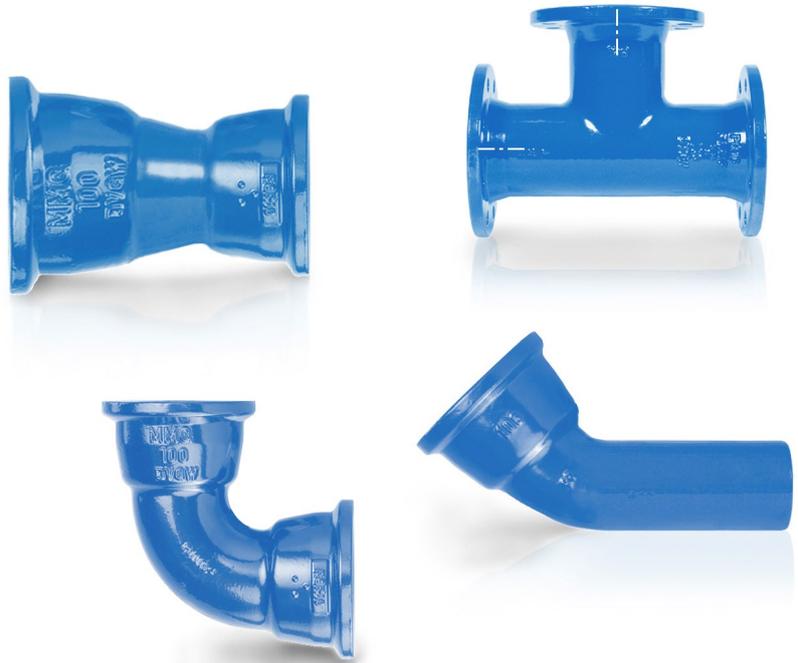
Complete Piping systems from one supplier

Fittings that fit needs of practice

Just connecting pipes together doesn't make a mains network. Every piping system needs a selection of just a few types of fittings that offer the user flexibility in planning and pipelaying.

The fittings have to fit the type of pipe chosen and be of the same quality.

Under the vonRoll ECOFIT label, vonRoll hydro can supply a comprehensive range of fittings in ductile cast-iron with integral epoxide coating that offer the same performance as the vonRoll ECOPUR pipes.



ORTOMAT
The world's leading leakage detection system

leading hydrant technology

High-performance, easy-to-use, maintenance-free and easy to install, as well as being pleasing to the eye, are the main criteria to be considered when developing new hydrants. When fitted with sensors, hydrants can become part of an intelligent network that offers additional functionality such as the early detection of leaks in water piping.

Since 1896, vonRoll hydro has developed and produced hydrants, in particular for the Swiss market.

Today's leading HYTEC and CLASSIC hydrants combine latest technological advances with many years of practical experience. It is this combination that has made vonRoll hydro the leading hydrant manufacturer in Switzerland.

Valves for long-term security

Valves must meet especially strict requirements as far as safety and corrosion prevention are concerned and exhibit the same quality characteristics as piping systems. Today, flexible solutions from a single supplier are asked for.

Apart from well-known products like pipes and fittings, vonRoll hydro can also supply a wide range of valves for the water and gas supply industry that leave nothing to be desired. The valves are permanently protected both inside and outside with an integral thick epoxy resin coating.



The vonRoll ECOSYS full-protection piping system meets all the requirements of a sustainable and secure water and gas supply.

Common quality characteristics of system components

- Long service life
- Integrated protection against electrical corrosion
- Immunity to aggressive soils
- Excellent hygienic properties
- Prevent incrustation and abrasion
- Universal use for soft, neutral and hard water as well as for gas
- Minimal flow resistance and optimal flow rate
- Resistance to shock, pressure and vibration
- Standardised sealing and restraint-clamping systems
- Cheap and user-friendly pipe-laying and operation



The right solution for every job



HYDRO

Ask for system competence

Today, customers are looking for a competent system supplier, who provides solutions and offers support for all types of tasks.

vonRoll hydro unusually high level of competence is the result of many years of experience in the development, manufacture and application of piping systems. It's worth asking us for advice and making use of our experience. Ask for solutions that are tailored to your own needs – from a single supplier.

Ask also for informations about our vonRoll DUCPUR pipes and vonRoll GEOPUR sewerage pipes.

Ask for advice

We regularly organise information events and training on piping systems, materials and pipe-laying in our factories or even at our customers' own facilities.

Our customer services can carry out soil analyses for you, calculate pressure drops in piping networks or provide professional advice on the use of particular products. Further services offered include inspection and maintenance, leak detection and refurbishment of hydrants.

Our sales representatives give advice during the purchasing process and provide support during the installation and commissioning of piping systems.

Demand security of supply

All types of pipes, valves, fittings and hydrants in all common sizes are available ex-stock in vonRoll hydro delivery store and in the sales stores of most plumbing and steel traders. This guarantees a high level of product availability for water supply industry – both in the long term as well as in the case of emergencies.



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