

WEHOLITE SPIRO



Versatile lightweight pipe system
for gravity and low-pressure applications



Now manufactured in Oman under licence of **M/s KWH PIPE** Finland by

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Polyethylene is recognised by clients and engineering consultants alike as the ideal pipe material for many pressure and non-pressure applications from water distribution to gravity sewers, rehabilitation projects and manholes, as well as marine pipeline applications.

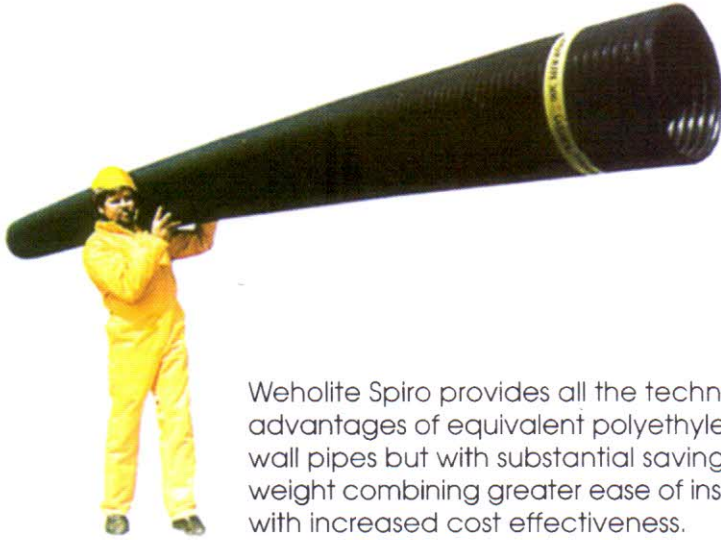
Recognising clients' needs for large diameter lightweight low-pressure pipes and fittings, KWH Pipe Ltd. developed Weholite Spiro, a pipe constructed using a patented structured wall process, making it possible to manufacture diameters up to 3000 mm.

Polyethylene has outstanding advantages over conventional materials, such as:

- *corrosion resistance*
- *non toxic*
- *long service life*
- *light weight*
- *flexibility*
- *impact strength*
- *weldability*
- *abrasion resistance*

Physical properties for Weholite pipe (+20 °C)

Property	Unit	Value
Density	kg/m ³	>930
E-modulus (short term)	N/mm ²	800
Thermal linear expansion coefficient	mm/m°C	0.2
Thermal conductivity	W/m°C	0.3-0.4
Ring stiffness short term	kN/m ²	>4
Long-term temperature of the pipe medium	°C	+45
Short-term temperature of the pipe medium	°C	+80

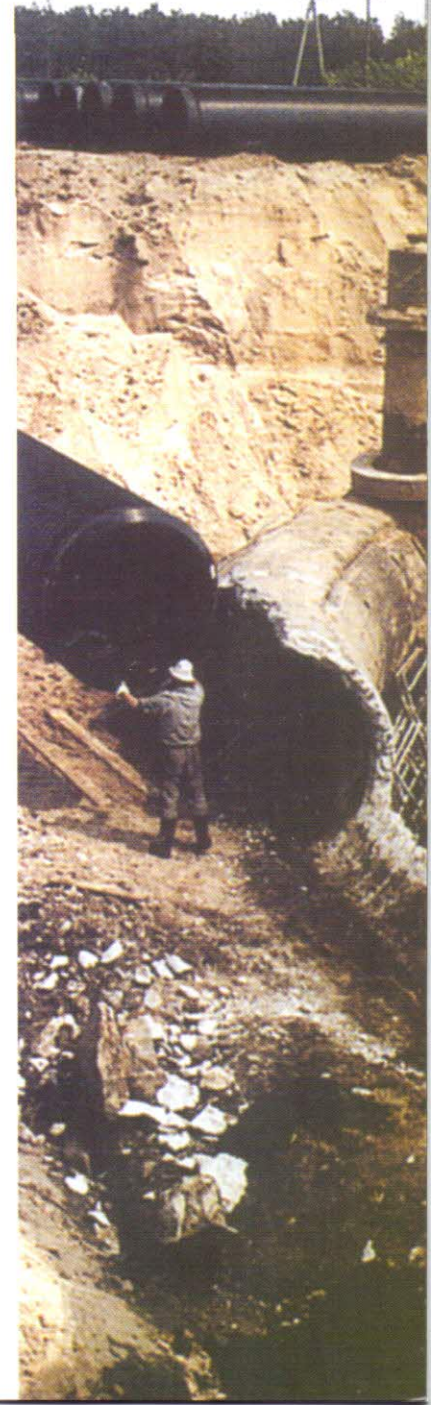


Weholite Spiro provides all the technical advantages of equivalent polyethylene solid wall pipes but with substantial savings in weight combining greater ease of installation with increased cost effectiveness.

Weholite Spiro pipe represents the latest advances in both material and manufacturing techniques. Its unique structure can offer a range of pipe sizes and ring stiffness, depending on customer requirements. Raw material properties and product technology have been combined to provide a lightweight engineered pipe with superior loading capacity for various applications in municipal, industrial, road construction, rehabilitation and marine pipeline applications.

Weholite Spiro is today manufactured in Europe at our main factory in Finland as well as in Sweden, Poland, Denmark, and Portugal. We currently have production facilities in Canada, India, Malaysia and Thailand. KWH Pipe Ltd. has granted manufacturing licenses to UK, Italy, South Africa and Oman.

For technical advice and information please contact your local KWH Pipe office.



Product program

Pipe dimensions

NS = di mm	de mm	Do	M
280	315	350	173
360	400	438	220
400	450	488	248
500	560	602	308
600	675	715	371
700	790	830	438
800	900	944	450
1000	1125	1170	550
1200	1350	1395	550
1400	1575		
1500	1680		
1600	1792		
1800	2016		
2000	2240		
2200	2464		
2400	2688		
2500	2800		
2600	2912		
2800	3136		
3000	3360		

NS=di=nominal size=inside diameter

de=outside diameter

Do=max outside diameter of socket

M=installation depth

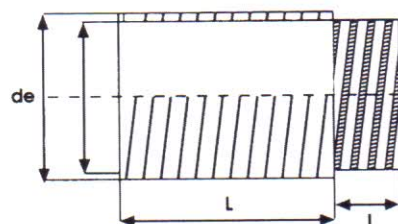
L=standard (effective) length

- pipe with socket 6 and 12 m

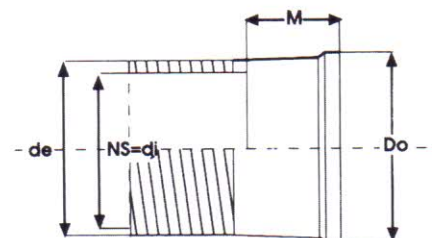
- pipe with threaded joint 5,8 and 11,8 m

l = length of threaded joint = 0,2 m

Threaded joint

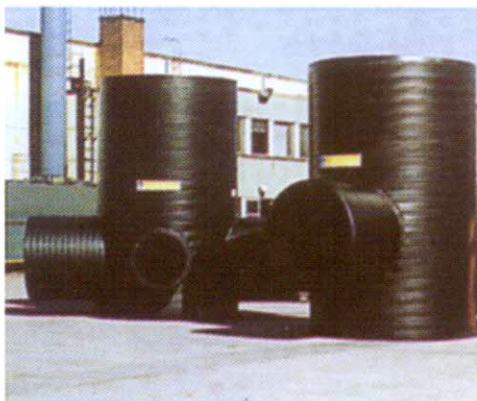
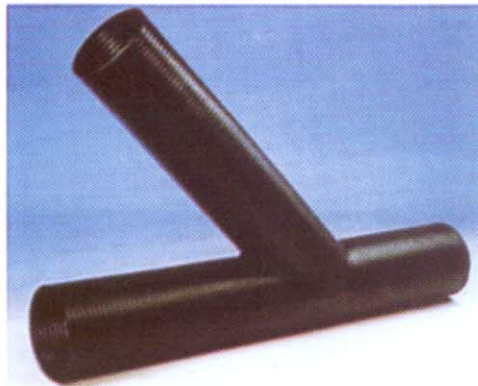


Socket joint



Other products

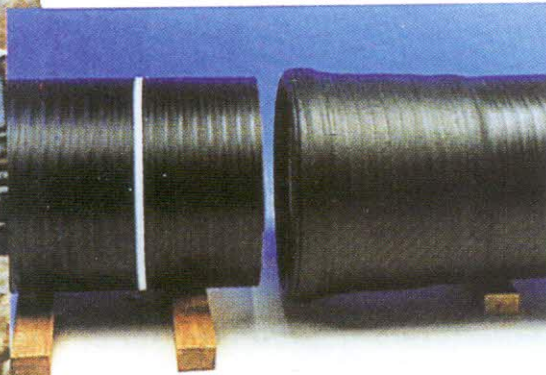
The Weholite Spiro system offers a comprehensive selection of fittings, comprising bends, junctions and manholes etc.



Jointing methods

Socket joint

The integral socket joint can be delivered as sand-tight (as such) or watertight (with rubber sealing). The rubber seal conforms to EN 681-1 and is resistant to normal sewage. Resistant sealings for oil contaminated water are available on special request.



Align the pipes vertically and horizontally.



Make sure that spigot end, socket and sealing are clean from sand, moisture, dust etc.



Install the rubber sealing into the groove.



Apply lubricant evenly onto the spigot end.



Apply lubricant evenly onto the rubber sealing.



Place spigot end against the socket opening, making sure the pipes are still aligned. Gently push the spigot into the socket using suitable force until the stop-mark is at the socket opening. Use a plate or plank to avoid damage to the spigot or socket. Larger dimensions can be put together using an excavator. Be sure to protect the socket opening with a sheet or plank.

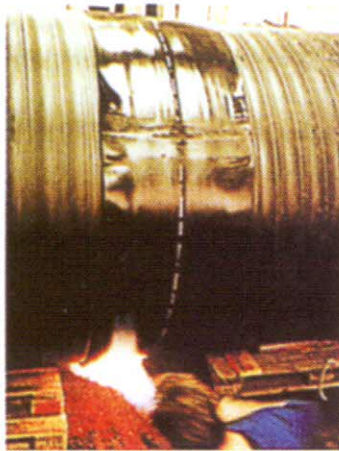
Threaded joint

The threaded joint is the quick and easy way to install pipes. It does not require any additional components, which may effect the outside diameter of the pipe.

1. Align the pipes vertically and horizontally.
2. Make sure that the threads are clean from sand, moisture, dust etc.
3. Thread the male end into the female end.
4. The pipe can be rotated using a lever or rope-sling. If needed, an excavator can be used to help rotate the pipes. To facilitate the rotation, the pipes can be laid on planks or roller supports.
5. The joint as such is sand-tight. If watertightness is required, the joint can be extrusion welded from the inside (ID > 800 mm), from the outside, or both. The joint can also be waterproofed using an external shrinksleeve or rubbersleeve.



The threaded joint provides tensile strength, flexibility and is quick to install.



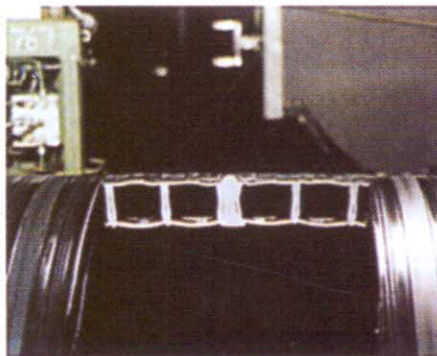
Heat shrink bands can be used together with threaded joint to tighten outside joint and connections to other materials. These bands are not capable to absorb any mechanical stresses.

Extrusion welding

Extrusion welding is mostly used for low pressure applications and for large diameter pipes in general. Welding will be done with special equipment developed by KWH Pipe, either from inside or from outside. Hand extrusion welding is another alternative especially for tightening threaded joint. All welding must be carried out by skilled personnel.



Hand extrusion welding



Welding provides a joint absolutely tight and as strong as the pipe itself.



Bedding

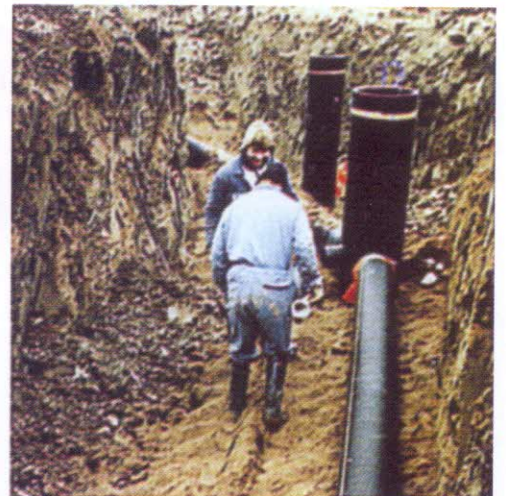
The pipe stiffness is chosen with regard to soil type, bedding and backfill material, depth of installation and external live and dead loads (ground water, traffic etc.) on the pipeline. Please refer to national codes of practice for installation of plastic pipes wherever applicable.

Pipe bedding



The bedding soil shall be free from stone within the breadth of the pipe trench. On the trench bottom, a 10-15 cm thick bedding layer is prepared and well compacted. The bedding shall be at least 20 cm wider than the pipe outside diameter. For installations in soft/wet soil, a geotextile is placed under the bedding.

Primary backfill



The primary backfill material shall be a friction soil or macadam. Backfilling shall be made over the whole width of the trench. Compaction of the backfill material shall be made in layers of 15 - 30 cm. The final layer or the primary backfill shall extend 30 cm over the pipe crown.

Note! No compaction is to be done directly above the pipe until the backfill has reached 30 cm above the pipe crown.



Final backfill



The final backfill is done with regard to the original soil and external loads (traffic). When deemed necessary, the compaction is carried out in several layers. The final backfill material can be compactable as excavated materials. The material must, however, be free from stones.



Installation depth

Recommended installation depth is 0,6 m - 6 m depending on external loads (ground water, traffic etc.)

Pipe sizes above 1200 mm, detailed static calculations are normally necessary to determine trench proportions and pipe stiffness.

Quality aspects

KWH Pipe maintains complete quality control from raw material to finished pipe product by establishing strict manufacturing specifications.

The Weholite production facility is ISO 9002 certificated.

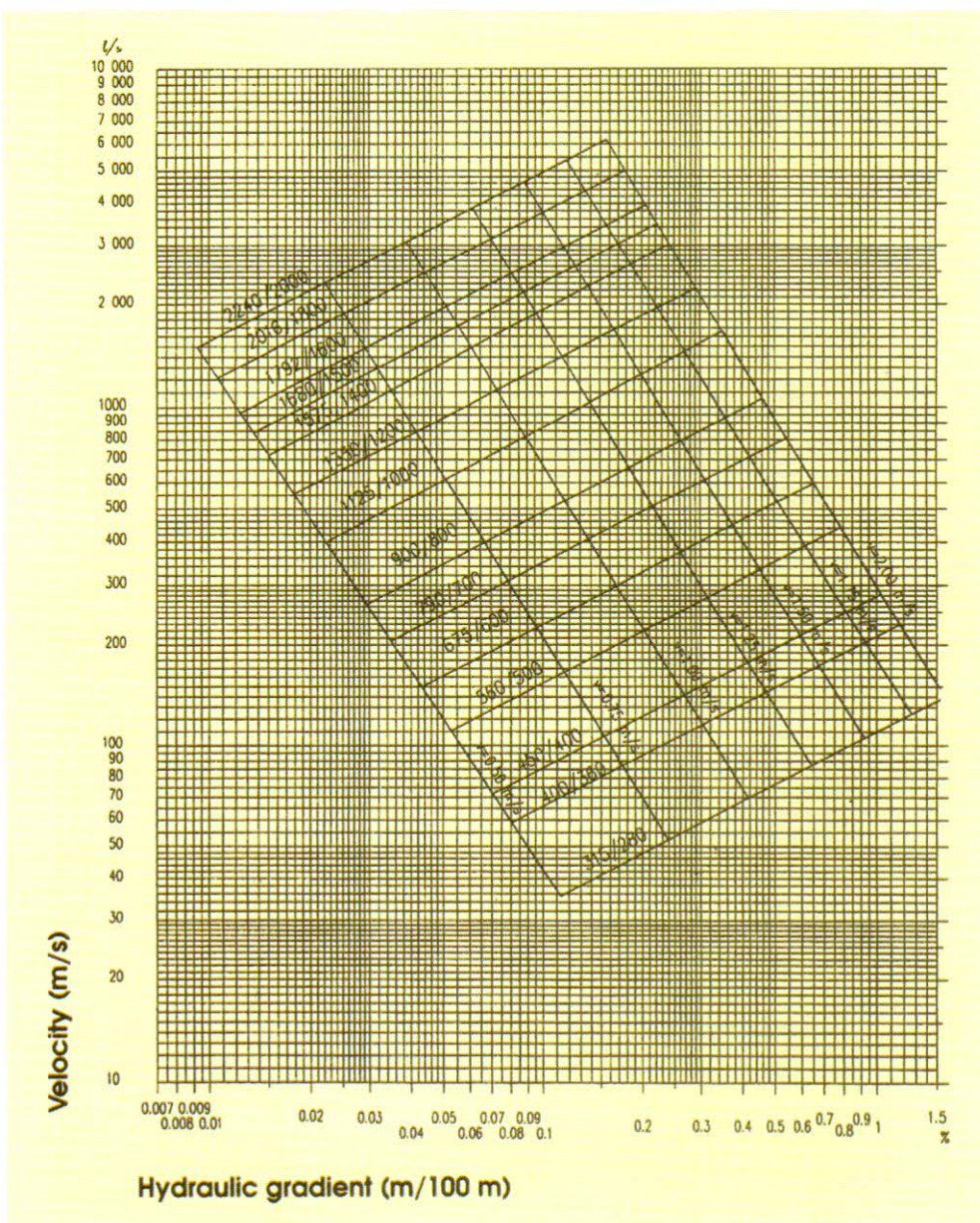
The characteristics of Weholite pipes are determined by; SFS 3453, CEN/TC 155/WG 1.

Weholite quality requirements consist of:

1. Raw-material performance
2. Geometry and tolerances
3. Product performance

Weholite pipe has national approvals in Finland, Germany, UK, Sweden and Poland.

Discharge for pipes flowing full



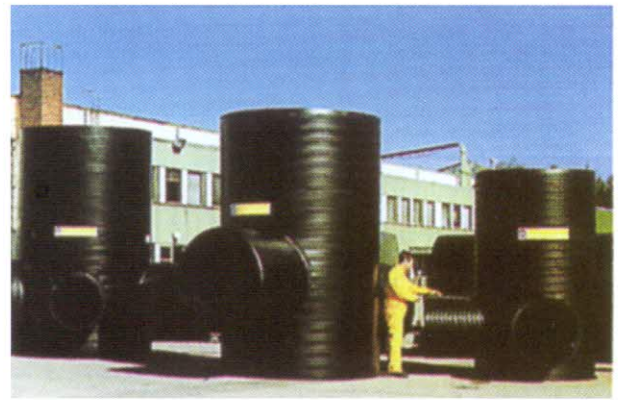
SPIRO INSTALLATIONS



Wolfen, Germany; A parallel, 2 x 1400 mm ID industrial waste water pipe-line. Total length 2046 m.



Averø, Norway; Weholite Spiro used in a fish farm. Diameters from 600 mm to 2000 mm ID.



Kaukopää, Finland; Inspection chambers made from Ø 2000 ID Weholite pipes for a cellulose plant.



Swiecie, Poland; Relining of 650 m, 1800 mm corroded concrete pipe with Ø 1500 mm Spiro pipe. Total project completed in 8 weeks.

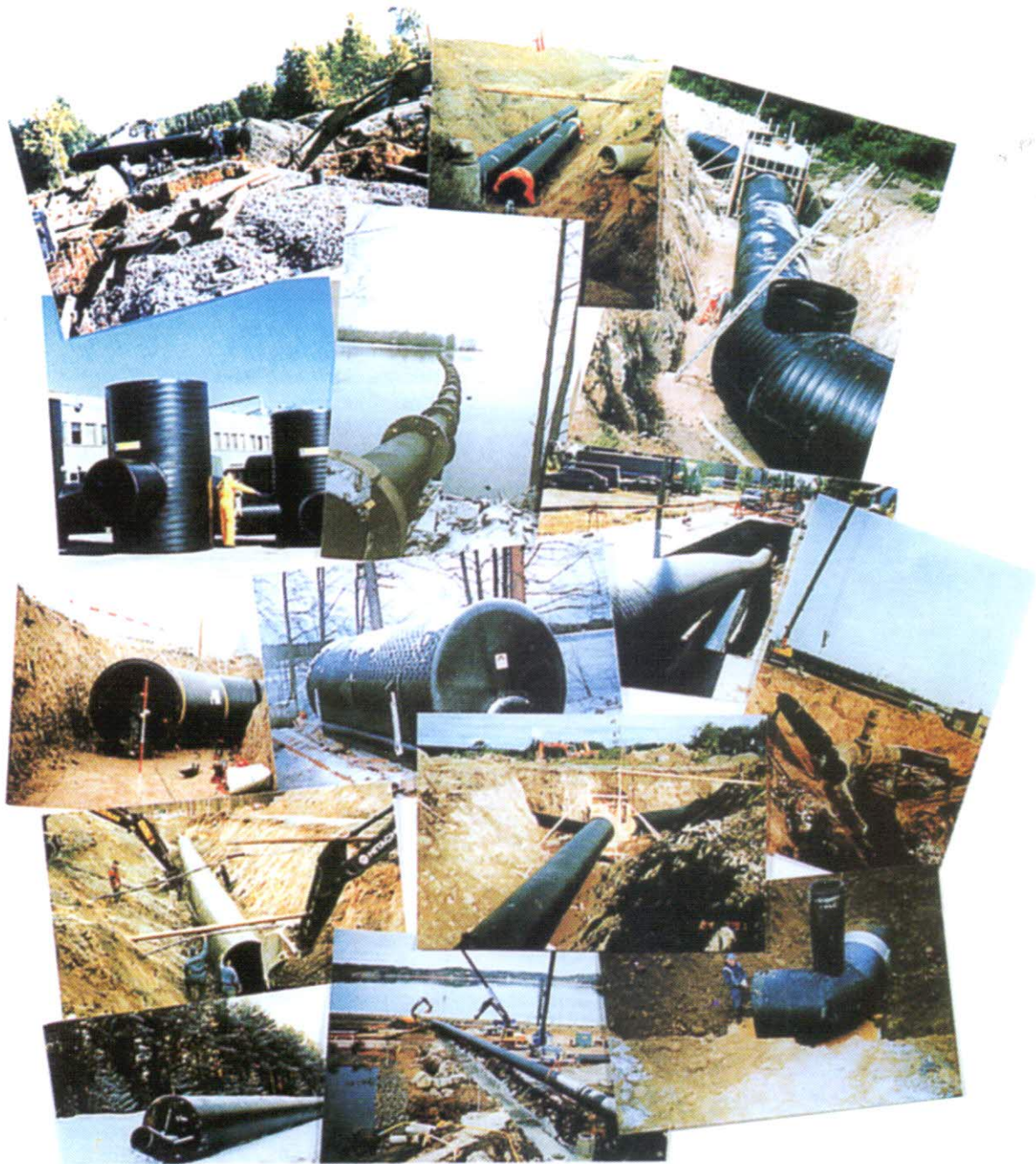


Kaskö, Finland; Culvert under railway. Open cut renovation finished in 3 hours. Dimensions 1200 mm – 1600 mm.



Seinäjoki, Finland; An 886 m, Ø 1200 mm Spiro pipe. Cooling water discharge line for a peat power plant. Submerged in a reservoir.

Complete engineering - our speciality



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