

# No digging, no disruption

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In the past, drinking water for the entire city of Bangkok was mainly carried by steel pipelines. It is widely known that steel pipes will eventually corrode, causing leakage and further damage, as one thing leads to another. Leaking pipes cost the authorities a significant amount of money, and eventually these costs will burden the end-users.

Leakages in these old steel pipes also create exfiltration that will lead to loss of water, property damage, water resource pollution and other environmental problems.



All of these problems had been under surveillance and investigation by the Metropolitan Water Works Authority (MWA) for years. The MWA was searching for a suitable way to improve the quality of the water supply and distribution. The most widely used renovation method for underground pipelines has been the excavation of the old pipelines and their replacement with new ones. This antiquated technique causes many inconveniences to all parties involved. For example, a major problem that needed to be recognized for all the renovation work in Bangkok was the traffic flow on its streets.

Bangkok is one of the most highly populated cities in the world with a notorious traffic problem. Any installation or maintenance of infrastructure, such as underground water pipelines, must be done with minimal disturbance to the traffic. That's where 'No-Dig' technology comes in.



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**PROJECT RECONFIRMS ADVANTAGES**

This was a demonstration project in 2004 to reconfirm the advantages of using No-Dig Technology in the central area of Bangkok for pipe renovation along the Rajapralob Road. The project was defined in conjunction with Per Aarsleff A/S and Wiik & Hoeglund Public Company Limited, based on an approved Partnership project run by the Danish Ministry of Foreign Affairs and financed by DANIDA. The total budget for the project was around 15 million Baht (approximately 300 thousand euros).

In the project, a very popular method called sliplining was used. It is performed by inserting PE-HD pipes into the existing damaged pipe and is widely known as the simplest method of No-Dig Technology.

PE-HD pipes OD 710 mm PN10 with a total length of 250 metres had been inserted into existing, damaged 800 mm ID steel pipes. Because of their superior flow characteristics the smaller PE-HD

pipes are still able to maintain the same volumetric flow as the steel pipes used previously.

The use of the sliplining method reduced the disruption of traffic in Bangkok and alleviated project-related traffic jams. Furthermore, the excavation of the road was completed with minimal effect on the existing road surface. After the layers of deposit in the old steel pipes had been removed with a mechanical scraper, PE-HD pipes that were delivered from the KWH Pipe factory in Rayong were welded.

The pipes were welded together as an entire project length and inserted into the existing steel pipe using a pulling head connected by a cable to a winch. The welding and insertion of PE-HD pipes had been done within one continuous period of 24 hours. To complete the flow, pipes were welded with stub ends and a steel backing ring in order to connect with an existing pipeline.

**FIRST EXPERIENCE 25 YEARS AGO**

Actually, the city of Bangkok first had experience of the sliplining method around 25 years ago. In 1980, KWH Pipe International was invited by MWA to submit a proposal to renovate the Bangkok cast-iron water pipeline on the major Rama IV, Rajdamri, and Charoenkrung roads.

KWH Pipe was contracted to manufacture and deliver 9.6 km of PE-HD pipe PN6.3 ranging in size from OD 355 mm to 710 mm. The pipes were then shipped from KWH Pipe's factory in Vaasa, Finland to Bangkok. The actual relining work took around 10 months for the whole project. Upon completion, MWA's Project Director said that he was very satisfied with both the technical solution and working schedule.

This rehabilitated pipeline functions very well in supplying drinking water to the people in these areas. ●