



The Use and Maintenance of HDPE Pipes

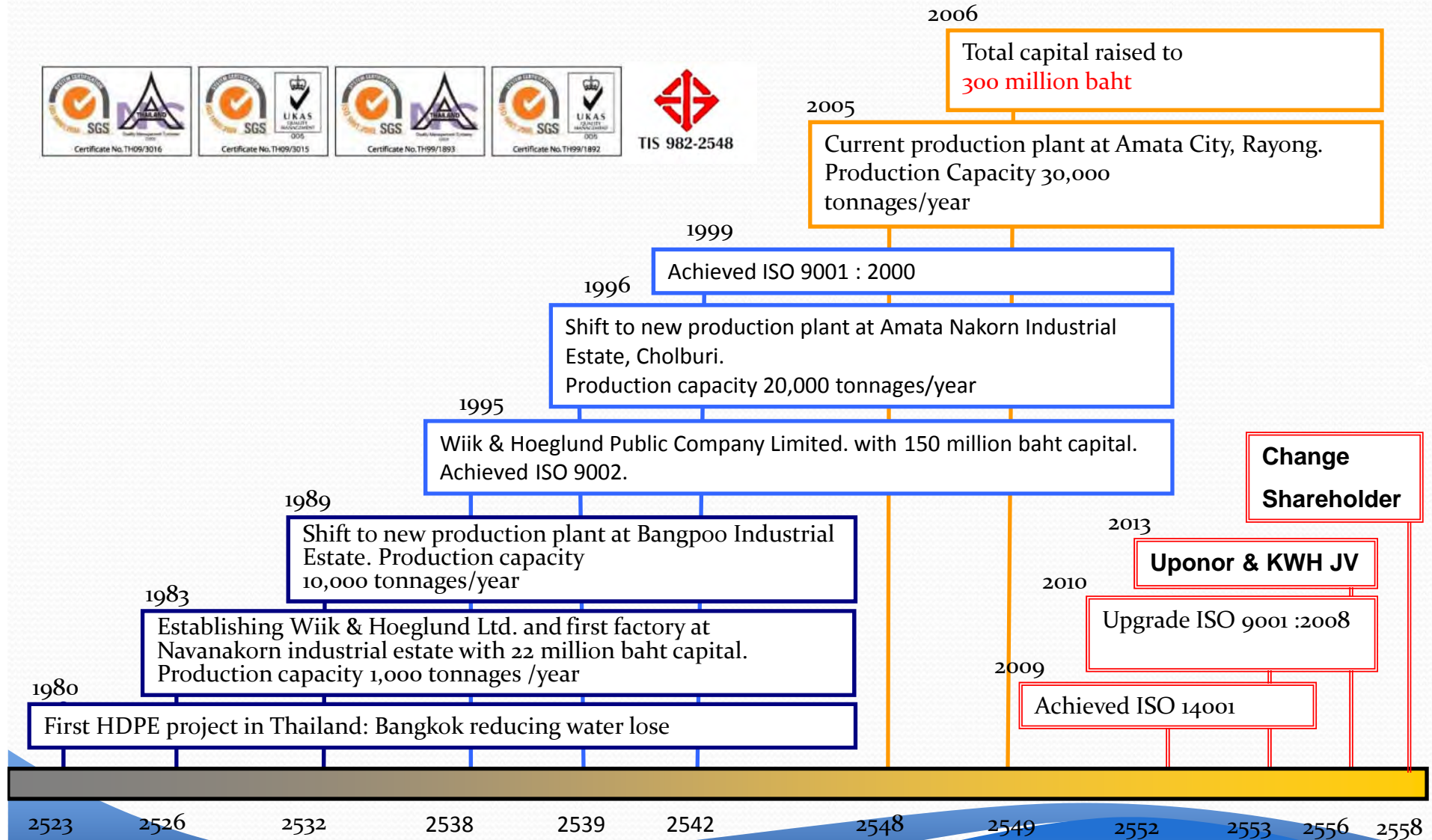
By

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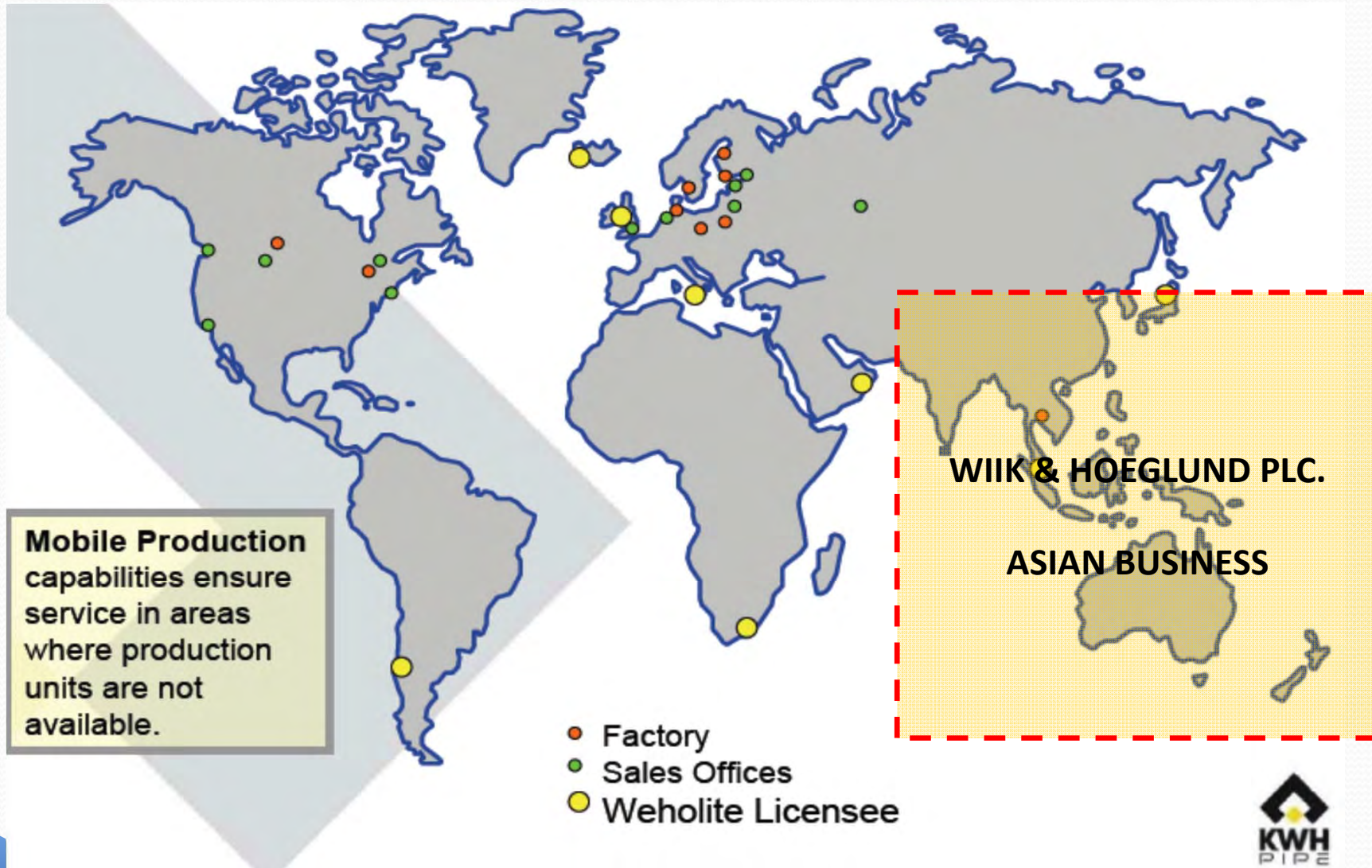
Wiik & Hoeglund Public Company Limited



Wiik & Hoeglund Plc. History



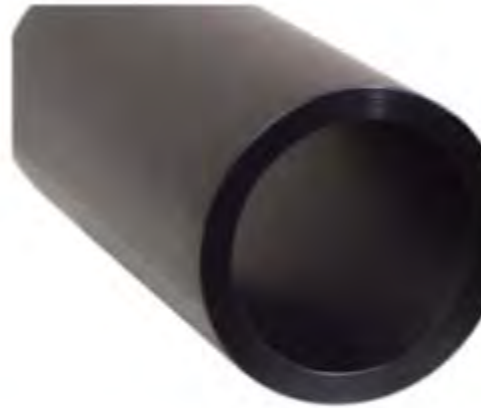
Sales area



Pressure WATER pipe

Wehopipe

Application: Pressure pipe
OD 16 – 1,600 mm PN 3.2 – 25



PN = Nominal Pressure

For plastic piping systems conveying water, it corresponds to the allowable operating pressure in bar, which can be sustained with water at 20 deg C with a design basis of 50 years, and based on the design coefficient (safety factor) of 1.25.

When a PE piping system is to be operated at a continuous constant temperature higher than 20 deg C, up to 40 deg C, a pressure reduction coefficient applies.

Non-Pressure pipe

Weholite

Application: NON- pressure pipe
DN 300 – 3,000 mm
SN 4 and 8 kN/m²



WehoTank

Application: Water & Chemical
storage/ Bio Gas scrubber Tank /
Wastewater treatment system



Non-Pressure Pipe

WehoManhole

Application: Access Point into Pipeline system for maintenance or surveillance



WehoPontoon

Application: Boat Lift & Multi-purpose floating Pontoon



Specialty products

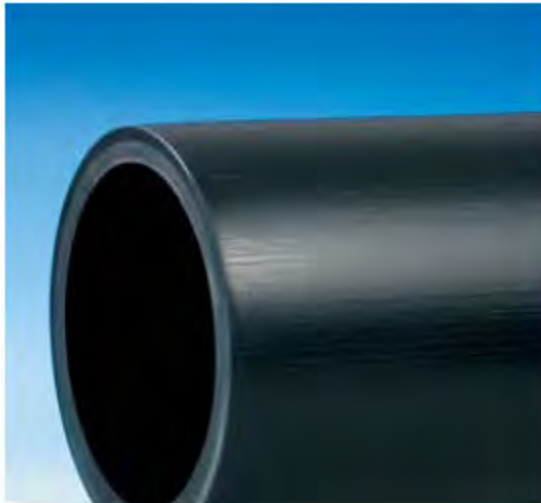
CableStay

Application: Suspension and Cable stay protection pipe



WehoSlurry

Application: Slurry tailing line for mining



The use of PE pipes

Key applications

Pressure pipe

- Provincial Waterworks Authority
- Royal Irrigation Department
- Industrial Estate
- Power Plant
- Wastewater treatment plant
- Fire protection system
- Mining
- Specialty project: Relining & HDD

Non pressure pipe

- Municipality drainage & sewage
- Bangkok Metropolitan drainage
- Cooling Tower Pipeline
- Industrial Estate

Storage Tank

- Factory
- BioGas Scrubber

HDPE Pipes and fittings



High quality HDPE Pipe

OD: 16 -1,600 mm

PN Class: 3.2 - 25

Application:

- Water distribution above & underground
- Intake & Outfall submarine system
- Fire protection pipeline
- Cooling tower pipeline
- Mining project



Fitting ranges

Pre Fabricate Fittings:

OD: **16 -1,600 mm**

PN Class: **3.2 - 20**



Compression Fittings:

OD: **16 -110 mm**

PN Class: **12.5**



Electro fusion Fittings:

OD: **16 -300 mm**

PN Class: **10 - 16**



Fittings for HDPE pipe ≤ 110 mm

HDPE Compression fittings

D.I.Y. Fittings

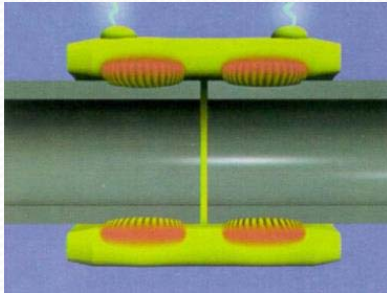
- OD: 16 -110 mm
- PN Class: 10, 16

Benefits:

- Easy to install and uninstall by D.I.Y.
- Light weight
- UV and load resistant
- More than 50 years lifecycle



PE100 Electro fusion fittings



Advanced fusion technique

- OD: 16 -315 mm
- PN Class: 10, 16

Benefits:

- Easy to install
- Light weight
- Traceable bar code system
- Accurate computerized and controlled by welding unit

Butt fusion welding technology



Accurate welding technology

OD: 63-1,600 mm

PN Class: 3.2 - 32

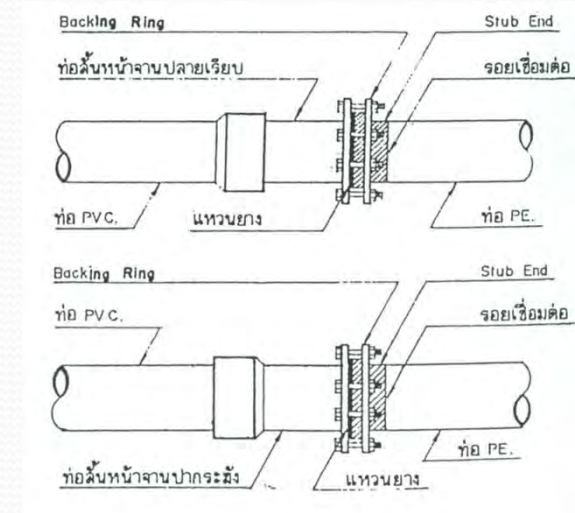
Benefits:

- Melded HDPE leak proof guarantee
- Welded area strong and sturdy as the pipe itself
- Accurate computerized and controlled (LDU)
- Portable and available in most of working site condition

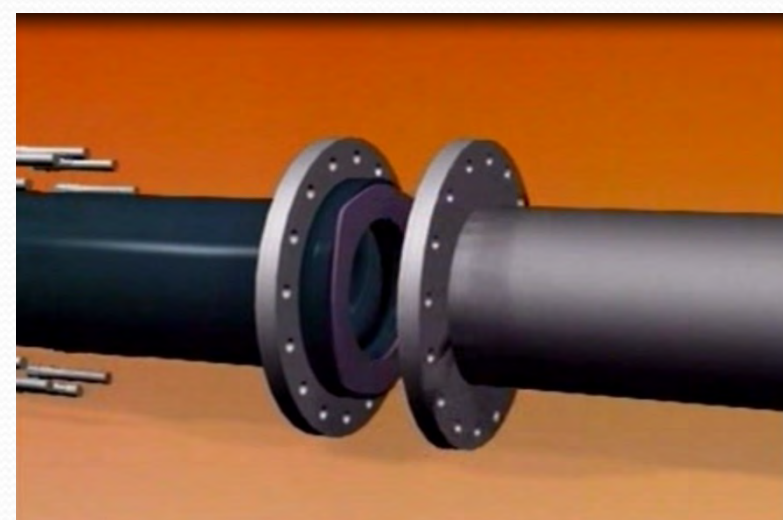
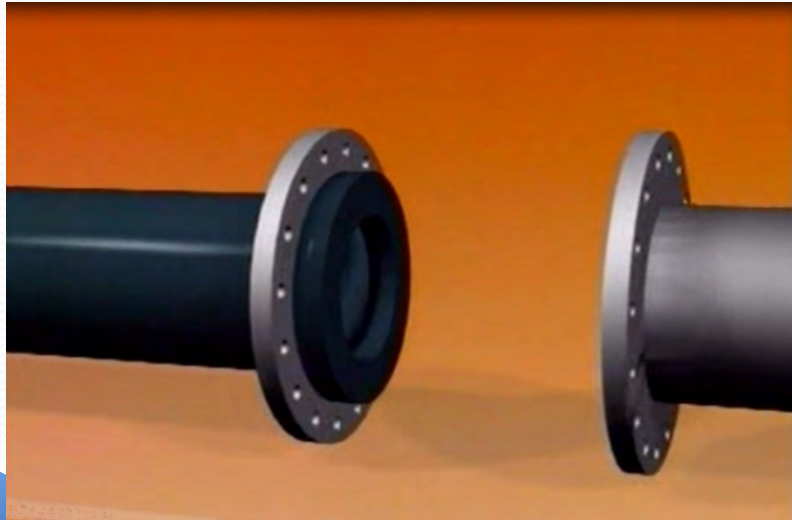
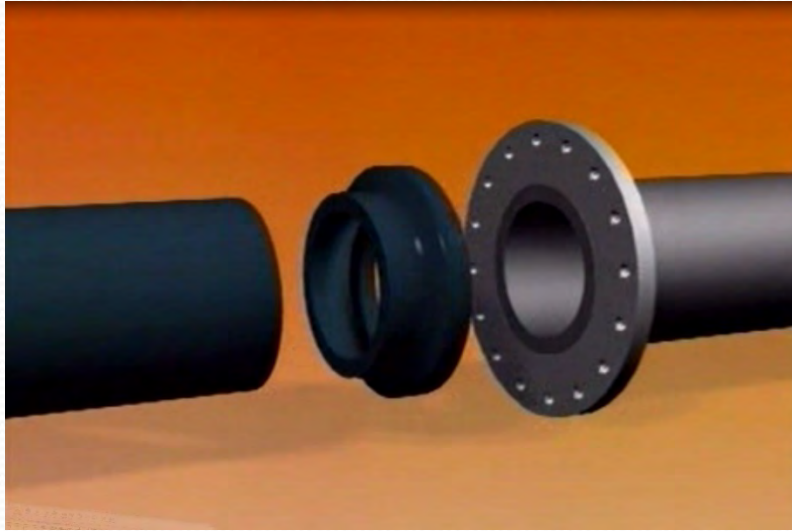


HDPE jointing method

- **Traditional easiest jointing method**
- **Stub end & Backing ring**
 - OD: **16 – 1,600 mm**
 - PN Class: **6, 10, 16, 25, class 150 lbs**
- **Benefits:**
 - Easy to install
 - No needed electrical supply
 - Fast installation
 - Compatible with another pipe material



Stubend jointing



Project services



Project Services

- Welding services
 - Butt fusion with or without data logger
 - Hand extrusion
- Hydrostatic pressure test
- Installation (upon request)
- Etc.



Welding services

- **Performance advantages**
 - WIJK Water have totally of Butt fusion welding machines 50 sets.



Type	Welding rang for pipe
PT160	OD 40 - 60mm
PT315	OD 90 - 315mm
PT500	OD 315 - 500mm
PT630	OD 500 - 630mm
PT800	OD 630 - 800mm
PT1000	OD 800 - 1000mm
PT1600	OD 1000 - 1600mm



ROYAL PROJECT YAO-KHA (MYAN-MAR)



- HDPE PIPE 110 MM. supplied in 100 m/roll
- Completed with stubends and backing rings both ends
- Pipes and fittings are installed by hilltribe people

PWA Water supply project



- Provincial Water Work projects
- Water distribution
- Fresh Laying pipe between pumping station
- Various size 110 - 1,000mm PE100 PN 6.3 - 10
- Project value more than 5,000 Tonnage per year

Royal Irrigation department



- Huay Lahan Pumping Station to Nong-Palai Reservoir
- HDPE Raw water transmission pipeline to alleviated the water shortage problem for private sector and saved 20 sq.km. of agricultural land from drought
- HDPE pipe OD 900 mm PN 6.3, 11,000 m was supplied by W&H and installed by local contractor was completed with in 45 days
- Project completion 2005

Power plant



- Nong Saeng Power Plant, Saraburi
- Raw Water Transmission
- Project completion 2012
- 800 mm PN10, 15,000 m
- Supply, welding and installation

Sea water reverse osmosis (SWRO)



- PTT Sea Water Reverse Osmosis
- Sea water intake, outfall and water distribution
- Mapthaphut Industrial Estate, Rayong
- Laying sea water intake pipeline OD 1,200 mm 2,400 m
- Laying brine water outfall OD 630 mm 600 m



SWRO Reactor Plant



- PTT SWRO, RO Reactor Plant
- PALL System Reverse Osmosis set
- ASTM F714, NS 6" & 8"
- Total 8 set, use all HDPE special fittings



SWRO distribution pipeline



- PTT SWRO RO Water distribution
- Welding and installing pipe on PTT pipe bridge
- Maphaphut Industrial Estate, Rayong
- HDPE pipe OD 315-630 mm SDR 11 total 6,500 meters



Underground Fire Fighting system



- DOW Chemical Fire protection
- Underground Fire protection pipe for DOW factory, Rayong
- Project completion in 2010
- OD 6- 24 inches at approximate 13 km length.

Underground Main Water Pipeline



- Thai Ethanolamine Co.,Ltd TEA
- Uhde Shedden
- Welding HDPE PIPE OD 315 PN6.3



Underground Fire Fighting system



- PTT Tank Terminal Co.,Ltd
- Underground Fire Water Pipe
- HDPE PIPE OD 63– 630 mm PN16 PE100



Underground Fire Fighting system



- RAYONG TERMINAL CO.,LTD
- Fire Water Underground Pipe
- HDPE PIPE ASTM F714
- OD 24", 8", 6" PN16 PE100 SDR11



Underground Fire Fighting system



- Thailand Propylene Oxide project(TPO)
- Fire Water Underground Pipe
- HDPE PIPE ASTM OD 16", 8", 6" PN16 PE100 SDR11



Sea water siphon pipe, Macau



- COLONAE Power Plant, Macau
- Siphon pipe for cooling
- Project completion 2002
- OD 1600 mm SDR 26, 1,524 m

Waste water treatment unit, India



- REACTOR PLANT, Tirupur India
- Project completion 2007
- HDPE Pipe set for Reactor plant in India
- HDPE Pipe 1,000 – 1,600mm

Water supply pipeline, Vietnam



- Project completion : 2010
- Dong Tam Water BOO Corporation
- Water Treatment Plant capacity 50,000 cu.m./day (Phase I) and 90,000 cu.m./day (Phase II)
- HDPE OD 900 mm and OD 800 mm
- Total Length 45,000 m

Outfall pipe, New Zealand



- ROSEDALE WATER TREATMENT
- Outfall and water distribution pipe line for WTT plant, NZ
- Project completion 2009
- OD 1,600 mm, PN 6.3, Length 1,560 m
- Follow AS/NZS 4130 Standard

Mining outfall pipe, Indonesia



- PT NEW MONT NUSA TENGARA
- Project completion 2005 (Indonesia)
- Replacement slurry pipe for mining 48" SDR 12, 3.7 km
- The thickest HDPE pipe ever made in Thailand



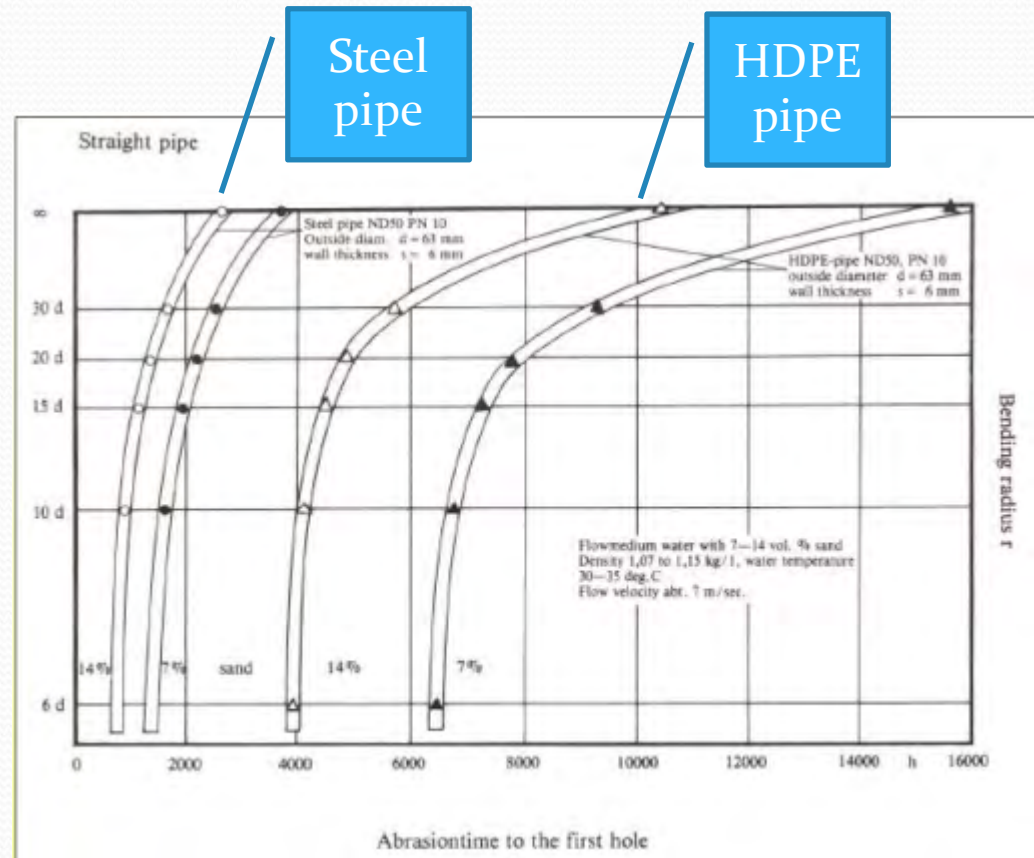
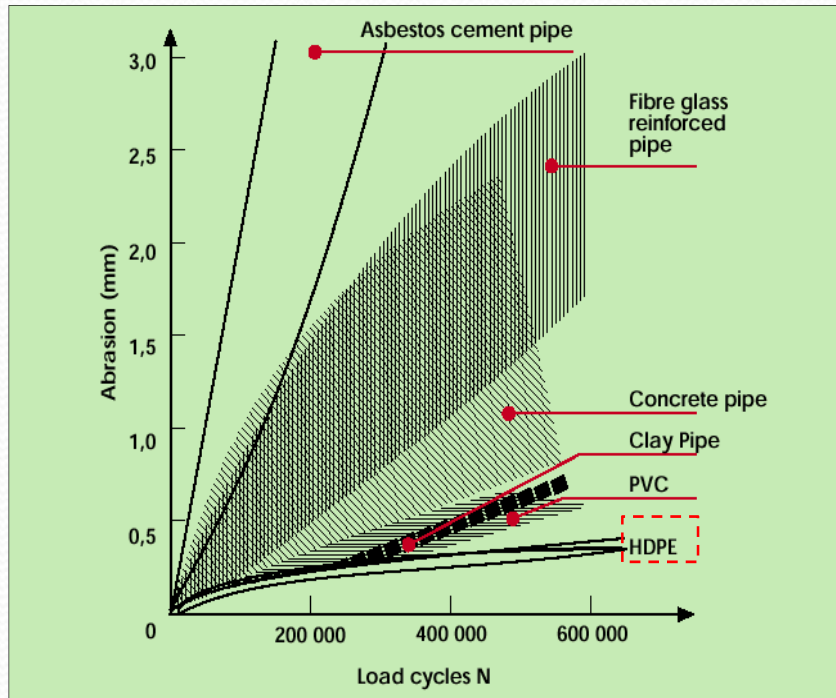
Mining Industry, Indonesia



- PT NEW MONT NUSA TENGARA
- Project completion 2014 (Indonesia)
- Replacement slurry pipe for mining 44" x 4", SDR 11, 3,300 m.
- The thickest HDPE pipe in the world.



Abrasion resistance



Better abrasion properties compared to traditional materials

HDPE bends are superior to steel bends

- HDPE PE 100 Plus (Pressure Pipe)
- BS EN 12201-2, PE100+
- 7 million people
- Seawater supply system (flushing toilet) 15% of water use.
- Meet WHO 's guideline for drinking water—the safest in the world.

Blue pipes for Hong Kong water

The Water Supplies Department of Hong Kong Special Administrative Region Government is responsible for providing a reliable and clean water supply for seven million people every day. In a densely populated area, largely situated on islands, this is no easy task.

However, the Department is known for its dedication to studying and finding the best solutions for water treatment, maintaining high water quality and developing water supplies. An interesting fact is that, in order to save drinking water, there's a separate seawater supply system used for flushing toilets, accounting for about 15% of total water use.

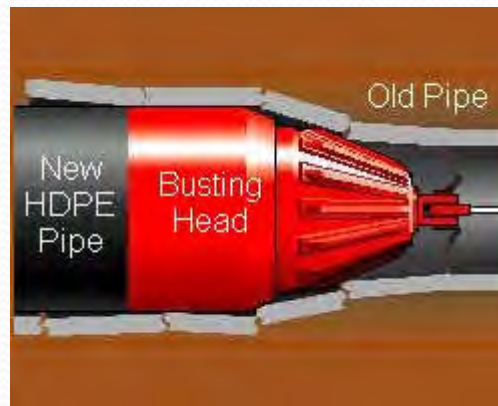
By adhering to strict standards, Hong Kong meets the World Health Organization's guidelines for drinking wa-

ter quality and produces drinking water that is among the safest in the world. KWH Pipe's subsidiary in Thailand, Wiik & Hoeglund Plc., has been able to meet these high standards. Blue PE-HD pipe in dimensions DN/OD 25–355 mm, produced and bar-coded under the BS EN12201 and ISO4427 standards, has been accepted for the purpose. These pipes are contaminant-free, long-lasting and UV resistant, they withstand pressures up to 16 bars and have superior resistance to slow and rapid crack growth propagation. Furthermore, they can be recycled to make the best use of the earth's resources. ■



Trenchless Technology

- No-dig Technology
 - Relining/Sliplining method
 - Pipe bursting/Pipe splitting
 - Horizontal directional drilling
 - Swagelining
 - Subline
 - Etc.



Typical Water Main Problems

Problem	Typical Consequences
Mild internal corrosion and tuberculation	Poor water quality and flow restriction
Sever internal corrosion	As above + Leakage and structural failure
Joint failure	Leakage
Localized external corrosion	Leakage and localized structural failure
Extensive external corrosion	Major and extensive structural failure

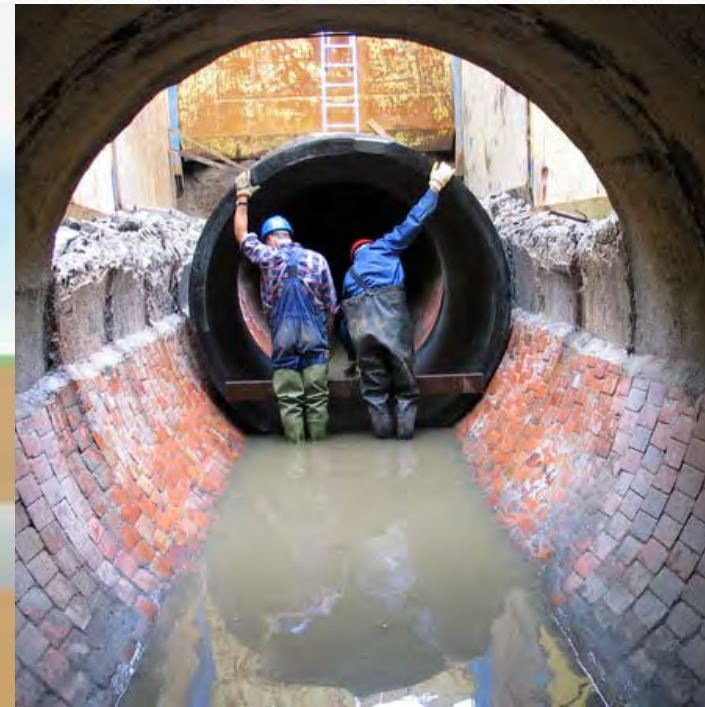


Relining/Sliplining Method



- Insert HDPE pipe into the existing pipe (Trenchless/No-dig method)
- Fast and save installation cost, avoided traffic problem
- Technology available for Pressure pipe OD 16-1,600 mm

Relining/Sliplining Method



- Insert the new HDPE pipe into old leaky pipe
- Technology available for non-pressure pipe Weholite ID 300 – 3,000 mm

MWA RAMA5 Road Relining



- Bangkok, Thailand
- Project completion 2013
- No dig method (Relining)
- Insert HDPE Pipe into old leaky steel pipe
- OD 800mm PN10, 2,800 m
- Fast over night installation, avoided traffic problem and need no open cut

Problem with leaky pipe



MWA Rajaparop Relining



- Bangkok, Thailand
- Project completion 2005
- No dig method (Relining) environmental study project
- Insert HDPE Pipe into old leaked steel pipe
- OD 710mm PN10, 250 m

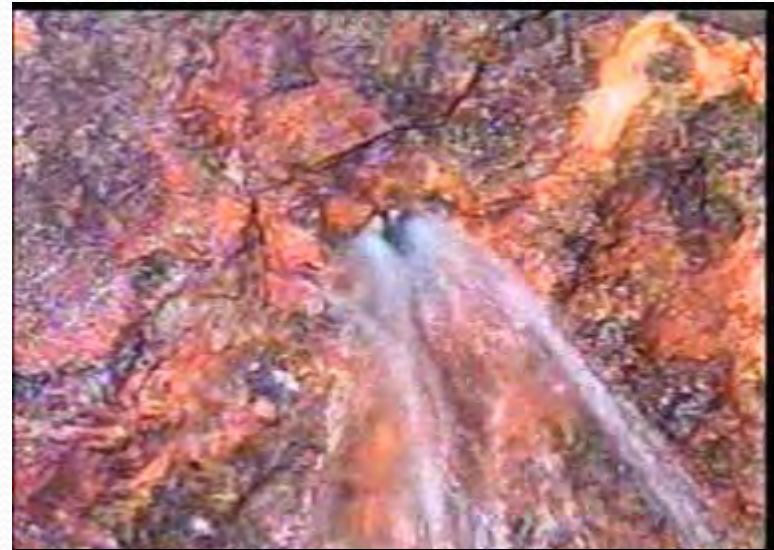
KALKATA RELINING, India



WehoPipe: OD 1,400mm SDR 32, 1,000 m

- Project completion 2005 Kolkata, India
- Help Kolkata municipality save 50% water loss
- Insert HDPE Pipe into old leaked steel pipe 1,550 mm
- 45 days installation , avoided traffic problem

KALKATA RELINING, India

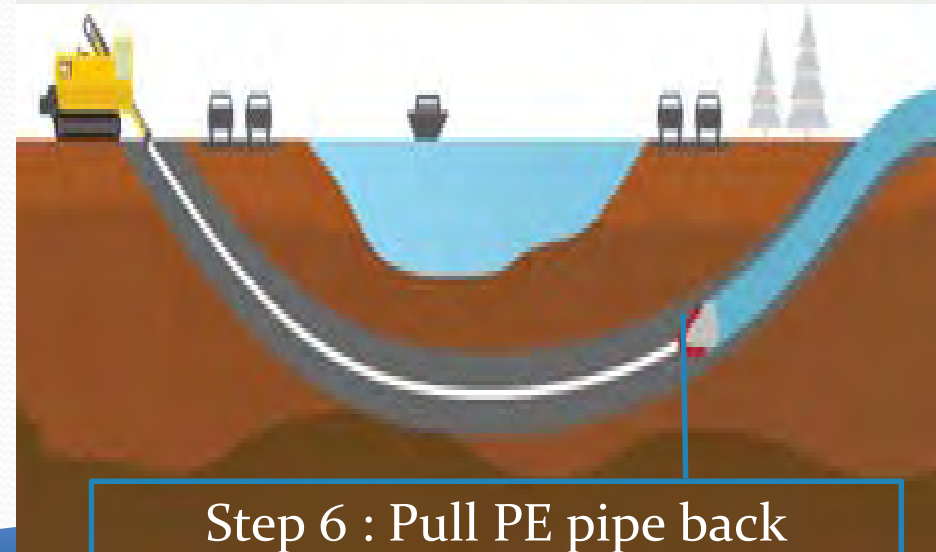
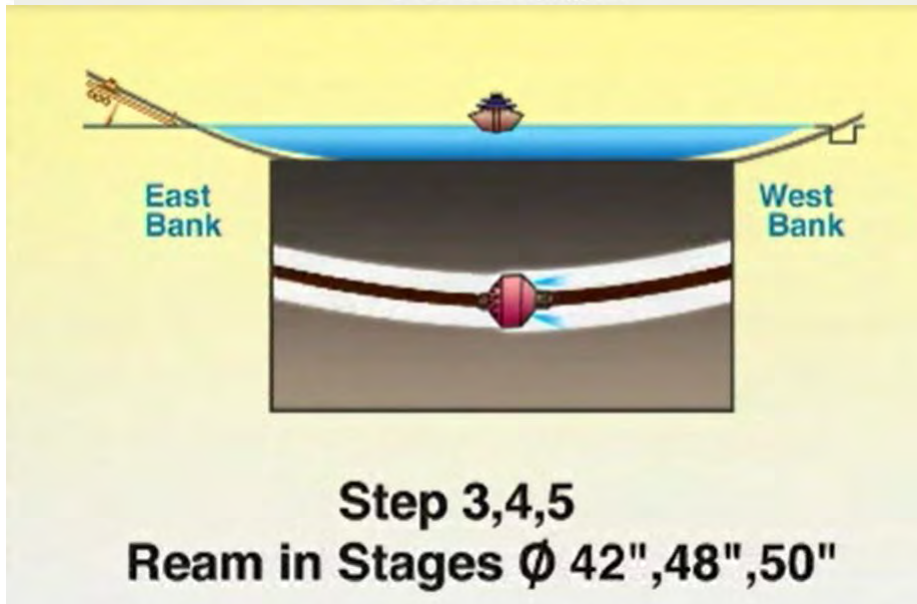
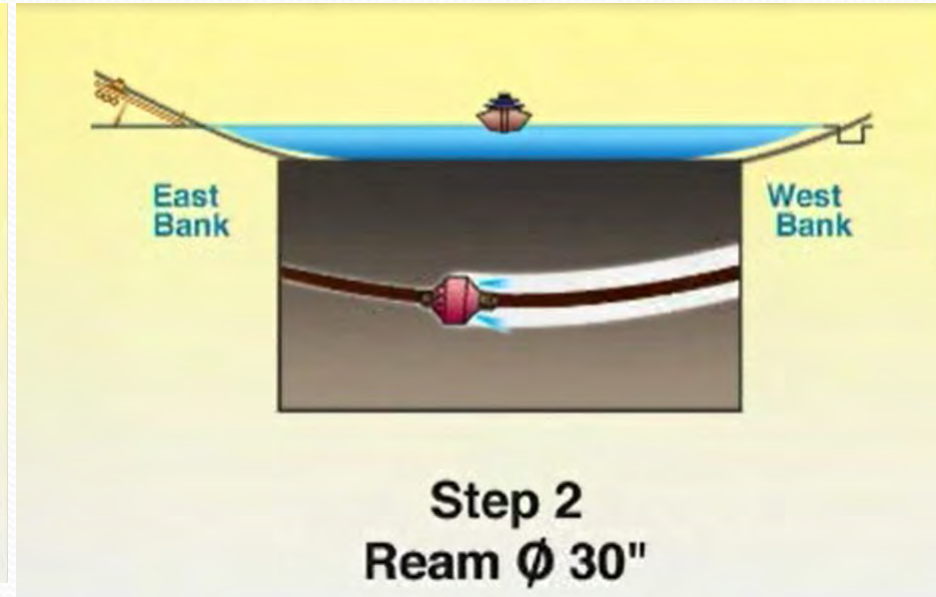
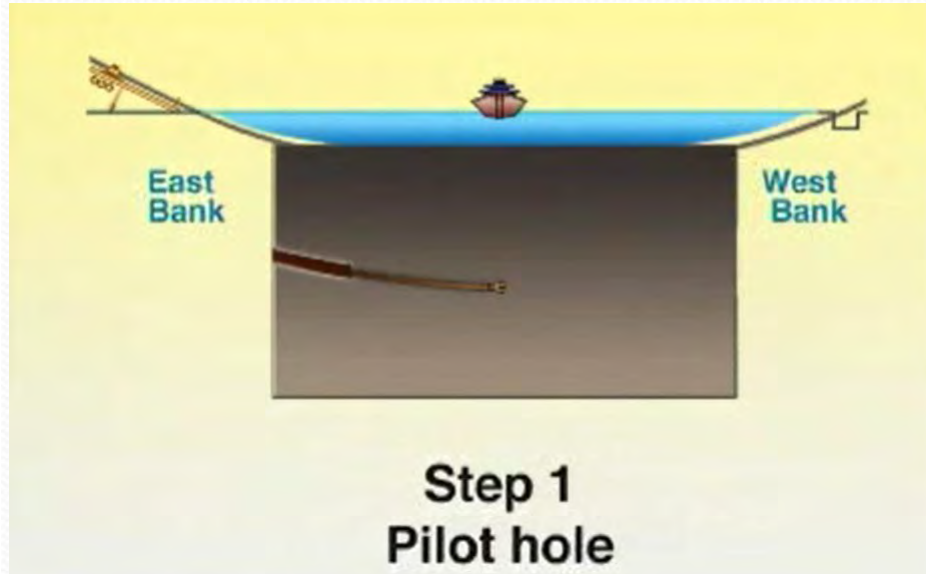


KALKATA RELINING, India

Corrosion problem



Horizontal Directional Drilling



HDD : Horizontal Directional Drilling

