



**FENOQ NIGERIA LIMITED**

**Continuous  
Horizontal  
Directional  
Drilling (CHDD)  
Capability**





### FENOG NIGERIA LIMITED

Fenog is an independent Engineering company, specialized in Project Management, Engineering Design, Procurement, Installation and Construction projects. We offer services to the oil and gas industry, corporate organizations and government agencies.

Fenog was formed in 1992 and currently has an experienced workforce who are expert in their fields and have a track record of safely and efficiently executing complex projects. Our corporate headquarter is based in Warri, Nigeria.

- Founded in 1992
- 100% Indigenous engineering and construction company
- Corporate Headquarters: Warri, Delta State, Nigeria





## Current Challenges with Conventional Pipeline Installation:

- Because of the burial depth (typ. 1 – 1.5m) it is susceptible to vandalism and illegal bunkering leading to huge financial losses and environmental degradation
- Swampy terrain can make traditional open cut method more challenging to construct because:
  - Most swampy terrain can have significant river crossing and creeks
  - The high water level can result in Flotation/buoyancy of pipeline resulting in the need for concrete coating
  - Difficulty of constructing trenches in swamps and usually has a higher cost implication.

## Benefits of Continuous HDD

In the Niger Delta, illegal bunkering activities have led to the attack on traditional open-cut pipeline installations resulting in enormous financial losses, environmental degradation and damage to oil company facilities and Nigeria in General.

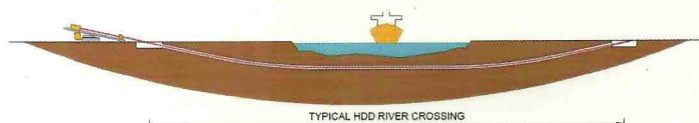
With a vision to finding a better way to enhancing the pipeline security and reducing operating cost Fenog has developed a unique concept of installation of pipeline.

This concept, known as Continuous Horizontal Directional Drilling (CHDD), allows installation of pipelines to depth up to 45meters and hence ensures that the pipeline are out of reach of illegal bunkering activities.

## Horizontal Directional Drilling

### Key Facts:

- World leading CHDD expert
- Fenog Nigeria limited is one of the largest directional drilling contractors in Africa
- Own small, mid-sized and large drilling rigs
- Capabilities of up to 500 tonne of pullback
- Ability to install pipe up to 60 inches in diameter
- Completed record breaking crossings
- Capability in marine HDD shore approaches and water to water crossings



**Expansion of Escravos to Lagos  
Gas pipeline project Phase 1 (EELP1)**

Type: HDD Gas pipeline river crossing  
Location: Apala Creek/ Apala  
Near Egwa Town  
Spec: 452m X24" at 25m depth  
Client: Zakhem/Nigerian Gas Company (NGC)

**Amukpe - Escravos pipe line project (AEPP)**

Type: HDD continuous pipe laying method  
Location: Amukpe - Escravos  
installation over 67km  
Spec: 67km X20" at 4m - 30m depth  
Client: Pan Ocean Oil Corporation

## **Selected Projects Deploying HDD Technology**

**Expansion of Escravos to Lagos  
Gas pipeline project Phase 1 (EELP1)**

Type: HDD Gas pipeline river crossing  
Location: Ibefan River/Ibefan  
Spec: 850m X24" at 23m depth  
Client: Zakhem/Nigerian Gas Company (NGC)

**Expansion of Escravos to Lagos  
Gas pipeline project Phase 1 (EELP1)**

Type: HDD Gas pipeline river crossing  
Location: Poro River near  
Egwa 11 River  
Spec: 457.6m X24" at 20m depth  
Client: Zakhem/Nigerian Gas Company (NGC)



**Escravos River Crossing (ERC)**

Type: HDD River crossing  
Location: Escravos river  
Spec: 1630.75m X24" at 45m depth  
Client: Zakhem /Chevron Nigeria Limited



**Expansion of Escravos to Lagos  
Gas pipeline project Phase 1 (EELP1)**

Type: HDD Gas pipeline river crossing  
Location: Egwa 1 River near  
Oporaza Town  
Spec: 582.8m X24" at 24m depth  
Client: Zakhem/Nigerian Gas Company (NGC)

**Expansion of Escravos to Lagos  
Gas pipeline project Phase 1 (EELP1)**

Type: HDD Gas pipeline river crossing  
Location: Egwa 11 River/Egwa 11  
Spec: 582m X24" at 24m depth  
Client: Zakhem/Nigerian Gas Company (NGC)



Contact



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## Fenog's HDD Rigs



### HDD-RIG PD 500/170 RP

Number owned: 1

#### Specifications:

Pull force: 1,124,000 lbs (5000kN)

Torque: 125,400 lbs.ft (170kNm)

Power: 1,200 Hp (880 Kw)

Weight: 92,500 lbs (65t)

### HDD-RIG PD 350/150 RP

Number owned: 1

#### Specifications:

Pull force: 786,831 lbs (3500kN)

Torque: 110,600 lbs.ft (150kNm)

Power: 764 Hp (570 Kw)

Weight: 138,891 lbs (63t)



### HDD-RIG PD 250/90 RP

Number owned: 4 (Including a swamp rig)

#### Specifications:

Pull force: 552,000 lbs (2500kN)

Torque: 66,400 lbs.ft (90kNm)

Power: 650 Hp (480 Kw)

Weight: 45,500 lbs (32t)



### HDD-RIG PD 150/70 RP

Number owned: 1

#### Specifications:

Pull force: 337,213 lbs (1500kN)

Torque: 1,629 lbs.ft (70kNm)

Power: 443 Hp (330 Kw)

Weight: 63,934 lbs (29t)

