



UNDERGROUND INFRASTRUCTURE CONFERENCE 2024

SUSTAINABLE TRENCHLESS INSTALLATION OF SMALL DIAMETER PIPELINES AND CABLES

Simon Herrenknecht, Herrenknecht AG



19.03.2024

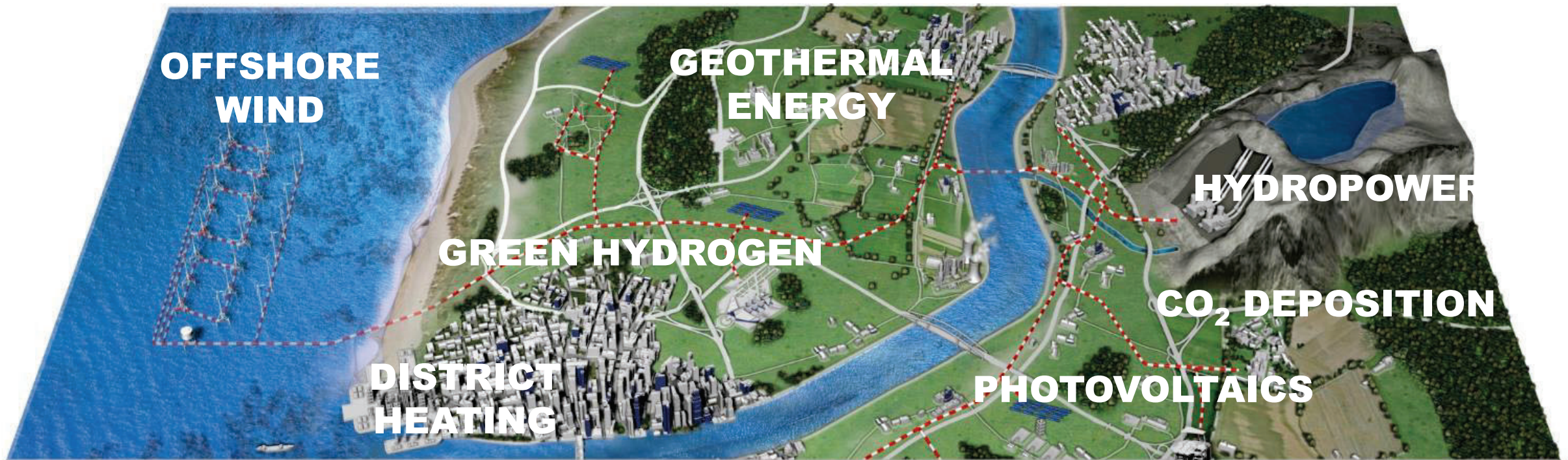
Underground Infrastructure Conference

Construction. Rehabilitation. Asset Management.

March 19-21, 2024 | Oklahoma City, OK

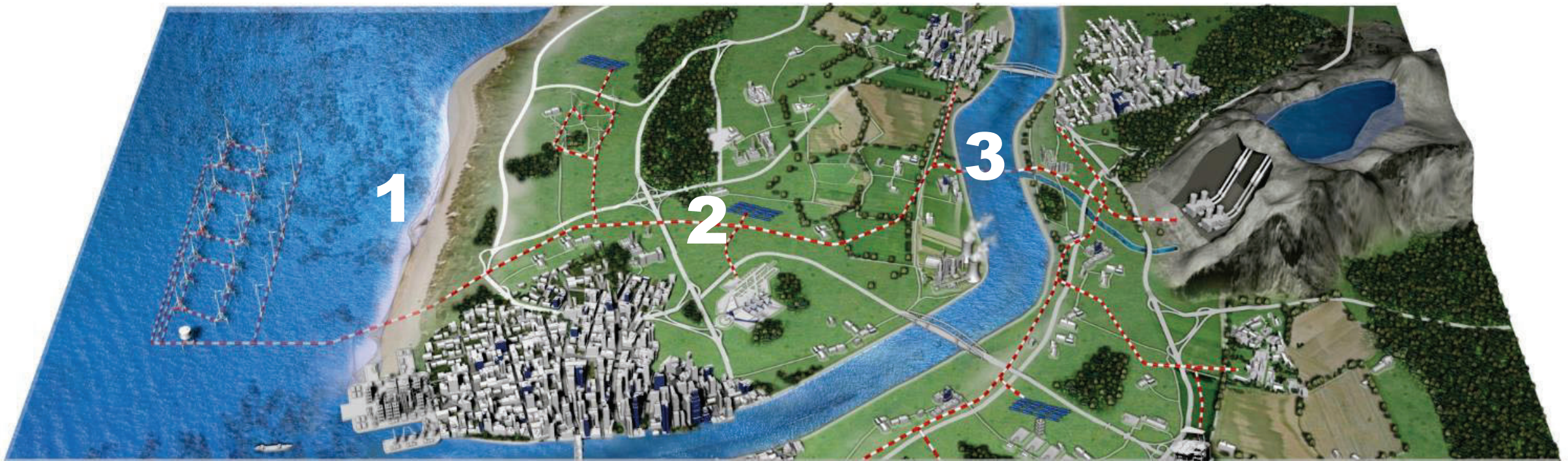


PIPELINE AND UNDERGROUND CABLE INSTALLATION



Transmission grid expansion required

PIPELINE AND UNDERGROUND CABLE INSTALLATION



1 Offshore-Onshore
Connections /
Landfalls

2 Cross-country
installations with
minimum disruption

3 Crossing of obstacles
(waterways, traffic
routes)

CHALLENGES OF TRENCHLESS

FASTER



- › Longer drives in less time

SAFER



- › Leakage / Frack-outs
- › Remote control



GREENER

- › Emission
- › Environment



STRONGER

- › Hard & abrasive rock

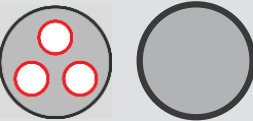
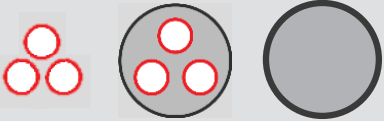


SMARTER

- › Efficiency, Connected
- › Predictive Maintenance

SUSTAINABLE EXPANSION OF POWER GRIDS AND PIPELINE NETWORKS



	Direct Pipe [®]	E-Power Pipe [®]	HDD
Installation of cable / casing steel pipeline	 one-step	 two-stage	 multi-stage
Diameter	600 – 1,500 mm / 24“ – 60“	250 – 700 mm / 10“ – 28“	250 – 1,500 mm / 10“ – 60“
Min. Installation depth	3-5 x pipe Ø	3 x pipe Ø	10-15 x pipe Ø
Max. installation length	2,000m / 6,500ft	2,000m / 6,500ft	5,000m / 16,400ft

DIRECT PIPE® TECHNOLOGY

24" up to 60" steel pipeline installations

- One-pass installation
- min. frac out risk
- High accuracy



SMALL-DIAMETER DIRECT PIPE OPERATIONS

- › AVNS600 with Jet Pump + HK500PT
- › GIPL-Gas Interconnector
 - › # 1 River Czarna Hancza: 1,050 ft
 - › # 2 River Narew: 2,900 ft
- › Geology: Sand, gravel, boulders
- › Client: Gaz-System | Contractor: GGT Solutions

Pipe-Ø: 28"



SMALL-DIAMETER DIRECT PIPE OPERATIONS

ITALY

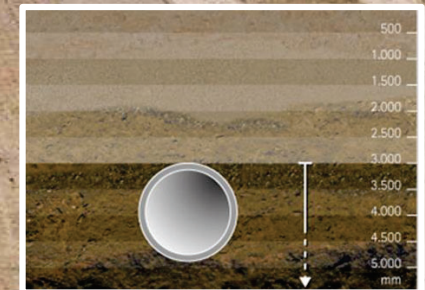
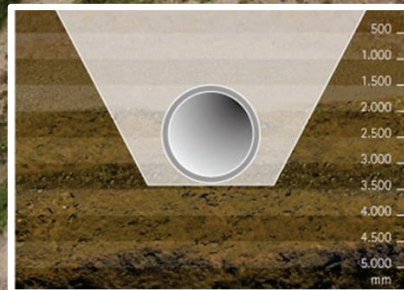


- › AVNS600 with Jet Pump + HK500PT
- › SNAM-Gas Network Adriatic Coastline
- › 2 crossings: # 1 Crossing: 1,017 ft
2 Crossing: 1,780 ft

Pipe-Ø: 26"

19.03.2024

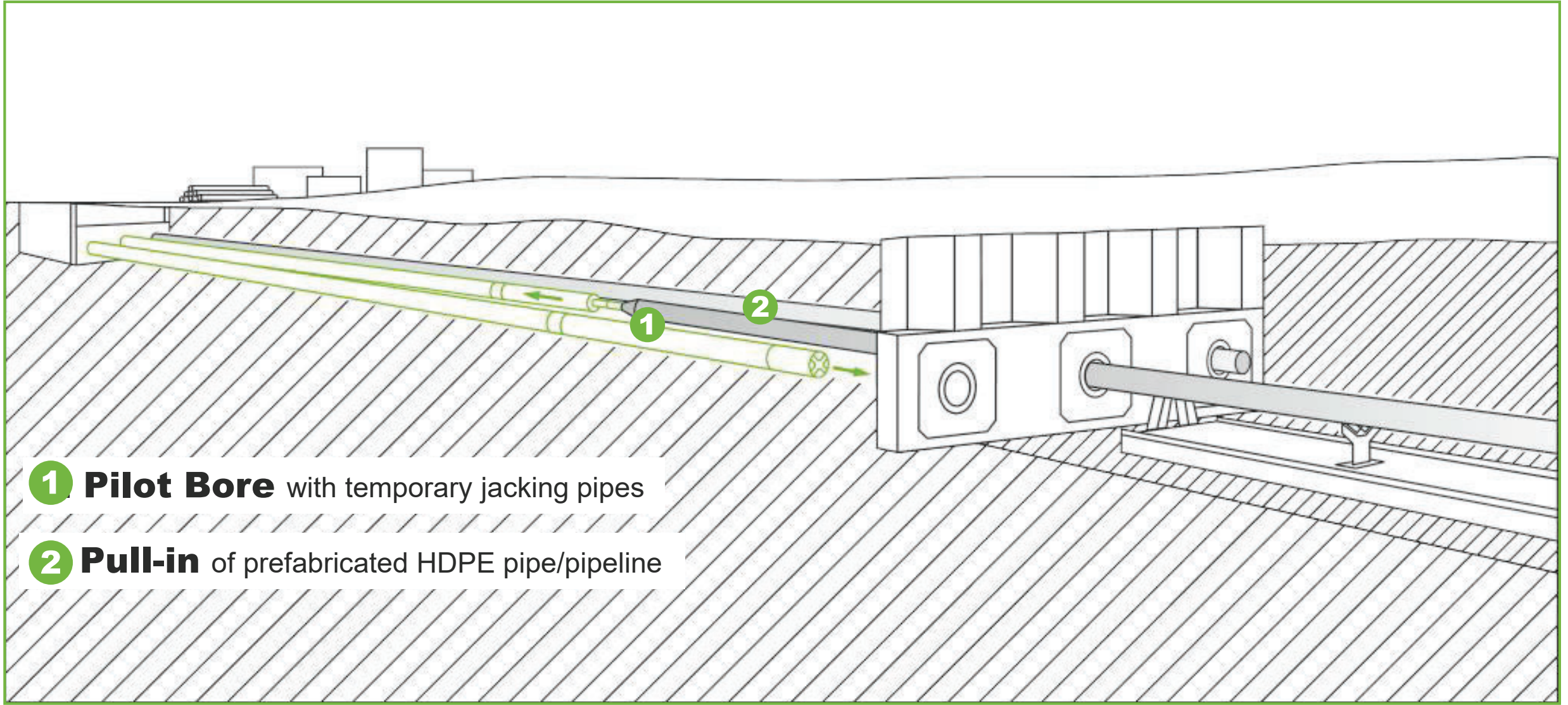
CROSS-COUNTRY INSTALLATIONS WITH MINIMUM DISRUPTION



E-POWER PIPE® TECHNOLOGY



Two-step installation of HDPE protective pipe or small-diameter pipelines



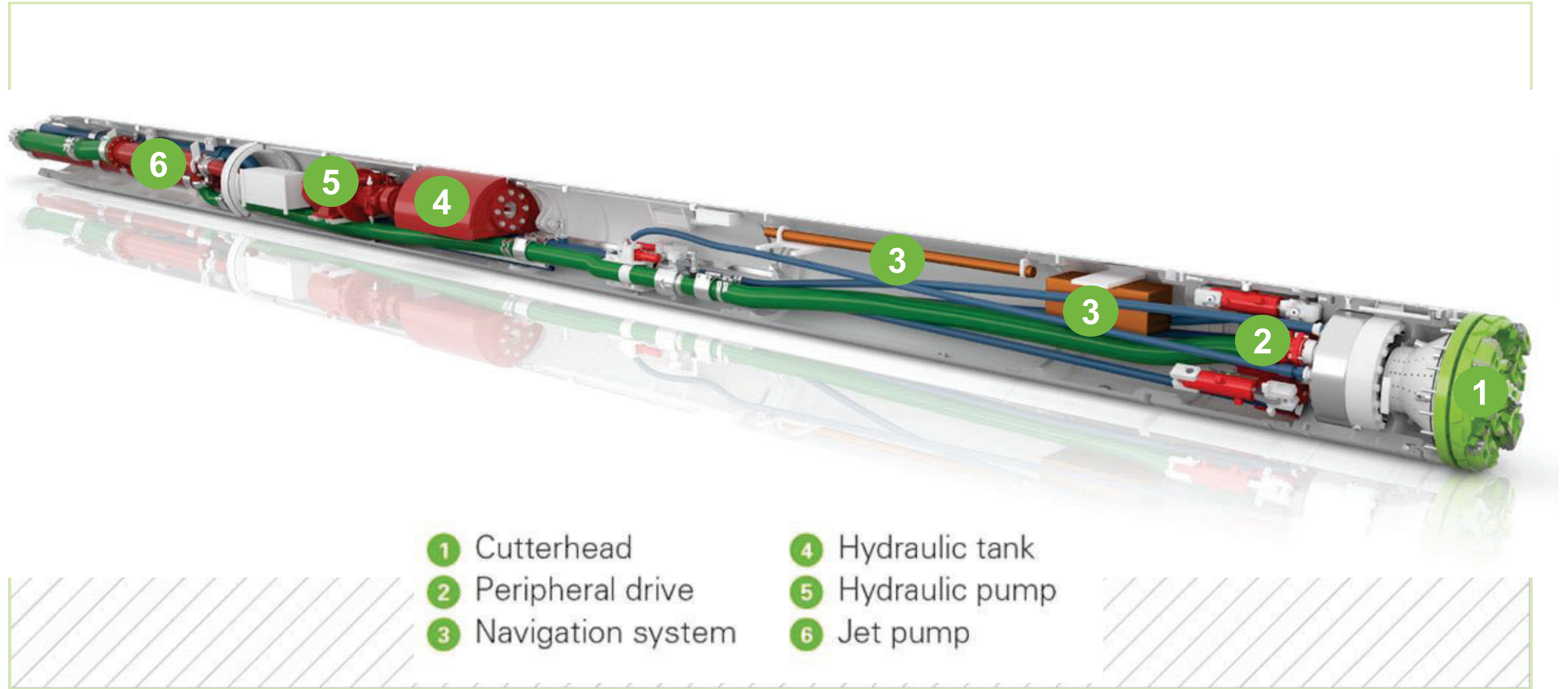
1 Pilot Bore with temporary jacking pipes

2 Pull-in of prefabricated HDPE pipe/pipeline

E-POWER PIPE® TECHNOLOGY

EPOWER PIPE

Two-step installation of HDPE protective pipe or small-diameter pipelines



E-POWER PIPE® | BACHARACH

- Machine: AVNS 350XB [Diameter: 505 mm | 20']
- Application: Grid connection / Cable
- Drilling length: 13,780 ft total // 6 x 2,300 ft
- Challenge: Six parallel installations with distance of 1.0 m | 3 ft



E-POWER PIPE® | BACHARACH

- Machine
- Application
- Drilling
- Challenge



| 3 ft

E-POWER PIPE® | BACHARACH

- › Machine
- › Application
- › Drilling
- › Challenge

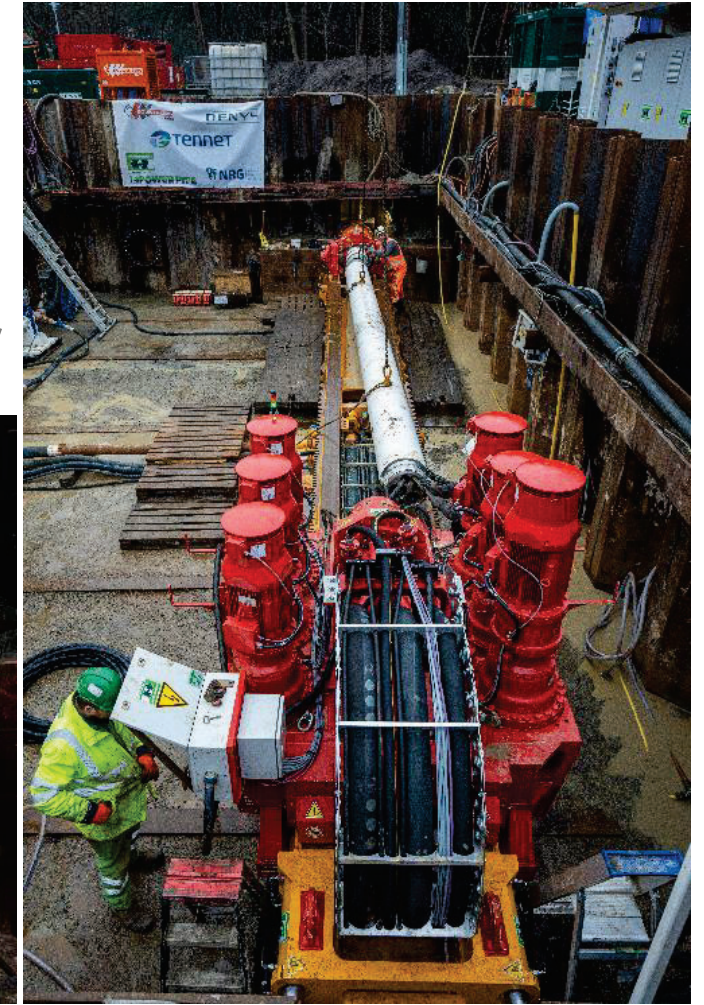
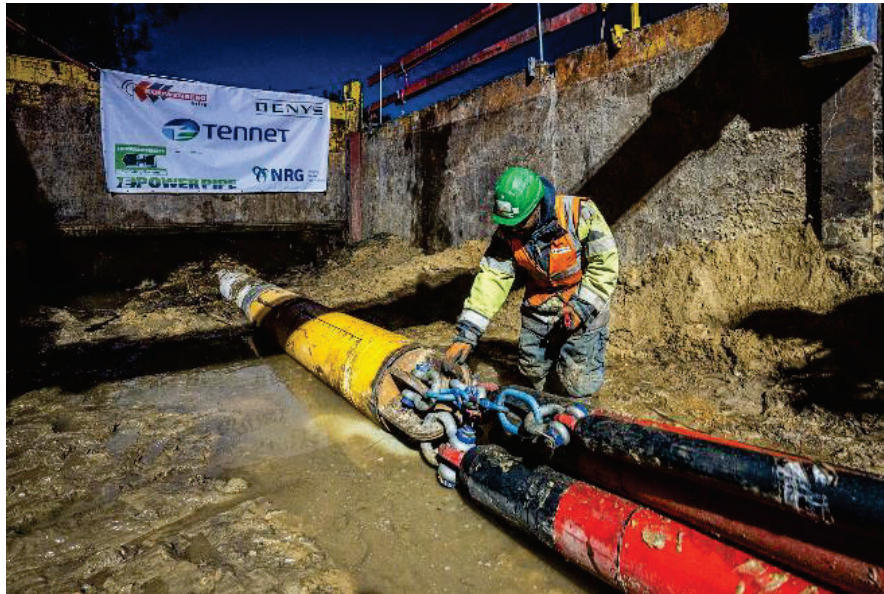


f 1.0 m | 3 ft

E-POWER PIPE® RECORD PROJECT (NL)

Latest cable project in the Netherlands | Tilburg | TSO Tennet

E-POWER PIPE

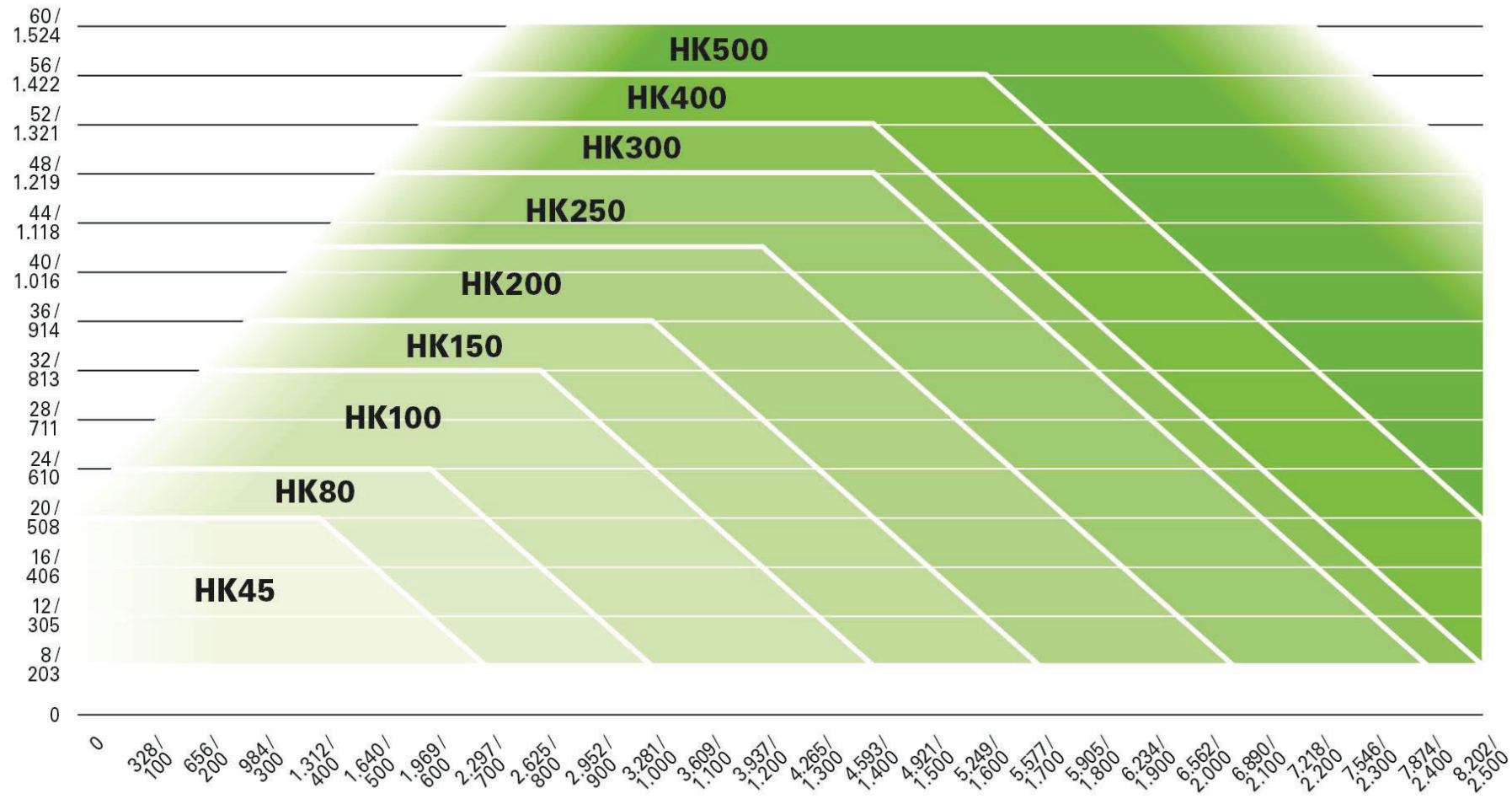


HDD

HORIZONTAL DIRECTIONAL DRILLING



HK RIG RANGE



Trailer



Crawler



Compact



Frame

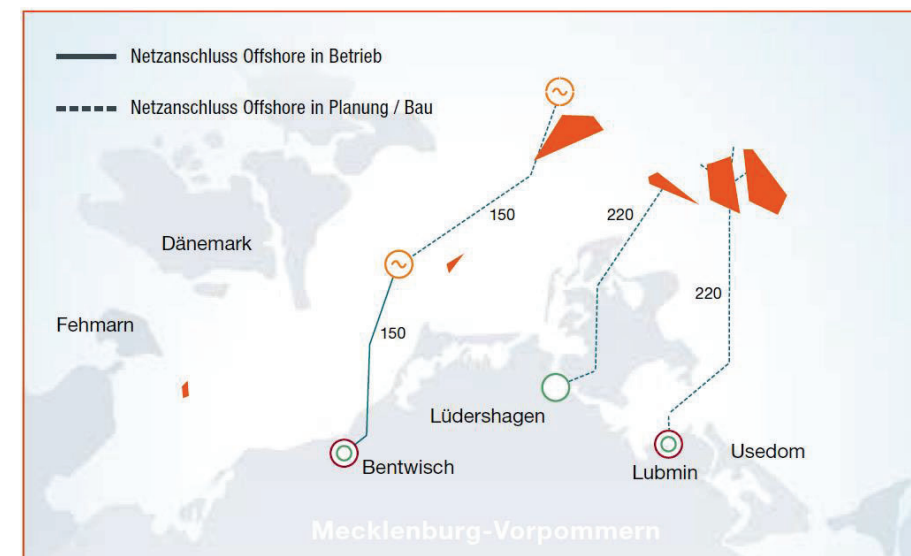


Modular



HDD | BALTIC SEA, LUBMIN

- Machine: HK 250T Trailer Rig
- Application: Grid Connect. Wind farm „Cluster Westlich Adlergrund“
- Drilling length: 2,600 m / 8,500 ft
- Challenge: Crossing sensitive biotopes / cooling water canals



CHALLENGES OF TRENCHLESS GREENER

ALL-ELECTRIC HDD RIG: HK300TE



CO2-Emissions



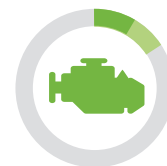
**Fuel
consumption**



**Noise
emissions**

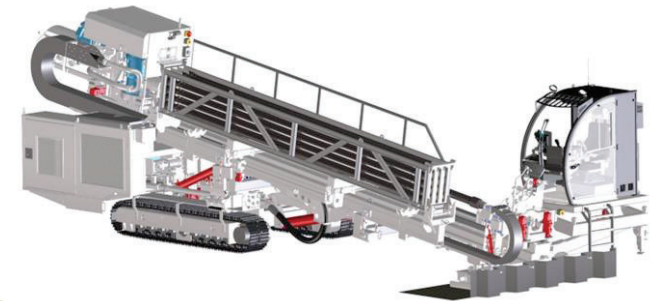


**Low
maintenance**



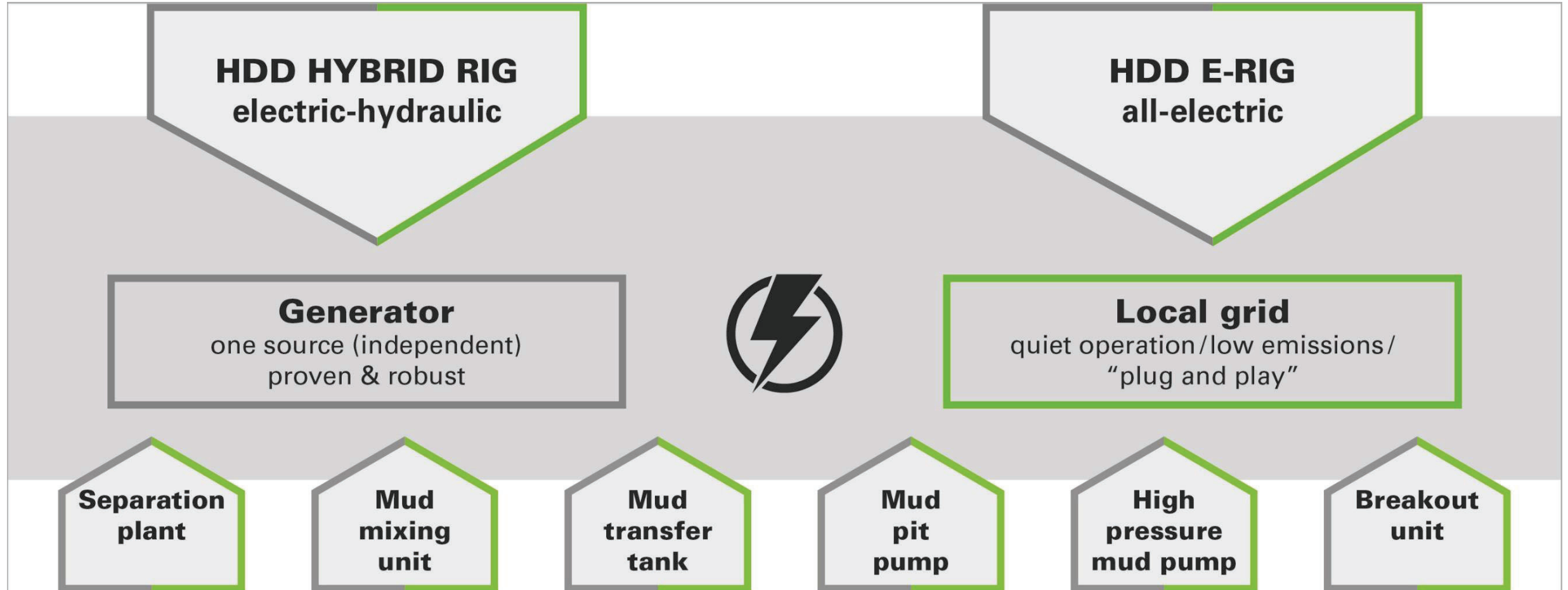
No leakages

HK45CKE

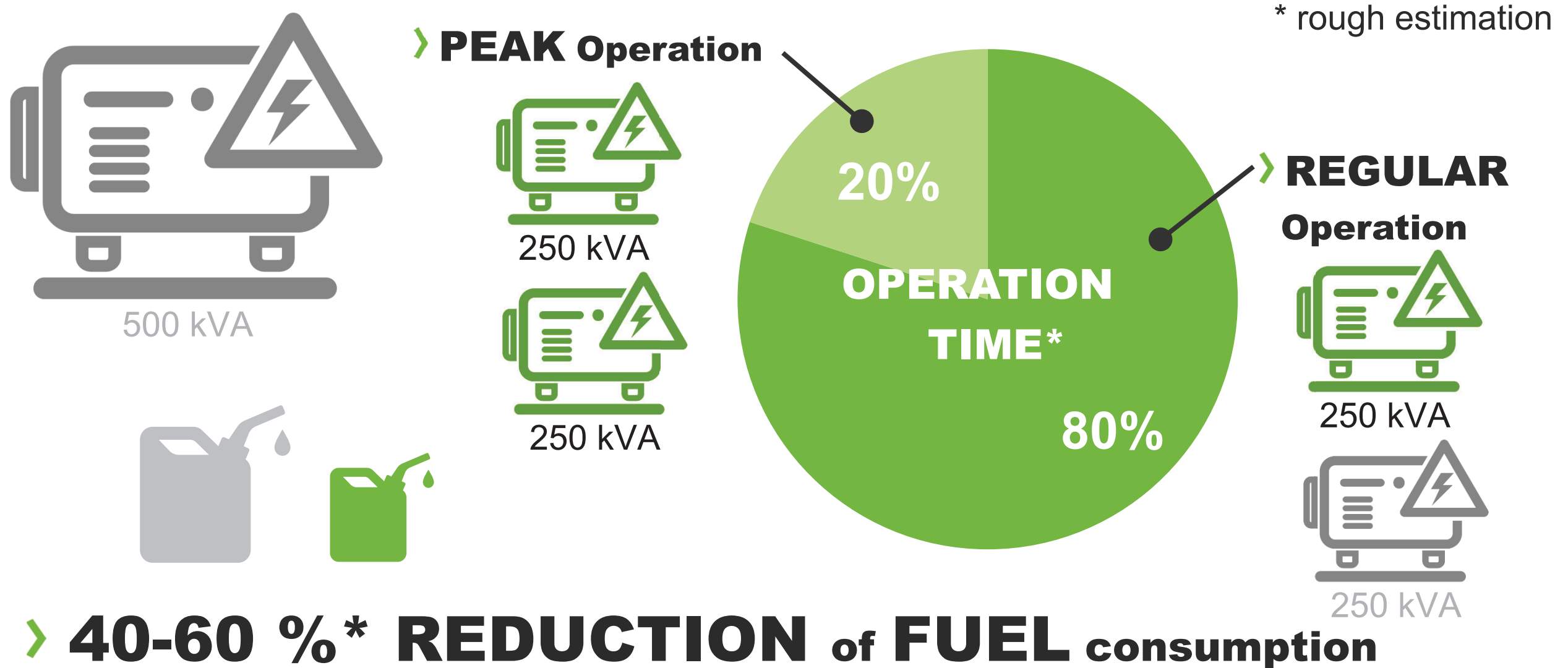


- › 100,000 lbs pull
- › 17,700 ft lbs torque
- › HP-Pump & Cabin on-board

DRIVE TECHNOLOGIES

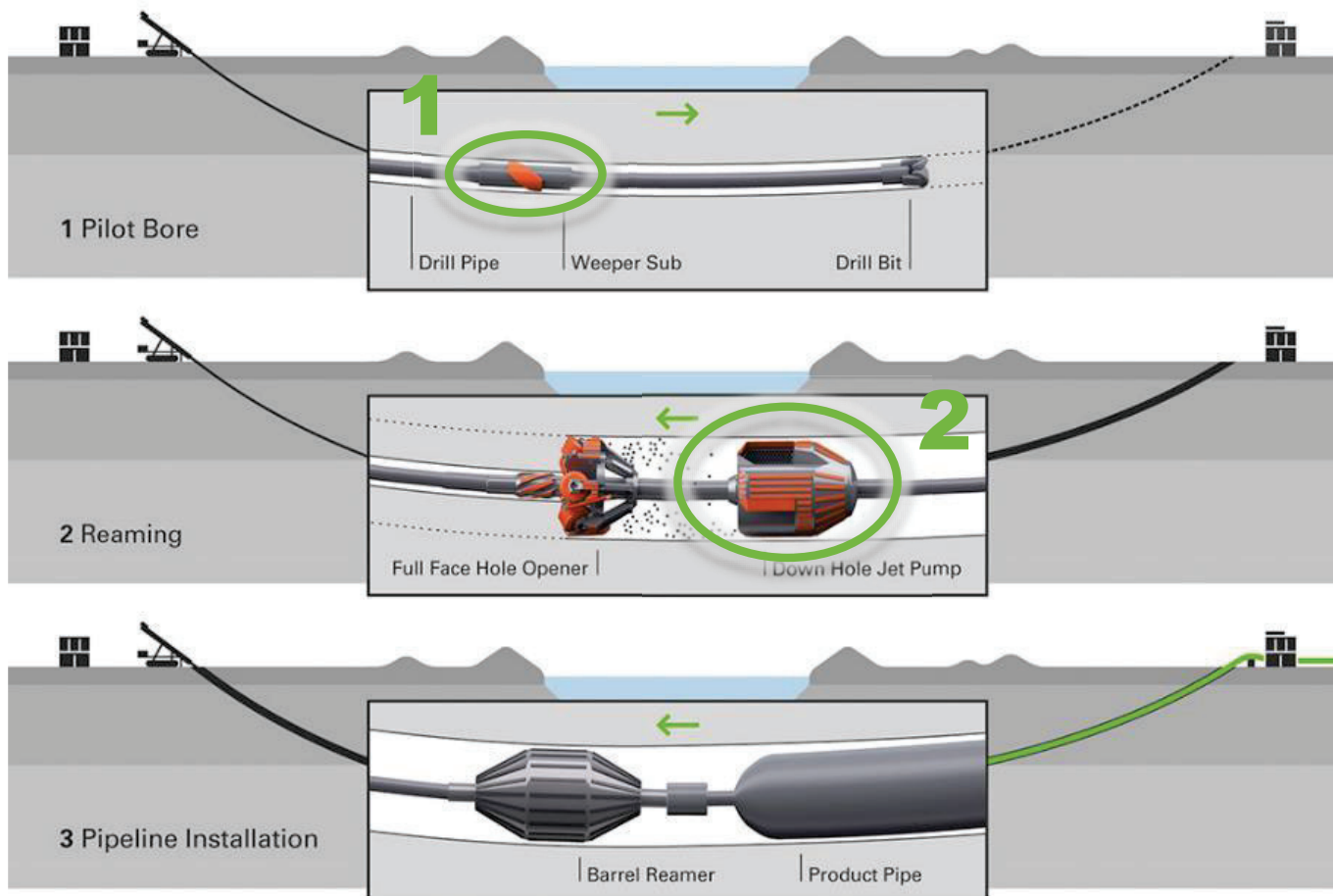


SMART GENERATORS FOR OPERATION



CHALLENGES OF TRENCHLESS SAFER

HDD: Downhole Tools to prevent frack-outs



1 Weeper Sub

- › Diameter: 8" – 12"
- › Jet vol.: 20-105 gpm

2 Down Hole Jet Pump

- › Diameter: 20" – 72"
- › Flow rate: 475 gpm



**BOOTH
#502**

SIMON HERRENKNECHT

Head of Business Division Pipeline,
Business Unit Utility Tunnelling

Telefon: +49 171 46 33 659

Mail: Herrenknecht.simon@herrenknecht.de

WWW.HERRENKNECHT.COM

HERRENKNECHT



Tunnelling Systems