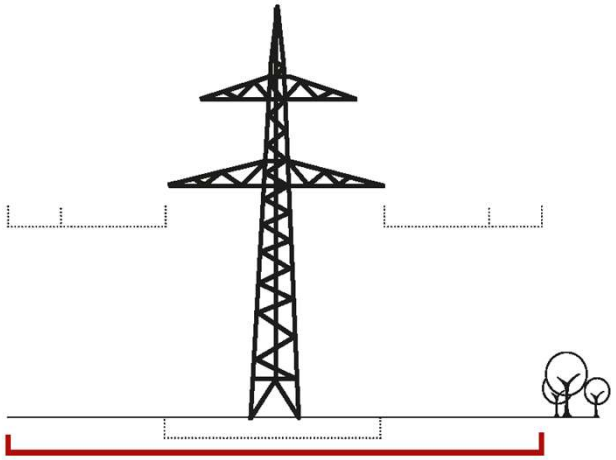
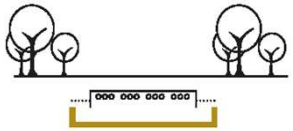

AGS
PowerRoad 2.0
Buoyancy-Based Slipping
Forced Cooled Power Transmission
enabled by
AGS System-Technology

One of these power lines hardly takes up any space!



72 m



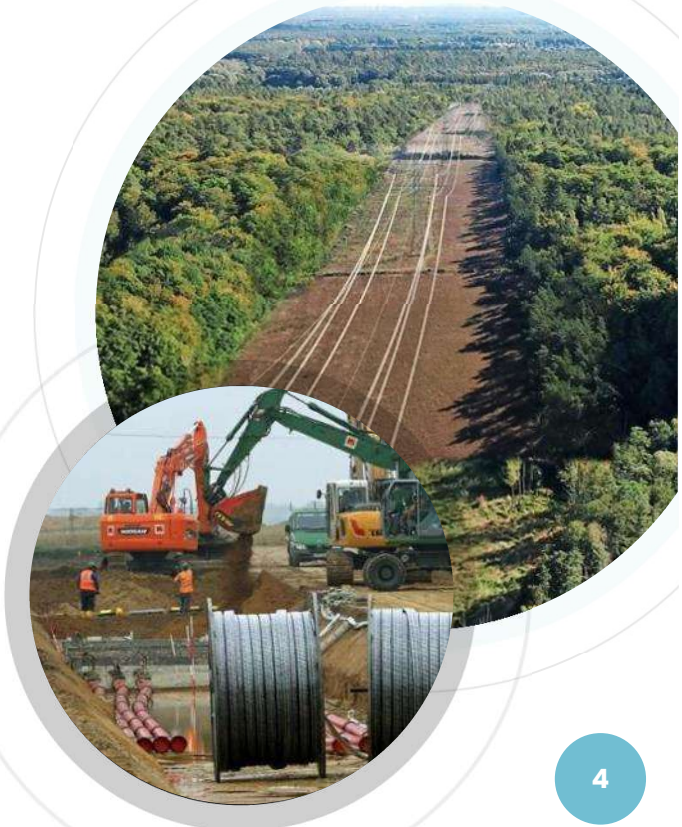
20 m

1,7 m

Challenge

Challenge

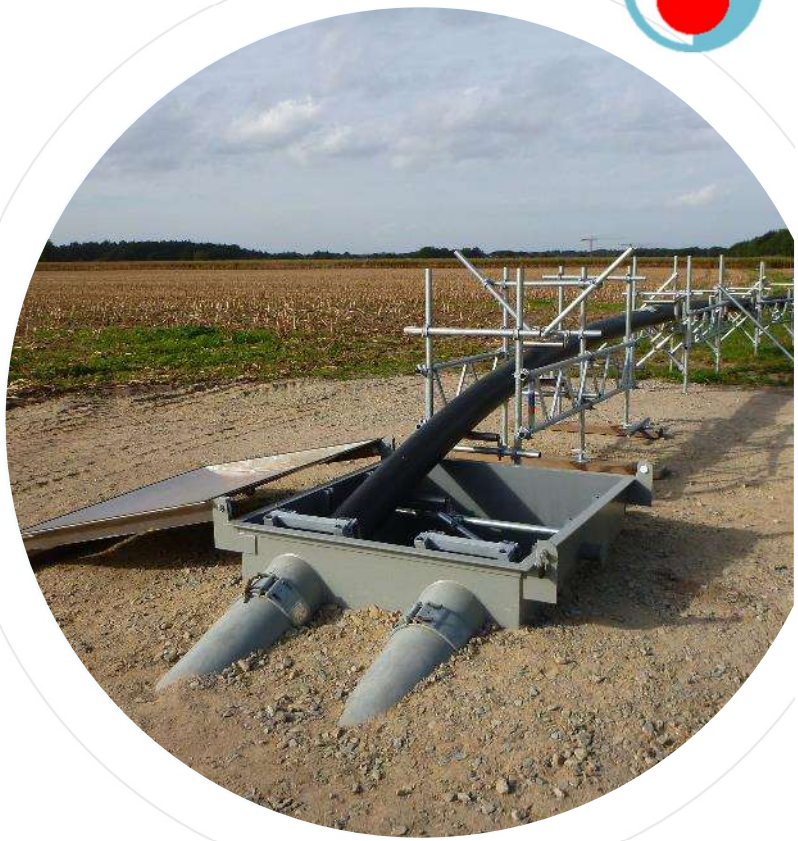
- High-voltage power lines are essential for the future of energy supply, as renewables require constant transmission of power from sources to where it is most urgently needed
- The power grid is a **bottleneck of the energy transition** in Germany
- Grid expansion is **delayed by years** due to citizen protests against overhead lines, landscape conservation, legal claims of affected landowners
- Both land cables and conventional underground cables face similar problems: they take up **too much space**, **damage the environment** and are **not connected to other infrastructure** (roads)
- hoped-for acceleration of grid expansion through the option of underground cabling (since 2015) has not been achieved to date



Solution

AGS PowerRoad 2.0

In the AGS process, a so-called **cable-carrier pipe system** is inserted into a **water-filled duct**. In the state of “weightlessness”, the frictional forces between the cable-carrier pipe and the duct during installation are virtually zero in straight-line sections. This **minimizes used space** and **facilitates grid construction**.

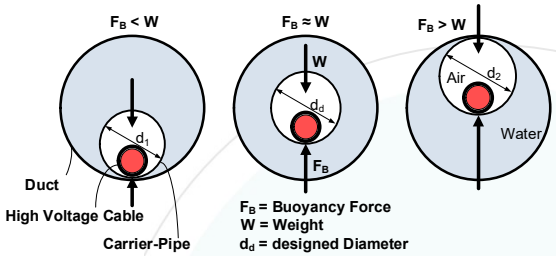


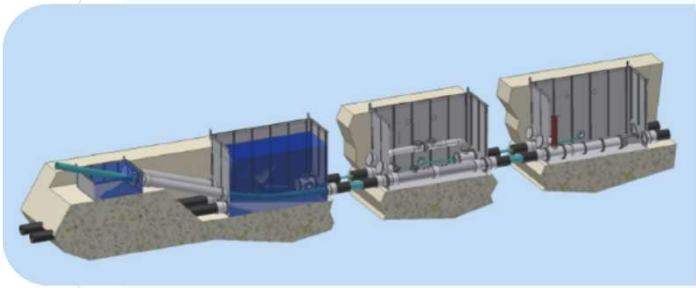
Solution: AGS PowerRoad 2.0

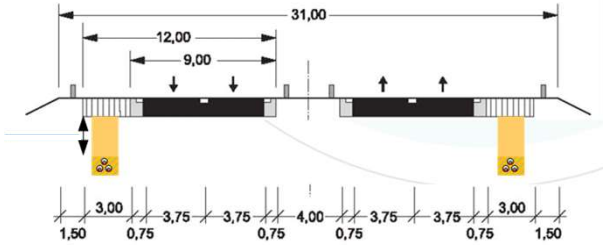
- Water-filled empty line pipe infrastructure can be an **integral part of the existing basic road infrastructure** due to **minimal space required**
- Flexible, reversible and easily exchangeable cable laying
- Active water cooling increases security and enables use of waste heat from power cables
- The imperative to **bundle different infrastructures**, such as roads and power lines, is anchored in German law

Solution: AGS PowerRoad 2.0

- AGS PowerRoad 2.0 is **already extensively tested**
- Reversibility, reduced use of space, longer cables and bundling with other infrastructure lead to **lower cost than conventional underground cables**
- Reduction of electromagnetic fields and generally **more environmentally friendly than conventional cable lines**
- More social acceptance enables **faster grid expansion**



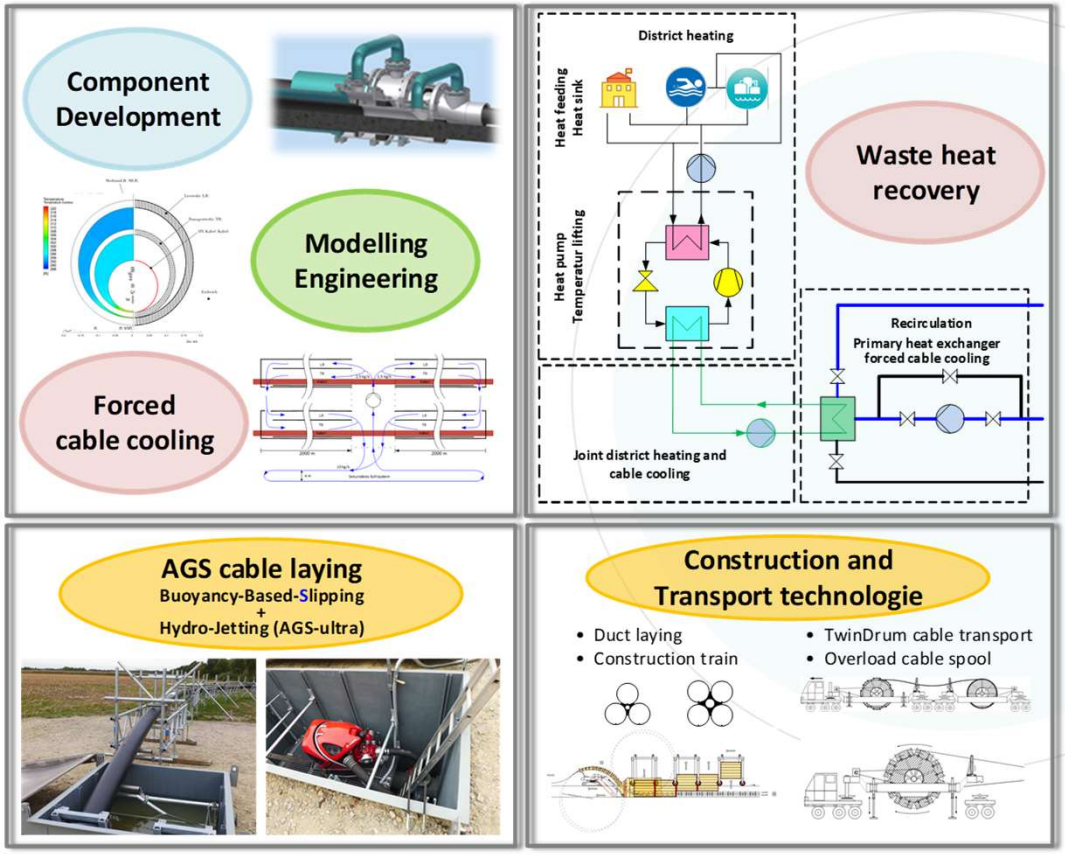




AGS System-Technology

Simple and efficient – 360° complete process solution:

- Development & engineering
- Transport & construction
- Cable laying
- Forced cable cooling & waste heat recovery

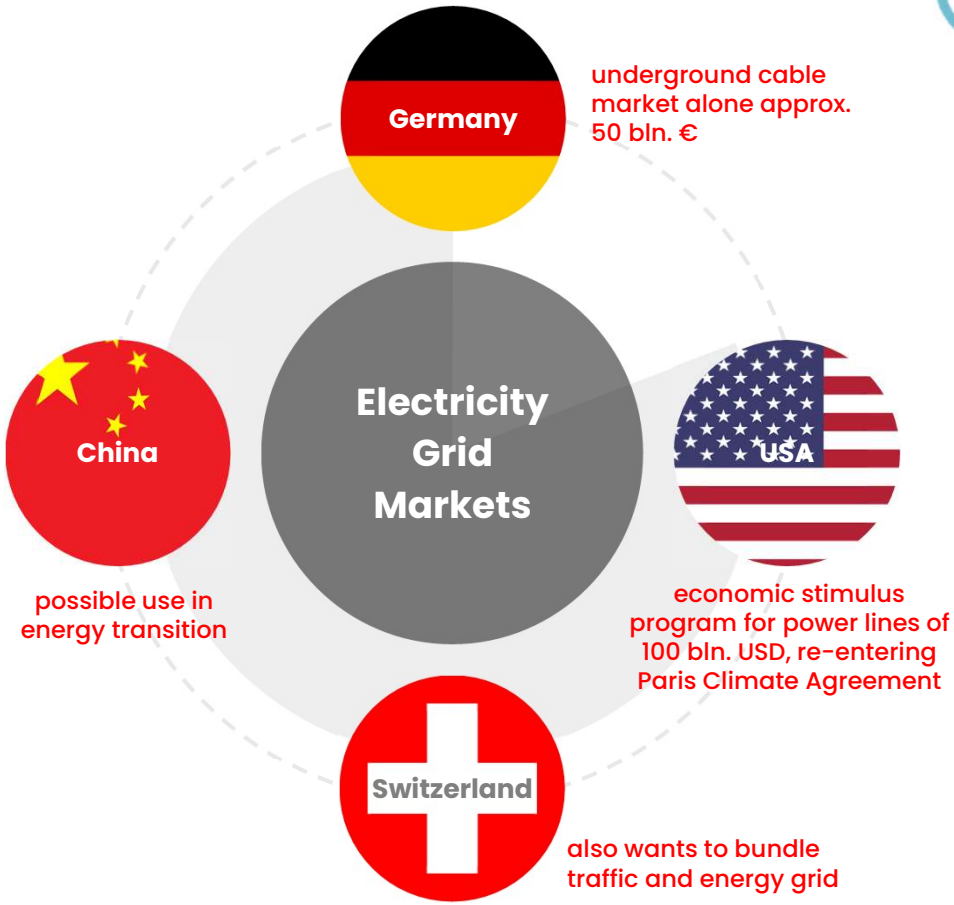


Value Proposition

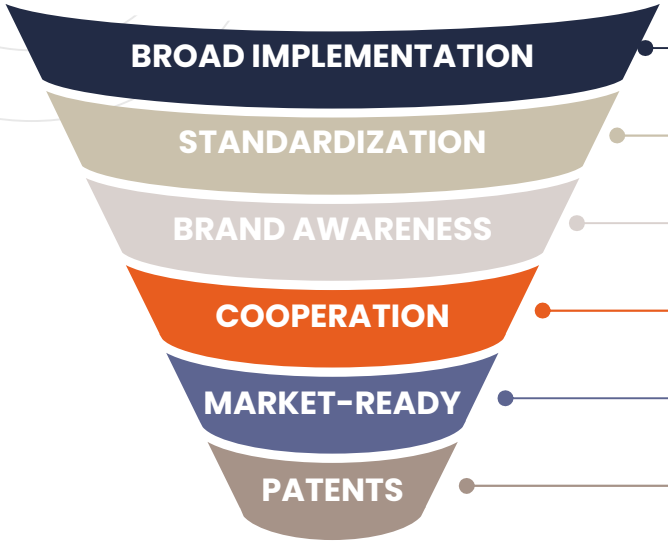
- **Market-ready system technology** which could also be universally deployed and **easily installed** by construction and installation companies using state-of-the-art technologies; innovative construction and installation technology for cable laying and replacement:
  - **ultra-narrow (< 2 m)**
  - **ultra-long (> 2 km)**
  - **reversible**
- Flexibility that enables **adaptation to future technology standards**, i.e. it is possible to later replace the installed cables without repeated underground work and without having to install ducts again (conventional ducts carry great damage potential and are much more expensive during replacement)
- Can be **installed under roadways** and **combined with other infrastructure** such as the charging grid for electromobility or broadband internet
- **Water cooling** and optional **use of waste heat**
- **No more lengthy approval processes - profitable, sustainable, uncontroversial**

Market

- At least **80% of electricity demand** shall be covered by renewable energies by 2050; this **requires a considerable expansion and renewal of the electricity grid**
- The **legally prescribed priority of underground cables** for HVDC in Germany will make the energy turnaround even more expensive and thus further burden citizens and the economy; compared to conventional underground cable laying, **AGS is significantly cheaper**
- The German government's resource efficiency program ProgRess III defines **infrastructure bundling as strategic goal**



Market Strategy



- **BROAD IMPLEMENTATION** — thanks to narrow and compact ducts, the expansion of the power lines can be implemented while traffic is running
- **STANDARDIZATION** — make duct-based cable laying the industry standard
- **BRAND AWARENESS** — high degree of brand awareness in Germany
- **COOPERATION** — with different renowned universities and companies
- **MARKET-READY** — test line, pilot line, certified by German TÜV, studies available, compliant with VDE and DIN
- **PATENTS** — approved in Germany/Europe, application running worldwide

Accolades

IKU, Innovation Award for Climate and Environment, 2017

Energy Award, 2017

Hermes Award, 2017

German-Dutch Business Award, 2017

Deutschland, Land der Ideen: Landmark in the Land of Ideas, 2017

German Renewables Award, 2018

Euroforum Start-up Award, 2019

Team

Dr. Dipl.-Oec. Rolf Hamann

Founder, Director
Dinslaken Office

Dipl.-Ing. Werner Spiegel

Founder, Director
Remscheid Office

Shareholder Structure:

- **Stadtwerke Stade GmbH, Stade**:
  unmittelbare Beteiligung, 20%
- **Scharping Beteiligungen GmbH, Frankfurt**:
  unmittelbare Beteiligung, 4,8%
- **Thüga AG, München**:
  mittelbare Beteiligung, 4%

Contact

AGS-Verfahrenstechnik GmbH
Hansestraße 18
21682 Stade

Telefon (04141) 404 - 350
info@ags-verfahrenstechnik.de
www.ags-verfahrenstechnik.de