

Controlled Pipeline Installation System Using Structural Foam

1. What It Is

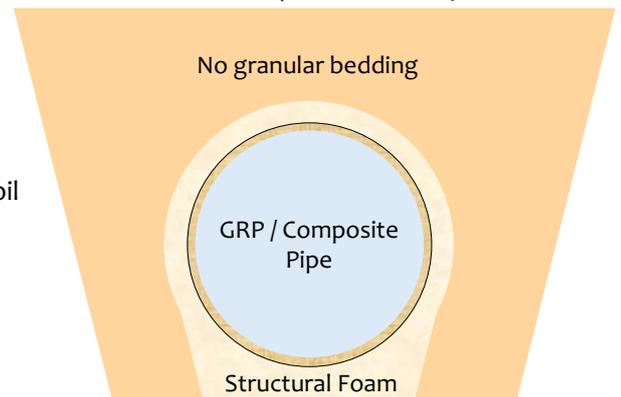
HydroFoamer is a restrained pipeline installation system in which structural polyurethane foam is used to stabilise pipelines within native backfill.

The method replaces granular bedding and concrete thrust blocks with a continuous load-distributing support system.

2. How It Works

- Pipe is installed and aligned
- Structural foam is applied around the pipe
- Foam expands and cures to form continuous support
- Loads are distributed along the pipeline and into surrounding soil

Cross-Section: Pipe–Foam–Soil System

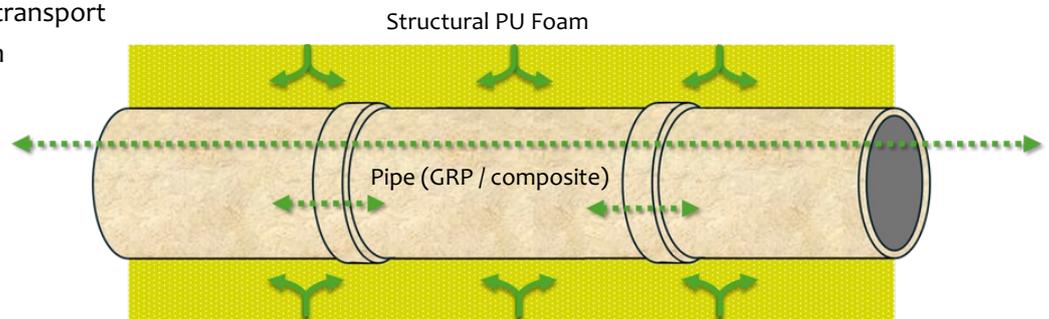


3. Key Advantages

- Eliminates most concrete thrust blocks
- Removes need for imported granular bedding
- Improves load distribution and stability
- Reduces excavation and transport
- Enables faster installation

4. Applications

- Hydropower penstocks
- Water infrastructure
- District heating
- Energy pipelines



Structural foam creates a continuous interface between pipe and soil, distributing loads along the pipeline and eliminating the need for discrete restraint elements.

5. Validation

- Full-scale commercial installation at Statkraft Adamselv (Norway)
- Independent academic validation (NTNU)
- Field-tested under harsh climatic and terrain conditions

6. System Characteristics

- Mobile installation platform
- Controlled application process
- Compatible with GRP and other pipeline materials
- Scalable to large infrastructure projects

HydroFoamer converts a segmented pipeline into a continuous restrained system.