



***Drilling Technique***  
***A Brief Description***



# **Drilling Technique a brief description**

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- 1. What does it mean: to drill?**
- 2. Why do you drill?**
- 3. What kind of different applications are there?**
- 4. What do you need for drilling?**
- 5. What kind of different drilling procedures do you use?**
- 6. What kind of equipment is needed?**
- 7. Different kinds of drill rigs**



# Drilling Technique, a brief description

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What does it mean: to drill?

**Drilling is the supply or displacement of soil  
(also rocks) to produce cylindrical holes.**

**These holes are used to fill the soil with, for example,  
soil stabilizing substances**

**or ,bodies‘ or to reach and supply resources.**

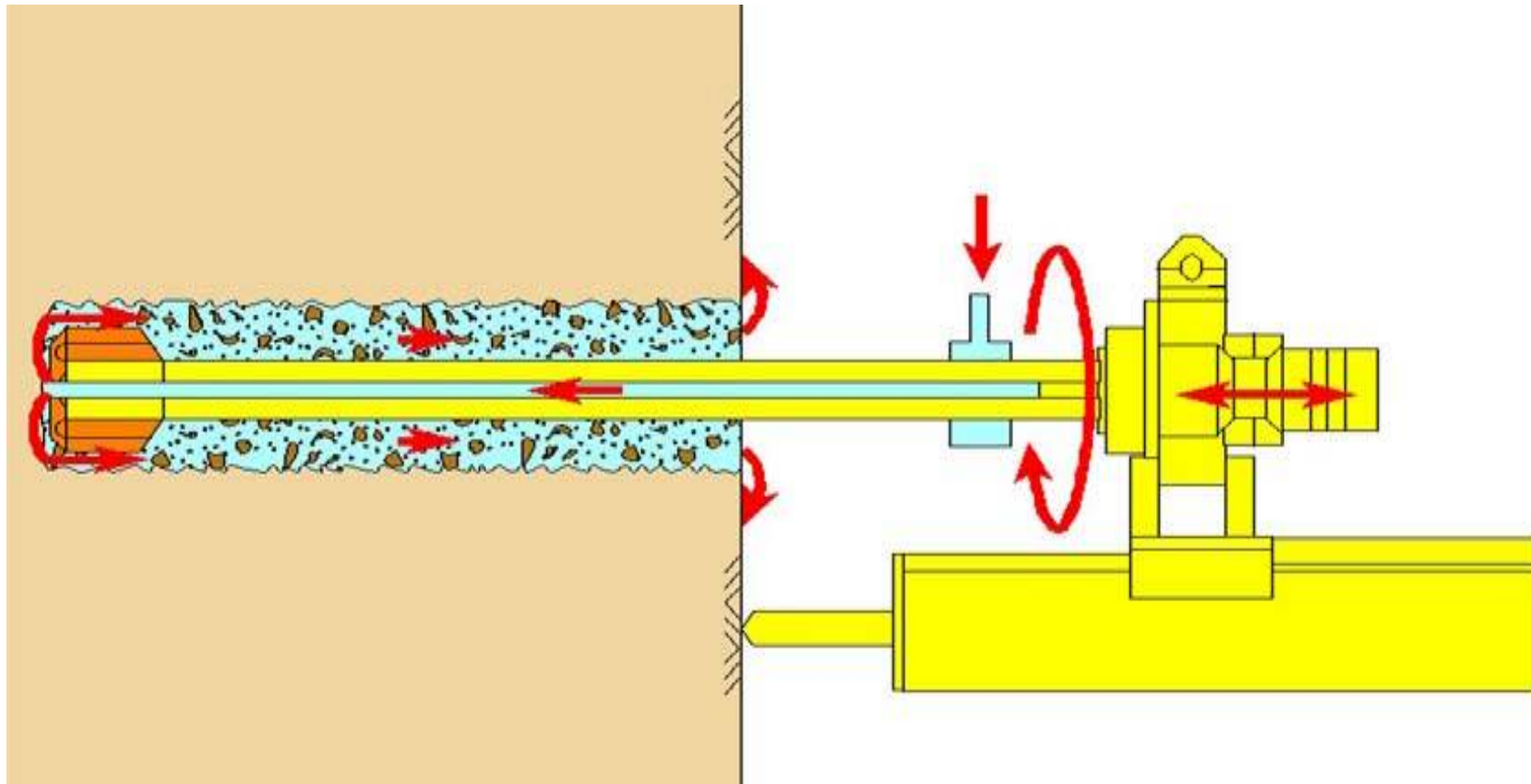
**Using water as a media is getting more and more important.**

**During drilling operation you use a rotating tool  
which at the same time**

**is powerful enough to penetrate all soil conditions.**

# DSI Drilling Technique, a brief description

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# DSI Drilling Technique, a brief description

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**Why do you drill?**

**During drilling operations you can reach deep depths at a relatively low soil moving at the same time at very low effort.**

**When you use a regular drilling procedure for example a classical excavation method to reach the same depth to supply and to move the same amount of soil and in case you have to work directly at flanking buildings, you can only operate at high cost and a time consuming level (it means you need more labour and cost for supporting works and also for the excavation itself) in order to reach the same depths.**

Different anchor drill rigs in operation



# DSI **Drilling Technique, a brief description**

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**What different kinds of applications are there?**

**Well drilling**

**Injection drilling**

**Anchor drilling**

**Sounding drilling**

**Core drilling**

**Micro pile drilling**

**Blast hole drilling**

**Freeze over drilling**

**Geothermal drilling**

**Mining**

**Exploration drilling**

**Escape drilling**

**Supply drilling**

**Drainage drilling**

**Directional drilling (controlled drilling)**

**etc.**

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**What do you drill with?**

**With a hand driven device,  
with an air driven device,  
with mechanical driven rigs,  
with hydraulically driven rigs,  
with mobile drill rigs,  
with stationary drilling units.**

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**Where do you drill?**

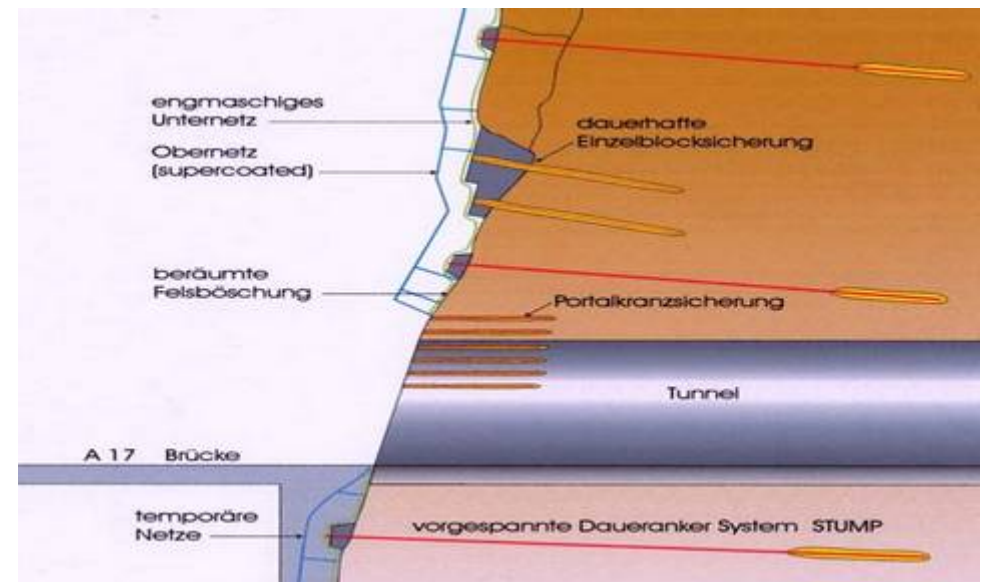
**Securing slopes in cut terrains,  
refurbishing buildings, underpinning in buildings,  
anchoring of buildings,  
blasting on the water, in a stone quarry, underground or in mines**

Cross section of building a tunnel

securing a slope

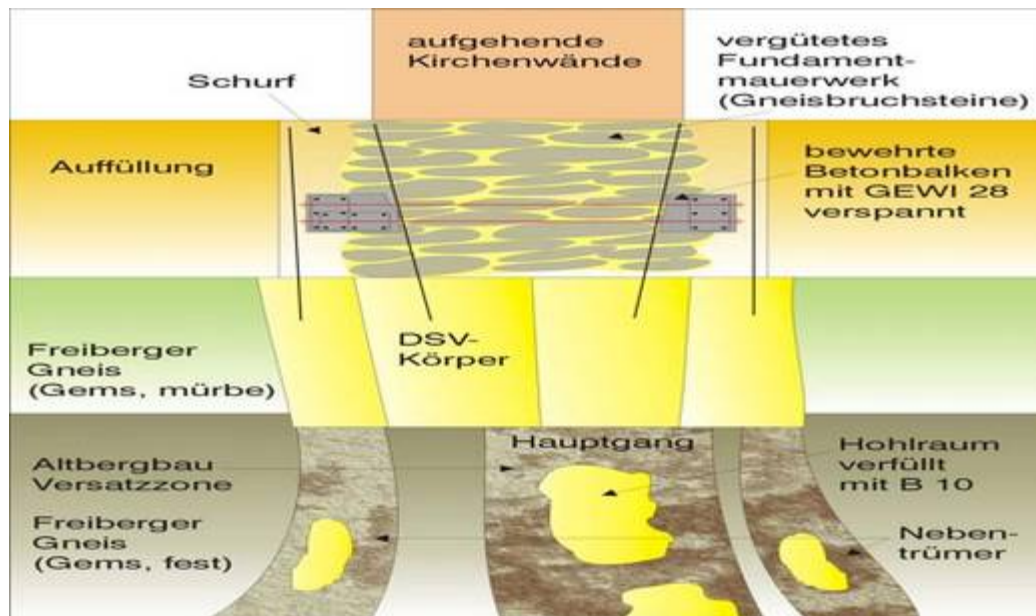
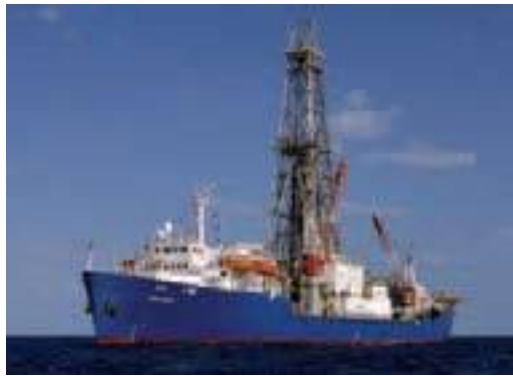


fundamental  
underpinning





# DSI Drilling Technique, a brief description

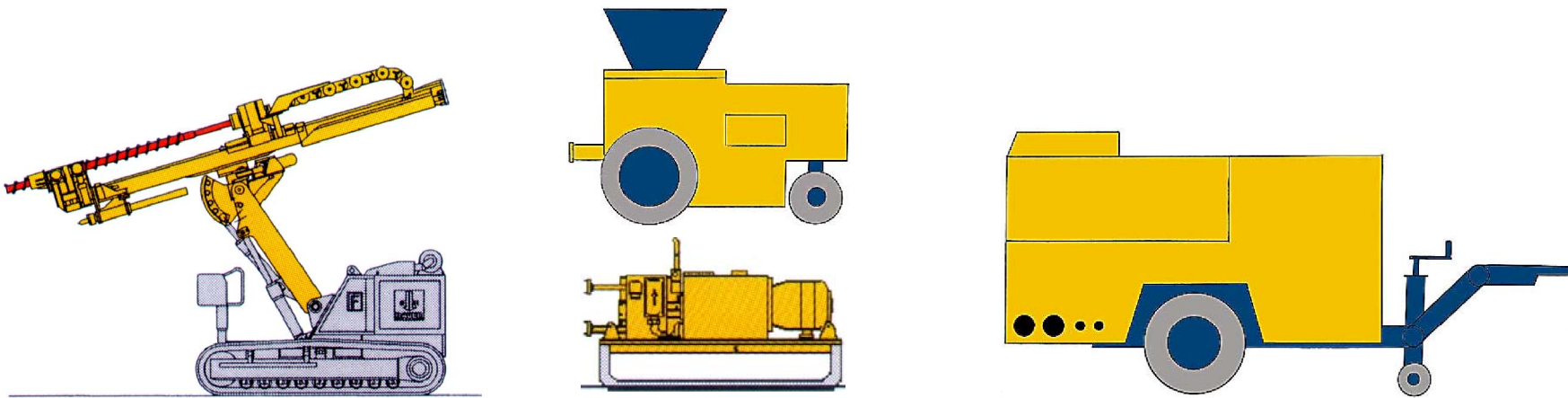




# Drilling Technique, a brief description

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What do you need for drilling operations?



**Drill rig, mixing plant; compressor or flushing pump; drill strings and accessory**

# DSI Drilling Technique, a brief description

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## Different kinds of drill rigs



drill rig for slope nailing



anchor rig at  
filling cavaties



# DSI Drilling Technique, a brief description

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different kinds of drill rigs



well rigs



# DSI Drilling Technique, a brief description

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## Different kinds of drill rigs



mini rig to set  
guard poles



Drill rig  
for  
DTH drilling



# Drilling Technique, a brief description

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## Different kinds of drill rigs

directional rig  
for controlled drillings



rig at underpinning  
a foundation



rig for narrow  
room conditions



# DSI Drilling Technique, a brief description

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blast hole rig  
with an on board  
compressor



different kinds of drill rigs



anchor rig with  
rod magasin



pile rigs

# DSI **Drilling Technique, a brief description**

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- Requirements for drill rigs
- 1. easy set up,
- 2. high availability,
- 3. high capability,
- 4. modern engineering,
- 5. quick service,
- 6. versatility.



# DSI Drilling Technique, a brief description

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- Easy set up means:
  - only that much components as needed,
  - only that costly as needed,
  - all components are easy to reach,
  - allows a clear view,
  - only few movable parts as possibly needed.

# DSI Drilling Technique, a brief description

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- High availability means:
  - You only need short time by optimized building size (transport),
  - optimized wearing parts,
  - modular building systems and
  - therefore high availability of needed spare parts,
  - easy maintenance for set-up,
  - optimized wearing parts,
  - the design is service orientated,
  - no need to have exotic components.

# DSI Drilling Technique, a brief description

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- High capability means:
  - to ensure a maximum drilling power at a size as small as possible,
  - small size means less problems at transport and better working conditions for narrow rooms on the job site.

# DSI **Drilling Technique, a brief description**

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- Modern technique means:
- to be up-to-date,
- to watch the current trend and
- to prepare the rigs accordingly,
- to adapt the technique to the particular operation.

# DSI **Drilling Technique, a brief description**

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- Quick service means:
- to reach a high service level,
- to strive for modular building systems,
- to have service partners right on the spot,
- to reduce standstill to a minimum,
- to be available at any time ( i.e. service phone/hot line).

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- A high versatility means:
- not to design rigs for only one operation,
- to develop a product range,
- or a series being compatible for as many applications as possible.

# DSI Profile of drill rigs

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- Rigs for vertical drilling,
- rigs for core drilling,
- rigs for well drilling,
- rigs for geothermal drilling,
- rigs for pile drilling.

# DSI Profile of drill rigs

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- Rigs for core drilling
- stand out for a simple set up of the kinematics,
- drilling operation usually is vertical,
- set up only requires some degrees of slewing either to the right or to the left side,
- the rigs mostly are equipped with a 4-point support.



# DSI Profile of drill rigs

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- **Rigs for core drilling**
- need high speed for drilling operations,
- do NOT need a high torque,
- usually have a flushing pump „on board“,
- mostly are equipped with 1-2 rope winches,
- only need low power for the drilling function (approx. 15-35 kW),
- should be equipped with a working pressure balance for backing up the drill string.

# DSI Profile of drill rigs

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- Rigs for core drilling
- must have compact dimensions,
- must be equipped for SPT tests  
(Standard Penetration Test),
- must be easy to set up and easy to handle,
- must be easy for transport.

# DSI Profile of drill rigs

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- Rigs for well drilling
- stand out for simple design of the kinematics,
- drillings usually are vertical,
- set up only needs some degrees of slewing range to the left or to the right side,
- the rigs mostly are equipped with a 4-point support.

# DSI Profile of drill rigs

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- **Rigs for well drilling**
- need medium speed for drilling operations,
- need up to 35,000 Nm torque (4" API),
- usually have a powerful flushing pump „on board“,
- usually are equipped with 1-2 rope winches,
- need low power for the drilling functions (approx. 30-100 kW) but a lot of power for the secondary functions (up to 100 kW),
- should be equipped with a working pressure balance for backing up the drill string.

# DSI Profile of drill rigs

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- **Rigs for well drilling**
- should be easy to set up and easy to handle,
- have to be easy for transport,
- are equipped with rod supports and handling systems,
- need a high pull-force to hold the drill string,
- usually are equipped with a separately operated piping unit,
- usually are equipped with a chuck at the rotary head.

# DSI Bohrgeräteprofile

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- Rigs for geothermal drillings

# DSI Thank you very much ...

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Thank you for your kind attention...

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