



**Research Project at  
Ruhr-University Bochum  
concerning Bentonite Suspensions  
modified with Polymers**

**Dr.-Ing. Britta Schoesser**



**Object / Aim**

Improve Knowledge on Construction Site

Treatment of Bentonite Suspensions for  
Lubrication of Pipe String

Reservation to use of Polymers

Manual for Construction Site giving  
Recommendations for specific geological  
Conditions



**Basics I**

More than 350 Bentonite and Polymer Products  
found, Products in Germany available > 30

Bentonite: Ca, Na, Wyoming, modified  
Bentonites

Types of Polymers: Viscosifier (Viscosity  $\uparrow$ ),  
Thinner (Viscosity  $\downarrow$ ), Filtrate Reducer, Lost  
Circulation Materials

Polymers: CMC, PAC, Xanthan Gum, Guar Gum,  
Starch, granular materials



**Basics II**

Use of different Concentrations of Bentonite  
(3%, 4%, 5% up to 12%, 14%)

pure and modified with

different Combinations and Concentrations of  
Polymers (0,001% - 0,1%)



**Step 1**

Determination of Suspension Parameters



**Step 2**

Determination of Limits of modified Bentonite  
Suspensions in defined Soils





## Step 2

---



## Step 3

---

Simulation of Pipe Jacking in model tests

Efficiency of Bentonite Suspensions in  
changing geological Conditions

---



Thank you for your attention!

---