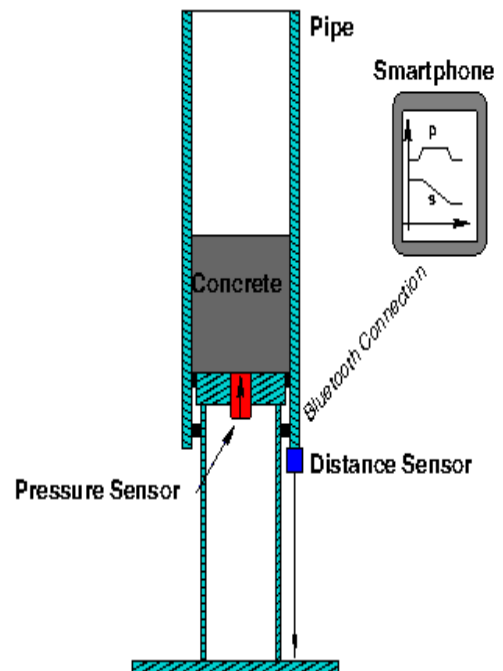




Sliper – Determining the pumping capacity of different concrete mixes under laboratory conditions

Each individual ingredient of a concrete formula has an effect on the pumpability of the concrete. For example, admixtures and additions for reducing the water content and the proportion of cement may have a negative impact on the pumpability of the concrete. The new **SLIPER** measuring device (SLiding Pipe RheometeR), developed by Putzmeister and produced by Schleibinger, allows the user to quickly assess the pumping characteristics of concrete and other materials in the laboratory and on the construction site before they are used.

"Using the rheometer the time and effort spent on pumping tests can be reduced and thus costs saved. At the same time, this new technology facilitates a quality check, as well as a simple prognosis option with regard to the pumping behavior of concrete and other thick matter," states concrete technologist Dr. Knut Kasten from Putzmeister. Consistent measurements at the pump and using the rheometer have shown what properties the concrete has when pumping: As can be frequently observed with modern high-strength concrete mixes, this special concrete also generated relatively high pressure drag in the conveyor pipe. The properties determined through experiments help in the targeted and clever design of later pump systems.

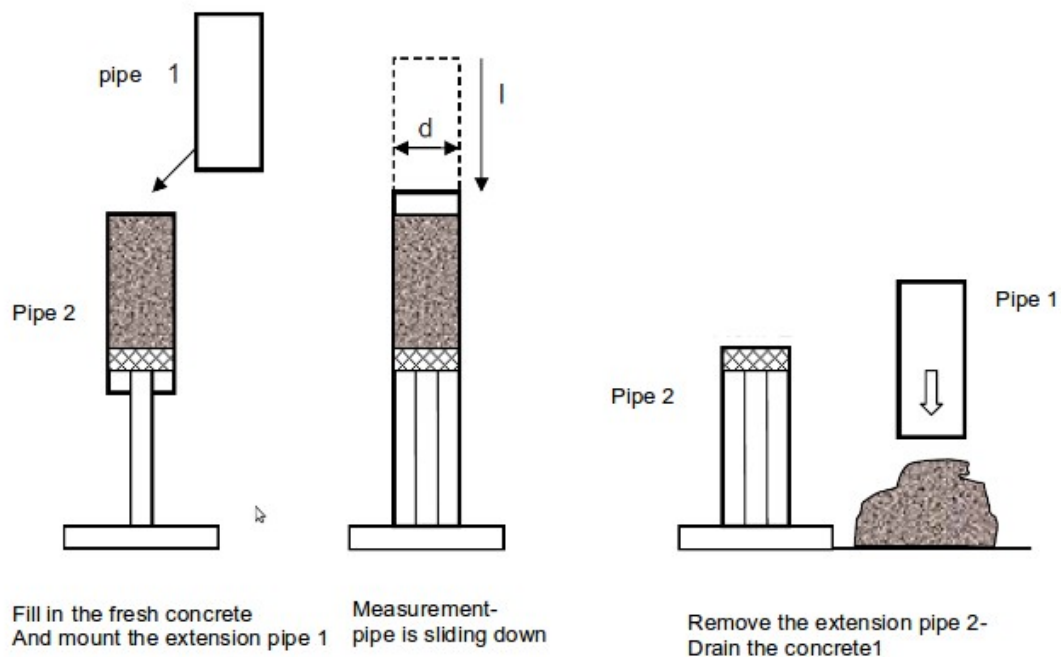




Schleibinger Geräte
Teubert u.-. Greim GmbH
Gewerbestraße 4
84428 Buchbach

Germany
Tel. +49 8086 94010
Fax +49 8086 94014
Ust. ID DE 174 175 046

Amtsgericht Traunstein HRB 9646
e-mail info@schleibinger.com
<http://www.schleibinger.com>



Measurement Principle

The **SLIPER** provides a vertical standing standard pipe which is filled with fresh concrete. In the pipe there is a piston which is standing on the ground floor. Integrated into the top of the piston there is a pressure sensor. If the pipe is sliding downwards, the pressure in the pipe is measured. Also the speed of the pipe is recorded. The measurement data are sent wireless to a common smart phone. There the data are stored and displayed graphically.

The properties of the fresh concrete are evaluated by the software App included. With this software the design and parameters for the pump application may be estimated. Therefore a computational model is used which calculates the expected pressure loss in the concrete pump.

The system is portable, robust, battery driven and designed for the construction site.

The German company, Schleibinger Geräte GmbH, well known for its concrete rheometers Viskomat and eBT2, will bring the **SLIPER** to the market in October 2014.

Literature

- Knut Kasten; Gleitrohr – Rheometer, Ein Verfahren zur Bestimmung der Fließeigenschaften von Dickstoffen in Rohrleitungen; PhD thesis, TU Dresden 2009
- Knut Kasten (Inventor), Putzmeister Concrete Pumps GmbH (Applicant); Rheometer for high-viscosity materials, WO 2010060701 A3 / DE 10 2008 059 534 A1
- Viktor Mechtcherine, Venkatesh Naidu Nerella, Knut Kasten : Testing pumpability of concrete using Sliding Pipe Rheometer, Construction and Building Materials, 53 (2014) 312–323
- J. Kronenberg : „Die Betonpumpe ist schuld!“ WISSENSPORTAL baumaschine.de 1(2011), Autor Anja Kittelmann, Communication Marketing, Putzmeister Holding GmbH

Technical Data **SLIPER***:

Pipe Diameter	125 mm
Filling Height	500 mm
Pressure Range	1..1500 mbar
Speed Range	0..4 m/s
Weights	2 x 2,5 kg und 2 x 5 kg

* Technical data maybe changed w/o notice

Order Code

Schleibinger SLIPER including: Android Smartphone incl. Software, 2 batteries + charging unit, transport case.	B0200
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Schleibinger Geräte
Teubert u.-. Greim GmbH
Gewerbestraße 4
84428 Buchbach

Germany
Tel. +49 8086 94010
Fax +49 8086 94014
Ust. ID DE 174 175 046

Amtsgericht Traunstein HRB 9646
e-mail info@schleibinger.com
<http://www.schleibinger.com>