

CaTeNA

Concept study for a mobile seismic
Shear Wave Source
with repeatable signals

September 2020

Analysis and investigation of suitable technologies for the generation of seismic signals for high-resolution exploration of the top Earth layers

- Mobile and flexibly usable seismic Shear Wave Source
- Generation of horizontal polarized waves (SH waves)
- Single SH waves → pulse source
- Study of the near-surface ground medium
- No penetration of the surface (no costly drilling)
- High-accuracy pulse generation including compensation and repeatability



Impact cylinder

Hammer

Jacket (with sliding bearings and spring inside)

- Car / trailer mounting mechanism
- Rotation for two impact directions
- Individual height adjustment

→ Up to >120m distance

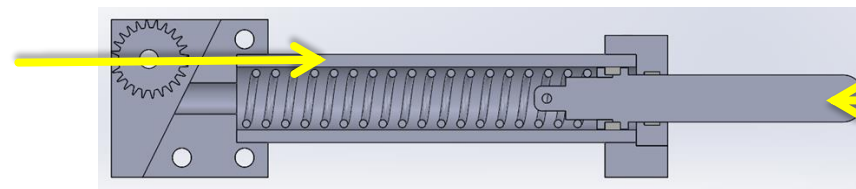
→ Good SH-stimulation, high frequency

→ Robust height adjustment mechanism

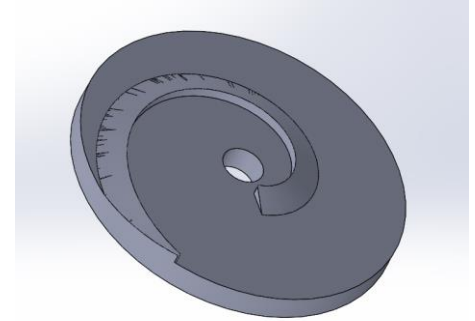
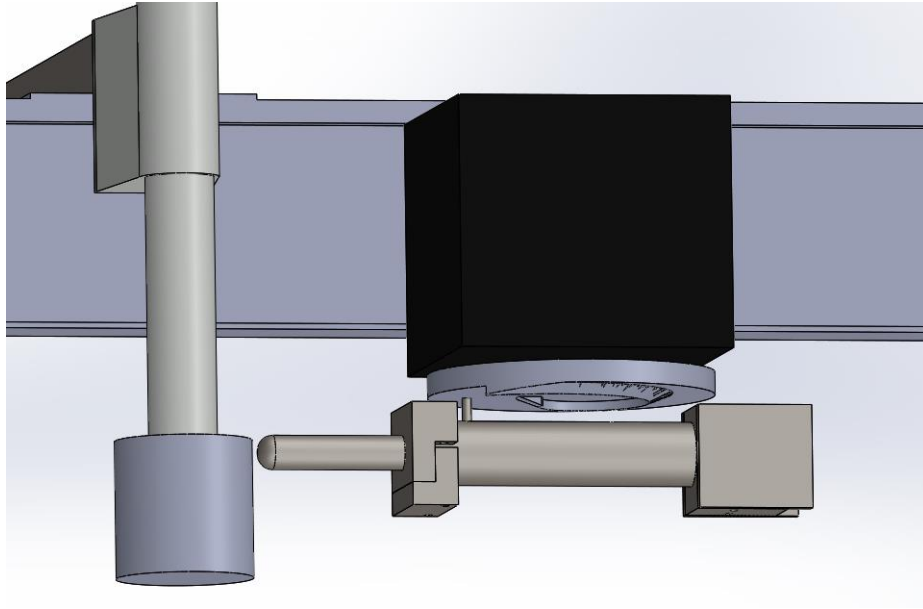
Negative:

- Rope tensioning not field-suitable
- Missing trigger
- insufficient ground clearance

Jacket (with sliding bearings and spring inside)



Hammer



- One rotating disc -> any number of releases without restoring the initial position
 - Few components -> compact design, robust, error-resistant and noise avoiding
 - Easy replacement of wearing parts
 - Many improvements over previous setup
- **Analysis/results of final experiment are promising**

