Dual density tests

Numerical analysis of dual-density samples simulates the watering process of bentonite material in two layers of two different initial dry densities of 1700 kg/m3 and 1300 kg/m3. The selected experiments No. 10 and No. 12 were tested in the laboratory of the Faculty of Science at Charles University.

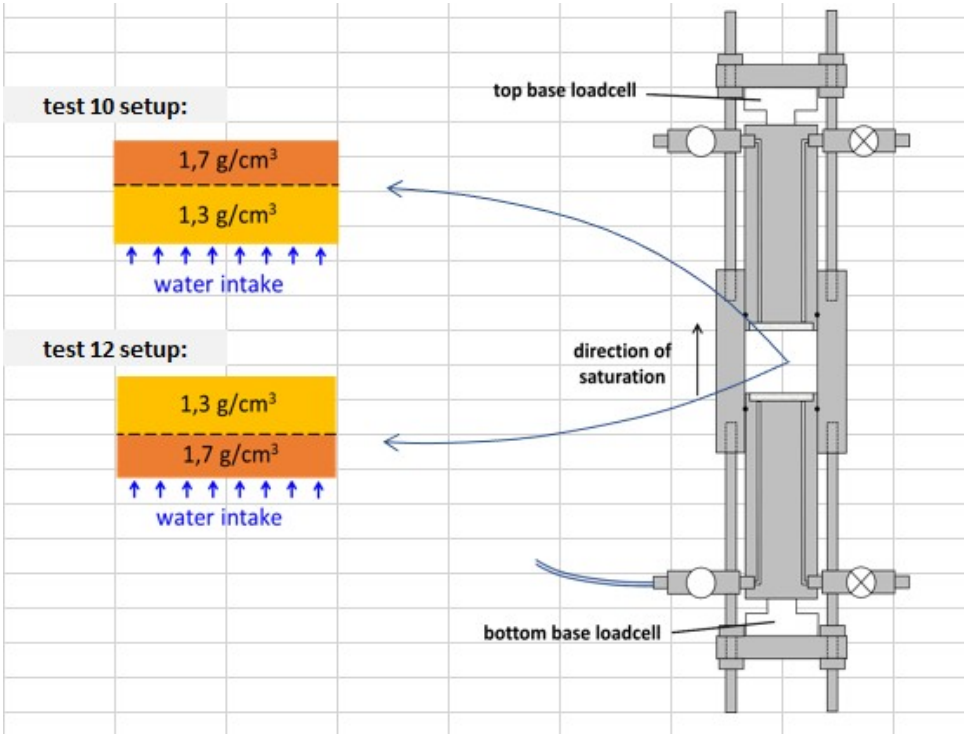

Figure 1: Setup of Test 10 and Test 12.

Test 10 setup:

Lower layer ρ_d=1300 kg/m^3, height = 12.479 mm. Upper layer ρ_d=1700 kg/m^3, height = 9.831 mm. Watering from the bottom, water pressure p_w = 1 MPa.

Test 12 setup:

Lower layer ρ_d=1700 kg/m^3, height = 10.016 mm. Upper layer ρ_d=1300 kg/m^3, height = 12.184 mm. Watering from the bottom, water pressure p_w = 1 MPa.

Additionally, two tests with samples of one layer with constant dry density were computed for comparison.

Test 7A setup:

Layer density ρ_d=1300 kg/m^3, height = 25.920 mm.
Watering from the bottom, water pressure p_w = 1 MPa.

Test 7A setup:

Layer density ρ_d=1700 kg/m^3, height = 19.938 mm.
Watering from the bottom, water pressure p_w = 1 MPa.

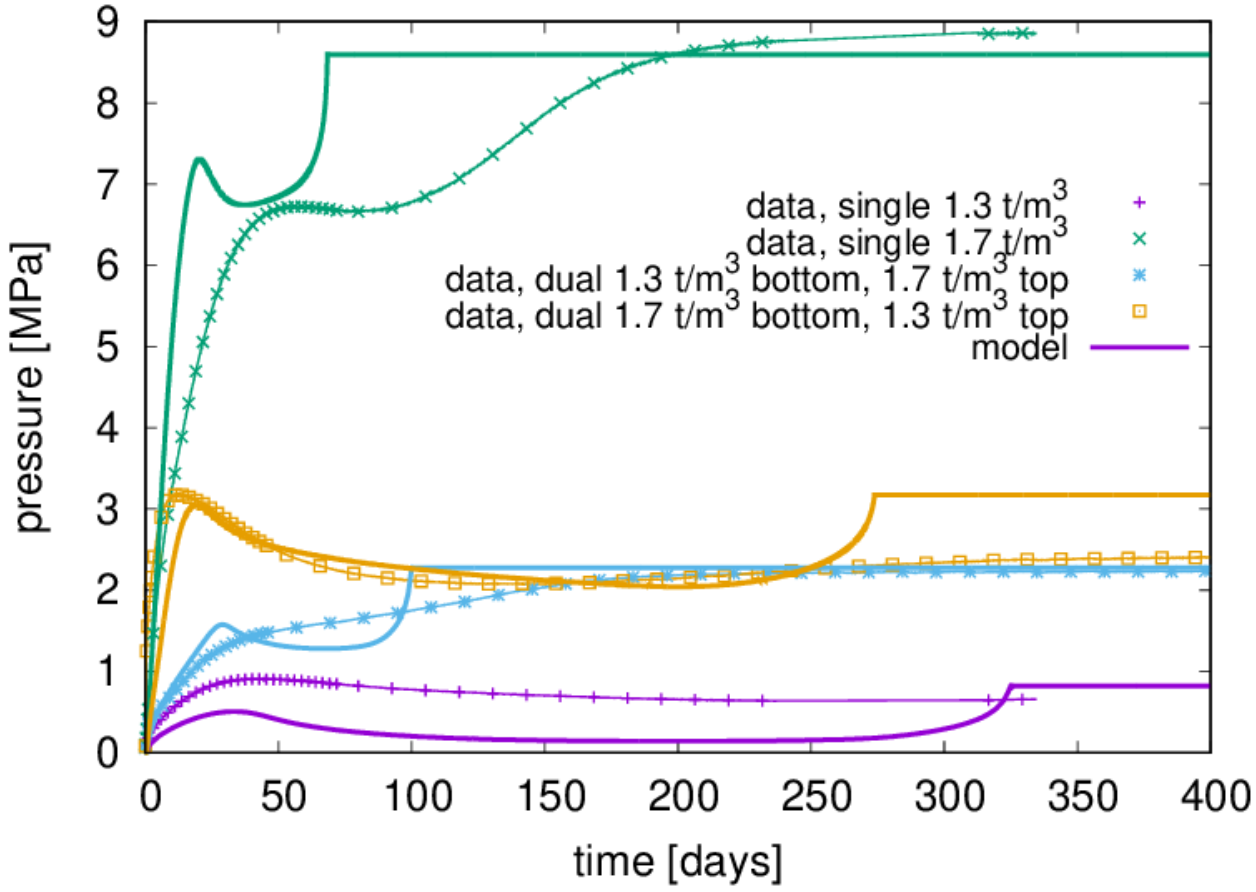

Figure 2: Comparison of computed and measured swelling pressure.