

COLLABORATIVE RESEARCH CENTER 837

INTERACTION MODELING IN MECHANIZED TUNNELING

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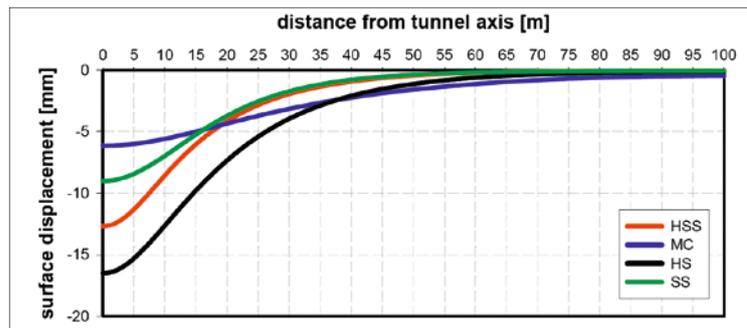
On the Influence of Soil Models on the Results of Tunneling Simulations and the Consequences of EC7 for Tunneling Design

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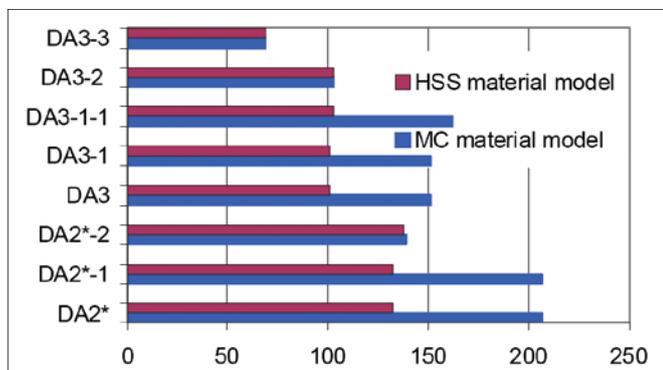
Graz University of Technology, Austria

31.03.2011 – 16:00 h – IA 6/21

Finite element analyses are routinely performed in the design phase of tunnel construction. When tunnels with low overburden in soils are considered the influence of the constitutive model employed for describing the mechanical behaviour of the soil has a significant influence on calculated displacements and lining stresses and consequently on the tunnel design. In the presentation this will be addressed by comparing the results obtained from different constitutive models for a simplified tunnel excavation problem.



Influence of constitutive model on surface settlements (stiff clay)



Influence of EC7 design approach on bending moments of tunnel lining

A second source of "uncertainty" in the design is the choice of the design approach which will be discussed in the second part of the presentation. Although Eurocode 7 has not been intended to be applied to tunnel design it has become an issue in practice because a consistent level of "(partial) safety factors" is desirable, e.g. for large infrastructure projects involving deep excavations and tunnels. The merits and disadvantages of the different design approaches are evaluated by means of a practical example, namely a station tunnel in soil in the city of Bratislava.

Guests are sincerely welcome!