PLAXIS

CONNECT Edition V21.00

User Defined Soil Models: Fluid model [ADV]+[GSE]

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Fluid model

Introduction

The Fluid model is an elastic model that can be used to model a body of fluid using active Finite Elements. Modelling fluid using Finite Elements may be necessary in case the stiffness or mass of the water must be taken into account during the calculation. For example, to model confined water in a offshore suction anchor or to model the inertia of water under dynamic loading.

With the Fluid model the fluid will behave stiff under compression while shear stiffness is very low. The user has to specify the elastic bulk modulus K of the fluid. Internally, the Poisson's ratio is chosen such that the shear stiffness G is low enough to be negligible without leading to numerical issues, while on the other hand the material is almost incompressible ($\nu \approx 0.5$).

Usage

The Fluid model is delivered as User Defined Soil Model. In order to use it, follow these steps:

- Create a new **Soil and Interfaces** material set
- Set the **Material model** to **User-defined**
- On the **Parameters** tabsheet choose the **DLL file** `fluid64.dll`
- For the **Model in DLL** choose the only model available: `Fluid`

Parameters

The Fluid model has 1 parameter: the bulk modulus K of the fluid.

For water, K is typically chosen as $2.2 \cdot 10^6$ kPa.