



## Option 2: Measurement Based Model

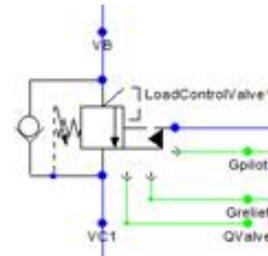
A measurement based component is manufacturer independent with regard to the model set-up. Simulation times will also be faster since there are a lot less components and small volumes involved. It is of course not possible to study any internal effects of the valve and parametrization requires measurement data for the whole range of operation of the modeled system. Due to its fast calculation speed this approach is best suited for system simulation.

Pros:

- A measurement based model will not slow down the system simulation.
- The model set-up is manufacture independent.

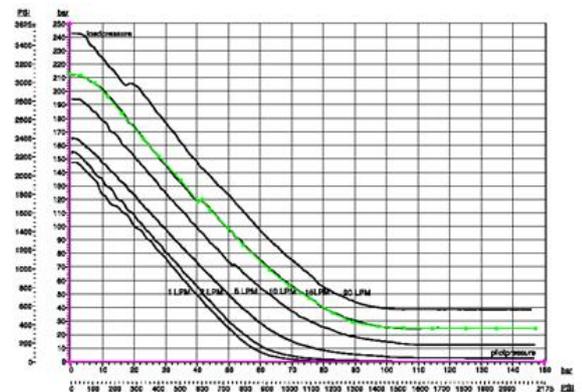
Cons:

- Measurements of the component's behavior are required.
- No conclusion about component internal effects.



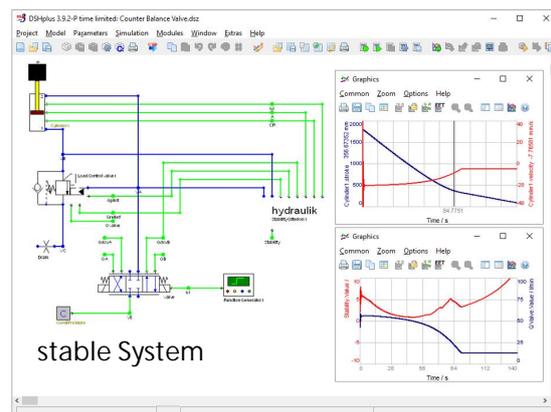
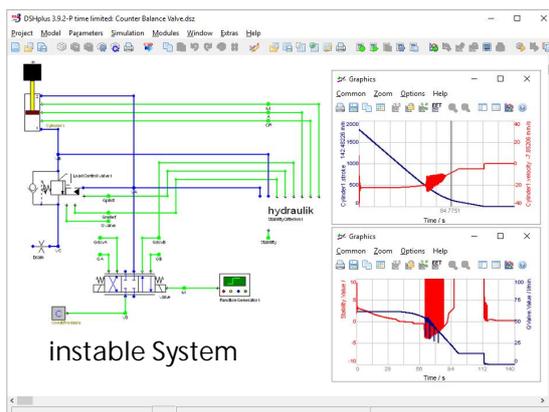
## Obtaining parameters from measurements

Measurements at different points of operation are combined into a 3D-look-up table, which is used in the compact model of the counter balance valve. In the component's parameter dialog the look-up table is chosen and simulation can start right away.



## Simulation using a counter balance valve model

At first simulation of the system's operational envelope will validate component dimensions etc. By variation of loads and pressures (e. g. due to environmental conditions) for different points of operation the counter balance valves can then be checked for stability.



## Solution Highlights

DSHplus is able to support the general engineering of mobile hydraulic systems with simulation models at typical system level detail as well as with high-fidelity physical models, which allow a comprehensive performance analysis and which also support simulation driven optimization techniques, to improve the system's performance.