

<https://eomys.com/produits/manatee/howtos/article/how-to-enforce-user-defined-modal-properties>



# How to enforce user-defined modal properties?

- Products - MANATEE - Howtos -

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## How to enforce user-defined modal properties?

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The idea is to short circuit some or all the modal calculations of MANATEE by enforcing some user defined values. By default, the [damping](#) of all structural modes used by MANATEE is given by the input

```
Input.Simu.ksi_damp = 2/100;  
Input.Simu.type_damping = 0;
```

If you have run an experimental test and you want to use more accurate values within MANATEE this is possible by specifying the modal parameters of some

To do that the modal parameter enforcement must be set

```
Input.Simu.is_force_natfreq = 1;
```

In the first simulation project tuto2\_proj01 a resonance occurs due to the ovalization mode of the stack at 1150 rpm due to a natural frequency close to 650 Hz. Let's change the ovalization mode natural frequency to 500 Hz and the associated damping to 1%. Additionally the breathing mode (order 0) of the stack is changed to 2.78% without changing the calculated associated natural frequency. Finally, the circumferential mode order 5 natural frequency is changed to 4000 Hz, but the associated damping is kept unchanged (cf tuto2\_proj17).

```
Input.Simu.ExpModes=[[2 0];[0 0];[5 0]];  
Input.Simu.ExpDamp=[1/100 2.78/100 NaN];  
Input.Simu.ExpFreq=[500 NaN 4000];
```

The order tracking of the sound power level at variable speed is done using [plot VS ASWL order analysis](#).

This feature of MANATEE allows you to check the influence of a structural redesign, or enforce your own modal parameters which can be based on [FEA simulations](#) or experimental modal analysis.