Torsion Bar

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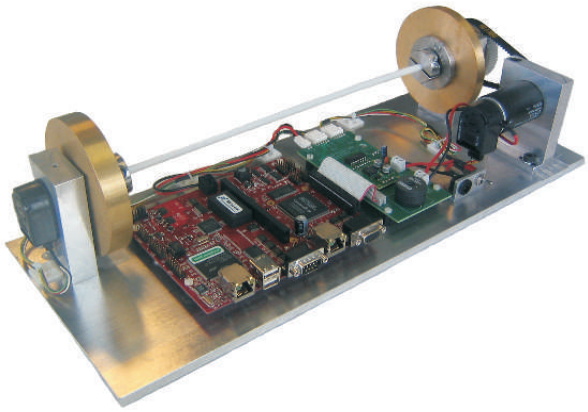
What is the Torsion Bar?

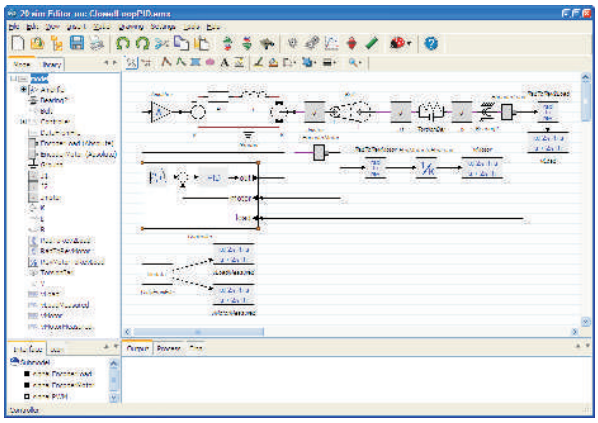
The Torsion Bar is a prototype machine that can be used to teach the basics of mechatronics and machine control. The Torsion Bar consists of two disks which are connected by a flexible beam. The stiffness of the flexible beam is deliberately chosen very low to ensure that the anti-resonance and resonance frequencies are clearly visible (3.3 Hz and 5.1 Hz). The Torsion Bar can be operated in combination with the software packages 20-sim and 20-sim 4C.



The Torsion Bar setup.

Key Features

- **Communication:** The Torsion Bar is equipped with an Ethernet connection (cross cable or network cable).
- **Automatic Code Generation:** From 20-sim you can generate C-code to run on the Torsion Bar.
- **Command:** Using 20-sim 4C you can export the generated C-code to the Torsion Bar, start running the code and stop it.
- **Monitoring and Logging:** In 20-sim 4C you can monitor variables during running and use logging for off-line measurements.
- **Education:** The Torsion Bar can be used as a practical setup in courses on mechatronics, machine dynamics and control.

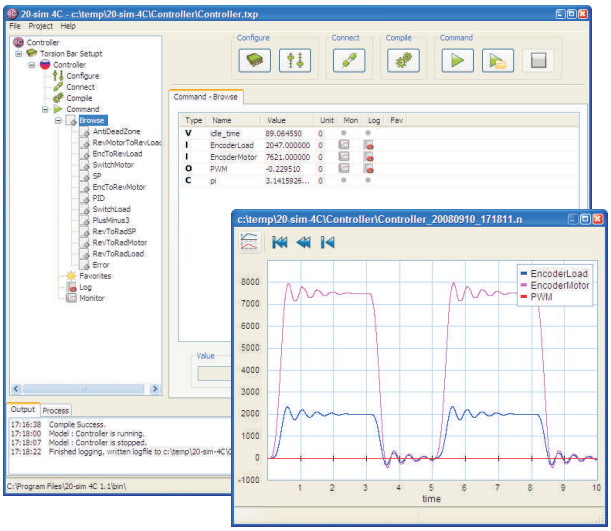


A number of 20-sim example models are provided with the setup.

Manual

The Torsion Bar manual contains the following experiments.

- **Installing & Testing:** How to install the software and test if the Torsion Bar is working properly.
- **Measurement:** The Torsion Bar is equipped with two rotary encoders to measure the rotation of the motor and the load disk. Various examples show how to use these encoders for measurements.
- **Identification:** Using experiments you learn how to identify the components that contribute to the dynamic behaviour of the Torsion Bar. These components can be combined into a simulation model of the Torsion Bar.
- **Control:** You will learn about feedback loops and run experiments to discover the basics of P, PI and PID control.



You can use 20-sim 4C to run 20-sim models on the Torsion Bar and measure the response.

Requirements

- A Windows PC with Ethernet connection.
- 20-sim 4.0 Professional or higher.
- 20-sim 4C 1.1 or higher.

Contact

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