Delft Institute of Prosthetics and Orthotics

Innovative Upper Extremity Prostheses and Orthoses

T U Delft

Delft University of Technology

Faculty 3mE
BioMechanical Engineering
Delft Institute of Prosthetics and
Orthotics

Mekelweg 2
2628 CD Delft
The Netherlands

www.dipo.3me.tudelft.nl

MASTER GRADUATION PROJECT

OPTIMAL SUPPLY PRESSURE LEVEL

For autonomous and/or portable systems, like for instance hand prostheses or walking bipeds, pneumatic actuation is designated. For the energy supply pressurized carbon dioxide is used, and stored at its saturation pressure [5.7 MPa]. Previously performed theoretical analysis, based upon a isothermal approach, combined with limited experimental data, suggest the amount of gas used for an operating cycle of the system is at its minimum if the saturation pressure is reduced to a supply pressure level of 1.2 MPa. To further support this outcome additional theoretical analysis based upon an adiabatic and/or a polytropic approach is required, whereas additional experiments need to verify the theoretical results.

ASSIGNMENT

Examine the optimal supply pressure level by a theoretical analysis based upon an adiabatic and/or a polytropic approach.
Design, construct, and build an experimental setup for the verification of the theoretical analysis. Execute the experiments.

ADDITIONAL INFORMATION:
Dick H. Plettenburg

+31 (0)15 278 5615
d.h.plettenburg@tudelft.nl