Deutsches Zentrum
DLR für Luft- und Raumfahrt

Handout

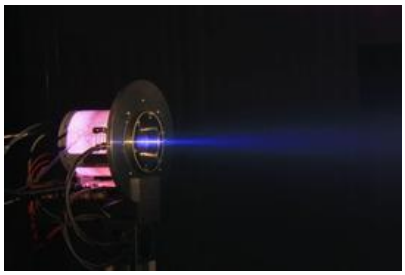
Electric Space Propulsion Test Facility Göttingen (STG-ET)

Measured values
- Thrust
- Thrust vector
- Ion beam distribution
- Ion energy
- Temperature distribution

Description of facility
The STG-ET facility was designed for electric space propulsion investigations, especially long term testing. The main component of the facility is a large vacuum chamber of 12 meters length and 5 meters diameter. Besides performing measurements of thrust or beam profiles on the thrusters the facility is meant to investigate the interaction of thruster plume with spacecraft components. The following diagnostic equipment is available:

- Thrust balance for thrusters with up to 40kg mass
- Several beam scanners for profiles at different distances from thruster exit
- Retarding potential analyzer
- Infrared cameras
- Video camera
- Mass spectrometer (RGA)
- Data acquisition system

Located at DLR Göttingen



Application
- Testing of space electric propulsion devices
- Investigation of interactions of thruster plume with spacecrafts and their component
- Development of ion beam and plasma diagnostics
- Large facility for simulation of space environment

Literature / References

- Neumann, A., Sinske, J., Harmann, H.-P.: The 250mN Thrust Balance for the DLR Goettingen EP Test Facility, Proceedings of the 33rd International Electric Propulsion Conference, IEPC-2013-211, Washington, D.C., USA, October 6 – 10, 2013.
- Neumann, A., Hannemann, K.: Electric Propulsion Testing at the DLR Goettingen: Facility and Diagnostics, Proceedings of the Space Propulsion Conference 2014, Cologne, 19.-22.5.2014, 2014.
- Neumann, A., Geile, C., Staemm, S., and Hannemann, K.: DLR's Electric Propulsion Test Facility – the First Three Years of Thruster Operation, Joint Conference of 30th International Symposium on Space Technology and Science, 34th International Electric Propulsion Conference and 6th Nano-satellite Symposium, Hyogo-Kobe, Japan, July 4 – 10, 2015, IEPC-2015-59?ISTS-2015-b-59, 2015.
- Neumann A., Nigmatzyanov, V., Hannemann, K., and Klar, P.J.: First Measurements with a New 2d Far Field Beam Scanning Device at DLR's Electric Propulsion Test Facility, Joint Conference of 30th International Symposium on Space Technology and Science, 34th International Electric Propulsion Conference and 6th Nano-satellite Symposium, Hyogo-Kobe, Japan, July 4 – 10, 2015, IEPC-2015-388?ISTS-2015-b-388, 2015.
- Neumann, A.: Update on diagnostics for DLR's Electric Propulsion Test Facility, Procedia Engineering 185 (2017) 47–52, online at www.sciencedirect.com, 2017.
- Neumann, A.: STG-ET: DLR electric propulsion test facility, Journal of large-scale research facilities, 3, A108 (2017), online at http://dx.doi.org/10.17815/jlsrf-3-156, 2017.

Deutsches Zentrum
für Luft- und Raumfahrt e.V.
German Aerospace Center

DLR Institute of Aerodynamics and Flow Technology

Dr. Andreas Neumann
Telephone: +49 551 709 2622
Telefax: +49 551 709 2800
A.Neumann@dlr.de
www.dlr.de

Deutsches Zentrum
DLR für Luft- und Raumfahrt

Handout

Contact

- Dr. Andreas Neumann, DLR Institute of Aerodynamics and Flow Technology, Tel: +49 551 709 2622, Fax: +49 551 709 2800
- Jochen Krampe, Technology Marketing, Tel: +49 2203 601 3665, Fax: +49 2203 695689
- Dr. Frank Holtmann, Technology Marketing, Tel: +49 531 295 3420, Fax: +49 531 295 3422

This handout, and cross-references to related measurement techiques and facilities are available at: http://messtec.dlr.de/link-198-en.

Deutsches Zentrum
für Luft- und Raumfahrt e.V.
German Aerospace Center

DLR Institute of Aerodynamics and Flow Technology

Dr. Andreas Neumann
Telephone: +49 551 709 2622
Telefax: +49 551 709 2800
A.Neumann@dlr.de
www.dlr.de