



Elbit
Systems



Israel Aerospace
Industries



Technion – Israel Institute of Technology
Faculty of Mechanical Engineering
Internal Combustion Engines Lab



Directorate of Defense Research
& Development (DDR&D)
Aeronautical Division



Association of Engineers, Architects
and Graduates in Technological
Sciences in Israel

5th Conference on Propulsion Technologies for Unmanned Aerial Vehicles

Conference Program

Thursday, January 28, 2016

Shirley and Manny Ravet Auditorium, D. Dan and Betty Kahn Building
Faculty of Mechanical Engineering, Technion, Haifa

8:30 – 9:00	Welcome and Registration
Opening session	Chairman: Leonid Tartakovsky, Technion
9:00 – 9:30	Welcome: Daniel Rittel , Deputy Senior Vice President, Technion Yoram Halevi , Dean, Faculty of Mechanical Engineering, Technion Uri Zvikel , Head, Propulsion Branch, Directorate of Defense Research & Development, MAFAT Emanuel Liban , Chairman, Israel Society of Mechanical Engineers
9:30 – 10:00	Keynote lecture: Small Internal Combustion Engine Technology – State of the Art and Future Trends Helmut Eichelseder , Director, Institute of Internal Combustion Engines and Thermodynamics, Graz University of Technology, Austria
Morning plenary session	Chairman: Yitzhak (Itche) Hochmann, Edmatech
10:00 – 10:25	Conceptual Trends in Development of Future Unmanned Aerial Systems and their Propulsion Derivatives Ariel Dvorjetski , Head of Concepts & Unmanned Systems Branch, Directorate of Defense Research & Development, MAFAT
10:25 – 10:50	HALE Piston Propulsion Systems Optimization Luca Piancastelli , Aerospace division, Faculty of Mechanical and Aerospace Engineering, University of Bologna, Italy
10:50 – 11:35 Coffee break	Posters Session** , Chairman: Emanuel Liban , Israel Society of Mechanical Engineers
Noon plenary session	Chairman: Hemi Oron, Elbit Systems
11:35 – 12:00	Insights on requirements of future diesel propulsion system for MALE UAVs Jacob Feldman , Israel Aerospace Industries
12:00 – 12:25	Investigation of a piston engine failure Ofer Levy , IAF, IDF

12:25 – 12:50	Operational perspective of Internal Combustion Engines Usage in MALE UAV Fleet A. Gil, IAF, IDF
12:50 – 13:00	Best Student Poster Award Ceremony
13:00 – 14:00 Lunch	Posters session - continuation
Afternoon session "New Concepts"	Chairman: Jacob Feldman, Israel Aerospace Industries
14:00 – 14:25	Knock prevention in UAV engines – theoretical considerations Ran Amiel, Leonid Tartakovsky, Technion
14:25 – 14:50	The cryogenic miniature propulsion system - initial test results Eran Sher, Technion
14:50 – 15:15	Energy management system for high fuel economy and low pollutants emission of a vehicle Erez Mosafi, Ledico – Bosch Israel
15:15 – 15:40	Micro-Turbine Generators – prospect for compact power source B. Arav, R. Shulman, TurboGEN Technology Ltd
Afternoon session "Engine Design & Performance"	Chairman: Gil Finder, Israel Defense Forces
14:00 – 14:25	Engineering design considerations in UAV engine liquid cooling systems Ron Raz, Elbit Systems
14:25 – 14:50	Civil certification of UAS propulsion systems Tamir Bar-Am, Civil Aviation Authority of Israel
14:50 – 15:15	The challenges of UAV propulsion system testing Menachem Lerer, Elbit Systems
15:15 – 15:40	Flow Simulation for Internal Combustion Engines Roy Honig, Tenzor Ltd.
Closing remarks 15:40 – 15:50	Leonid Tartakovsky, Chairman Organizing Committee

Posters session

- 1. Optimization of propulsion system for UAV**
V. Kliatzkin, E. Shalem, Winflex
- 2. Improvement of Plug-in Hybrid Electric Vehicles (PHEV) by using Micro-Turbine Generators (MTG)**
B. Arav, R. Shulman, TurboGEN Technology Ltd.
- 3. Analysis and danger assessment of UAV flight conditions at low altitude**
E. Shalem, V. Kliatzkin, Winflex
- 4. Surface Modification by Shot-Peening for Friction and Wear Reduction**
H. Kasem and G. Ryk, Tribology Laboratories, Technion
- 5. Combustion mechanisms validation at fuel rich conditions using Laser diagnostics**
A. Fomin, T. Zavlev, V.A. Alekseev, A.A. Konnov, V. Tsionsky, I. Rahinov, S. Cheskis, Tel-Aviv University
- 6. Spray Combustion in Vortical Flows**
Y. Dagan¹, David Katoshevski², Barry Greenberg¹, 1 – Technion, 2 – Ben-Gurion University of the Negev, Beer-Sheva
- 7. Dry sump and Cooling system of the SAE Formula-Student engine**
H. Bombigher, O. Gryzman, Technion
- 8. Fuel and Power Delivery in the SAE Formula-Student engine**
O. Avni, Y. Dadon, Technion
- 9. Manifolds design & Engine Performance Analysis**
R. Mizrahi, T. Bashan, D. Diskin, Technion
- 10. High-pressure methanol steam reformer for waste heat recovery of an internal combustion engine**
A. Poran, L. Tartakovsky, Technion
- 11. Reforming-controlled compression ignition**
A. Eyal, L. Tartakovsky, Technion
- 12. Mitigation of nanoparticles emission from diesel buses by retrofitting diesel particle filters**
R. Fleischman, R. Amiel, L. Tartakovsky, Technion
- 13. Hybrid propulsion system for Unmanned Aerial Vehicles – simulation results**
I. Biner, Technion
- 14. Propulsion system for the 2016 SAE Formula-Student car**
N. Dabush, I. Greenberg, D. Ganon, A. Asraf, T. Lipshitz, D. Brudner, A. Sacks, Technion
- 15. Spray flame dynamics in an oscillating flow field – computational study**
I. Moshe, D. Katoshevski, G. Ziskind, Ben-Gurion University of the Negev, Beer-Sheva

* The Program is subject to changes

** Poster presenters will make a 2-min presentation of their work during the Posters Session. *The best student poster will be awarded by a certificate and a prize of 1000 NIS* donated by Association of Engineers, Architects and Graduates in Technological Sciences in Israel.

Participation in the Conference is free of charge, however early registration is required.

An exhibition will take place in the Conference lobby, where the leading industries will demonstrate their latest developments in the field of UAV propulsion.

Conference Chairman:

*Leonid Tartakovsky, Faculty of Mechanical Engineering, Technion – Israel Institute of Technology.
Email address: tartak@technion.ac.il*

Conference Secretary:

Mrs. Ruthie Bouscher, meruthi@tx.technion.ac.il Phone: +972-4-8292065, Fax: +972-4-8295711

Best Student Poster Selection Committee:

Emanuel Liban, Israel Society of Mechanical Engineers – *Chairman*

Jacob Feldman, Israel Aerospace Industries

Yitzhak (Itche) Hochmann, Edmatech

Hemi Oron, Elbit Systems

Michael Shapiro, Technion