



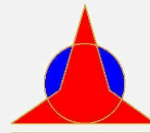
Elbit  
Systems



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



לשכת המהנדסים  
האדריכלים והאקדמאים  
במקצועות הטכנולוגיים  
בישראל



# 7<sup>th</sup> Conference on Propulsion Technologies for Unmanned Aerial Vehicles

## Conference Program

Thursday, January 25, 2018

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

8:30 – 9:00	<b>Welcome and Registration</b>
<b>Opening session</b>	<b>Chairman: Leonid Tartakovsky, Technion</b>
9:00 – 9:30	<b>Welcome:</b> <i>Wayne D. Kaplan</i> , Executive Vice President for Research, Technion <i>Yoram Halevi</i> , Dean, Faculty of Mechanical Engineering, Technion <i>Yigal Ben-Shabat</i> , Head, Propulsion Branch, Directorate of Defense Research & Development, MAFAT <i>Emanuel Liban</i> , Chairman, Israel Society of Mechanical & Aerospace Engineers
9:30 – 10:00	<b>Keynote lecture:</b> <b>Prospects of Advanced Compression Ignition Concepts: Thermal Barrier Coatings for Improved Engine Efficiency and Range of Applicability</b> <i>Zoran Filipi</i> , Chairman, Department of Automotive Engineering, Clemson University, USA
<b>Plenary session</b>	<b>Chairman: Yitzhak (Itche) Hochmann, Edmatech</b> (the session will be held in English)
10:00 – 10:30	<b>Electric A/C Propulsion - Opportunities and Challenges</b> <i>Emanuel Liban</i> , CEO, Edmatech, Israel
10:30 – 11:00	<b>Propulsion systems for UAV: One size fits it all?</b> <i>Thomas Uhr</i> , General Manager BRP-Rotax, Vice President Powertrain BRP and R&D/Operations Lynx, Austria
11:00 – 11:30	<b>Coffee break</b>
<b>Noon session</b>	<b>Chairman: Nir Geva, Elbit Systems</b> (the session will be held in English)
11:30 – 11:55	<b>Fuel cell - Key steps for affordable and reliable technology for UAVs</b> <i>Xiao Li</i> , Troowin Power System Technology, China
11:55 – 12:20	<b>Introduction of the 3W International Wankel-engine hybrid</b> <i>Karsten Schudt</i> , Managing partner, 3W International GmbH, Germany

12:20 – 12:45	<b>UAS in the Israeli Defense Forces – Operational Challenges and Coping methods</b> <i>E. Gil</i> , IDF, Israel
12:45 – 12:55	<b>Best Student Poster Award Ceremony</b>
12:55 – 14:00	<b>Lunch</b>
<b>Session "New Concepts "</b>	<b>Chairman: Michael Shapiro</b> , Technion (the session will be held in English)
14:00 – 14:20	<b>Measurement of in-cylinder pressure and temperature based on VA parameters of a spark plug</b> <i>Nir Druker, Gidi Goldwine, Eran Sher</i> , Technion, Israel
14:20 – 14:40	<b>Reforming-controlled compression ignition</b> <i>Amnon Eyal, L. Tartakovsky</i> , Technion, Israel
14:40 – 15:00	<b>Using new injection and ignition systems to enhance the efficiency of 2- and 4-stroke internal combustion engines</b> <i>Karsten Schudt, W. Seidl</i> , 3W International GmbH, Germany
<b>Session "Engine Design &amp; Performance – 1"</b>	<b>Chairman: Jacob Feldman</b> , Israel Aerospace Industries (the session will be held in English)
14:00 – 14:20	<b>Investigation of oil temperature deviations in Rotax 914 engines</b> <i>Rom Kafri, Ofer Levi, Dudu Halfon, Dan Bukhman</i> , IDF, Israel
14:20 – 14:40	<b>The Potential of Using Organic Coolants in Diesel Engines</b> <i>Alon Davidy</i> , Israel Military Industries, Israel
14:40 – 15:00	<b>Demonstration of propeller-wing interaction analysis</b> <i>Avi Ayele, Shaul Segal, Ohad Gur</i> , IAI - Israel Aerospace Industries
15:00 – 15:20	<b>Coffee break</b>
<b>Session "Alternative Propulsion Technologies"</b>	<b>Chairman: Ariel Dvorjetski</b> , IDF (the session will be held in English)
15:20 – 15:40	<b>Challenges in Electrical Propulsion</b> <i>I. Gerlovin</i> , IAI - Israel Aerospace Industries, Israel
15:40 – 16:00	<b>Li/CF<sub>x</sub>-MnO<sub>2</sub> Hybrid Technology for UAV Applications</b> <i>M. Destephen, D. Zhang, D. Darch, E. Ndzebet</i> , Eaglepicher Technologies LLC, USA
16:00 – 16:20	<b>Power-Lines Charging Mechanism for Drones</b> <i>Kobi Gozlan, Kfir Cohen, Nir Shvalb, Boaz Ben-Moshe, Moshe Sitbon, Alon Kuperman</i> , Ariel University, Ben-Gurion University of the Negev, Israel
<b>Session "Engine</b>	<b>Chairman: Benjamin Brinder</b> , IDF

<b>Design &amp; Performance – 2"</b>	(the session will be held in English)
15:20 – 15:40	<b>Power Performance Enhancement for a Rotary UAV Engine</b> <i>Jonathan Shachar Luzzatto</i> , Elbit Systems, Israel
15:40 – 16:00	<b>Split-cycle engine – main challenges and ways of their overcoming</b> <u><i>H.B.Tour</i></u> , <i>O. Tour</i> , Tour Engine Inc., Israel - USA
16:00 – 16:20	<b>Limitations of Two-Stage Turbocharging of Unmanned Aerial Vehicles at High Flight Altitudes</b> <u><i>Yehuda Fass</i></u> , <i>L. Tartakovsky</i> , Technion, Israel
<b>Closing remarks</b> 16:20 – 16:30	<b>Leonid Tartakovsky</b> , Chairman Organizing Committee

\* The Program is subject to changes

## Posters session

- 1. CFD Modeling of a Direct Injection Hydrogen/DME Fueled Internal Combustion Engine**  
G. Faingold, L. Tartakovsky, S. H. Frankel, Technion – IIT, Israel
- 2. Numerical Simulation of Bluff-Body Stabilized Flame Combustors.**  
Yann Delorme, S. H. Frankel, Technion – IIT, Israel
- 3. Development of Propulsion system (PS) concept for different Unmanned Vehicles (UV)**  
Boris Arav<sup>1</sup>, Daniel Feldman<sup>2</sup>, 1- TurboGEN Technology; 2 – Ariel University, Israel
- 4. Trends in the development of electric unmanned cargo vehicles in the Russian Federation**  
K. Karpukhin, A. Terenchenko, NAMI Russian State Scientific Research Centre, Moscow, Russian Federation
- 5. Features of the vision systems application for unmanned vehicles in climatic conditions of Russia**  
A. Saykin, S. Buznikov, A. Barashkov, NAMI Russian State Scientific Research Centre, Moscow, Russian Federation
- 6. Four-Stroke Engine with a Port in the Cylinder Sleeve**  
A.L. Zhmudiyak, L.M. Zhmudiyak, Panaya, Ltd, Israel
- 7. Simulation of a multicomponent underexpanded gaseous jets**  
A. Thawko, L. Tartakovsky, Technion – IIT, Israel
- 8. Drive train for a Formula-student racecar**  
R. Levy, R. Baltzan, Technion – IIT, Israel
- 9. Intake system for a Formula-student racecar 2017**  
M. Avraham, Technion – IIT, Israel
- 10. Powertrain system for a Formula-student racecar 2018 – novel features and challenges**  
T. Lipshitz, N. Rosenblum, Y. Gil, T. Katzenstein, G. Rubinstein, K. Aridy, Y. Boim, Technion – IIT, Israel
- 11. Advanced muffler for a Formula-student racecar**  
D. Buntin, Technion – IIT, Israel
- 12. Theoretical Study of the 3-branches Explosion Limits of a Flammable System**  
A. Lidor, D. Weihs and E. Sher, Technion – IIT, Israel
- 13. The Effect of the Initial Conditions on the IC Engines Injection Spray Generated by Homogeneous Flash Boiling**  
Y. Moshkovich, Y. Levy, E. Sher, Technion – IIT, Israel

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\*\* A posters session will be open for audience during the whole Conference day. Poster presenters will make a 2-min presentation of their work at 08:00. *Three best student posters will be awarded by certificates and prizes of 1000, 600 and 300 NIS for the 1<sup>st</sup>, 2<sup>nd</sup>*

*and 3<sup>rd</sup> places, respectively* donated by DRONES – an open access journal by MDPI and Association of Engineers, Architects and Graduates in Technological Sciences in Israel.

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

**Participation in the Conference is free of charge, however early registration is required (email to [shimrit.w@me.technion.ac.il](mailto:shimrit.w@me.technion.ac.il)).**

**Conference Chairman:**

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

**Conference Secretary:**

*Ms. Shimrit Wagner-Lior, [shimrit.w@me.technion.ac.il](mailto:shimrit.w@me.technion.ac.il) Phone: +972-77-8871668, Fax: +972-4-8295710*

**Best Student Poster Selection Committee:**

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

Jacob Feldman, Israel Aerospace Industries

Yitzhak (Itche) Hochmann, Edmatech

Nir Geva, Elbit Systems

Michael Shapiro, Technion

Daniel Budianu, Israel Aerospace Industries

Ariel Dvorjetski, IDF