

CONFERENCE PROGRAM

**XXIInd National Conference on
Thermodynamics
with International Participation**

NACOT 2019

May 22-24, 2019

Organized by:



**"Dunărea de Jos" University of Galați
Faculty of Engineering
Thermal Systems and Environmental
Engineering Department**



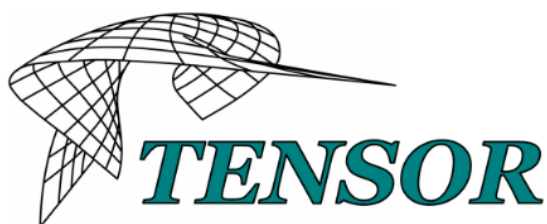
and



**Refrigeration and Cryogenics Association of Romania
(AFCR)**

Romanian Society of Thermotechnicians (SRT)

Sponsors:



Conference Programme

WEDNESDAY, MAY 22, 2019

Faculty of Engineering - 111, Domneasca St., Building D, Room D12

16:00 – 17:00 **Participants registration**

17:00 – 20:00 **Welcome Reception**

THURSDAY, MAY 23, 2019

Faculty of Engineering, 111, Domneasca St., Building D, Room D12

9:00 – 9:30 **Opening Ceremony, Welcome address**

Rector of the “Dunarea de Jos” University of Galati, Prof. Iulian-Gabriel BIRSAN

President of the Romanian Society of Thermotechnicians (SRT), Prof. Gheorghe DUMITRAȘCU

President of Honor of the Refrigeration and Cryogenics Association of Romania (AFCR), Prof. Florea CHIRIAC

9:30 – 11:00 **Plenary Session**

1. Entropic approach of endoreversible Carnot energy converter using finite physical dimensions thermodynamics

Michel FEIDT, University of Lorraine, France

Gheorghe DUMITRĂȘCU, “Gheorghe Asachi” Technical University of Iasi, Romania

Bogdan HORBANIUC, “Gheorghe Asachi” Technical University of Iasi, Romania

2. Internal combustion engines: how to improve efficiency

Jorge MARTINS, Universidade do Minho, Portugal

3. Technologies and applications of high temperature heat pumps

Alberto CORONAS, Universitat Rovira i Virgili, Spain

4. Heat exchanger design based on minimum entropy generation

Alexandru DOBROVICESCU, University Politehnica of Bucharest, Romania

5. Innovative products from the HB Products

Yassmin ABDULLA, AB Tehnic Profesional

6. New refrigerants with glide in the 400 series

Viorel BUIUC, Güntner

7. Refrigeration solutions in the context of the F-Gas Directive

Razvan VOICU, Frigotehnica

Faculty of Engineering, 111, Domneasca St., Building G

11:00 – 11:30 **Visit of Exhibition stands and Coffee Break (Güntner, AB Tehnic Profesional, Frigotehnica, Primo, Frigorex) (ground floor)**

11:30 – 13:00 **Sections Session** (Rooms G102, G206; G208)

13:00 - 14:00 **Meeting of the SRT members** (Room G208)

14:00 – 15:00 **Lunch Break** (Royal Restaurant)

15:30 – 20:00 **Trip to the Macin’s Wine Cellar**

FRIDAY, MAY 24, 2019

Faculty of Engineering, No. 111, Domneasca St.

9:00 – 11:00 **Sections Session** (Building G, Rooms G102, G206; G208)

Poster Session (Building G, ground floor)

11:00 – 11:30 **Coffee Break**

11:30 – 13:30 **Sections Session**

13:30 – 13:45 **NACOT 2019 Closing Ceremony**

13:45 – 17:00 **Boat Ride on the Danube River, Lunch**

CONFERENCE CHAIRMAN

Viorel POPA

Vice-President of the Romanian Society of Thermotechnicians (SRT)
Vice-President of the Refrigeration and Cryogenics Association of Romania (AFRCR)

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Conference sessions:

Section A (Room G206):

- Applied thermodynamics
- Heat and mass transfer
- Fluid dynamics and CFD

Session A1 (23.05: 11:30 – 13:00)

Chairmen:

Alexandru DOBROVICESCU, Politehnica University of Bucharest, Romania

Nina PENKOVA, University of Chemical Technology and Metallurgy, Sofia, Bulgaria

Code	Title	Authors	Start hour
A1-01	Application areas and calculation method for capillary-porous heat exchangers of the new heat-removing class	A. GENBACH, N. JAMANKULOVA, I. ILIEV	11:30
A1-02	Experimental validation data for CFD of heat transfer processes in a heat exchanger thermosyphon type with complex geometry	A. K. TERZIEV, C. I. ILIEV, I. K. ILIEV, I. H. BELOEV, E. V. VELKOV	11:45
A1-03	Finite elements analysis of mass transfer and mechanical processes in ceramic ware at convective drying	N. Y. PENKOVA, B. M. MLADENOV, K. S. KRUMOV	12:00
A1-04	Analytical and numerical investigation of heat exchange in fin-tube refrigerating heat exchanger	M. GEORGIEVA, P. RAYNOV, D. ATANASOV, I. TASHEV	12:15
A1-05	Numerical analysis of the transient heat transfer in high temperature chamber furnaces	K. S. KRUMOV, N. Y. PENKOVA	12:30

Session A2 (24.05: 9:00 – 11:00)

Chairmen:

Emilia-Cerna MLADIN, Politehnica University of Bucharest, Romania

Viorel POPA, "Dunărea de Jos" University of Galați, Romania

Code	Title	Authors	Start hour
A2-01	Numerical modelling of heat transfer in convector's pipes by ABAQUS	Z. D. KOLEV, S.Y. KADIROVA	9:00
A2-02	Research of the heat transfer crisis and limit state of the heat exchange surface covered by capillary porous medium	A. A. GENBACH, K.K. SHOKOLAKOV, D.Y. BONDARTSEV, I. K. ILIEV	9:15
A2-03	The E4 brickhouse of Romania – a local proved nZEB	E. C. MLADIN	9:30
A2-04	Two-dimensions finite-difference heat transfer study for a single borehole heat storage system during a seasonal charge-discharge cycle	B. HORBANIUC, Gh. DUMITRAȘCU, A. DUMENCU	9:45
A2-05	Behaviour of transmission and distribution networks with big consumption, the stress test	C. N. EPARU, S. NEACSU, A. P. PRUNDUREL, R. RADULESCU, A. NEACȘA	10:00
A2-06	Development of the highly boosted capillary porous foam generator for gas (steam) mechanical foam	A. A. GENBACH, K. K. SHOKOLOAKOV, I. ILIEV, A. K. TERZIEV	10:15

COFFEE BREAK (11:00 - 11:30)

Session A3 (24.05: 11:30 – 13:00)**Chairmen:**

Iliya ILIEV, University of Ruse, Bulgaria

Bogdan HORBANIUC, "Gheorghe Asachi" Technical University, Iași, Romania

Code	Title	Authors	Start hour
A3-01	Energy aspects of the process of adsorption of methylene blue on the TiO ₂ / diatomite nanocomposite	T. DATSKO, V. ZELENTSOV	11:30
A3-02	Investigation of the energy consumption in regulating the flow rate of fan systems	G. S. POPOV, K. V. KLIMENTOV, B. Z. KOSTOV	11:45
A3-03	Numerical study of the heat transfer and flow characteristics of heat pipes	A. HUMINIC, G. HUMINIC	12:00
A3-04	Oxy-combustion simulation of ethylene	S. GRIGOREAN, Gh. DUMITRAȘCU, S. PREDOI	12:15
A3-05	Research on the fire endurance of the silica sand membrane	A. KAYA, S. ÇELEN, U. AKYOL	12:30
A3-06	Thermal - fluidics behaviour of water mist and gas fuel flame jets based on experimental results	D. PAVEL, A. CHISACOF, S. DIMITRIU, P. COZMA	12:45

Section B (Room G208):

- Refrigeration and heat pumps
- Power plants and CHP
- Internal combustion engines

Session B1 (23.05: 11:30 – 13:00)

Chairmen:

Ugur AKYOL, "Tekirdag Namik Kemal University", Çorlu, Tekirdag, Turkey
Monica COSTEA, Politehnica University of Bucharest, Romania

Code	Title	Authors	Start hour
B1-01	Analysis of a high-pressure screw compressor performances	C. N. EPARU, A. NEACȘU, A. P. PRUNDUREL, R. RĂDULESCU, C. SLUJITORU, N. TOMA, M. NIȚULESCU	11:30
B1-02	Comparative analysis of NH ₃ and CO ₂ refrigerating plant performances in different climatic conditions	M. C. BĂLAN, O. G. POP, A. C. ABRUDAN	11:45
B1-03	Comparative thermodynamic analysis of irreversible closed Brayton engine cycles	Gh. DUMITRAȘCU, M. FEIDT, Ș. GRIGOREAN, B. HORBANIUC	12:00
B1-04	Design analysis of low pressure distillation column for cryogenic air separation	M. PINTILIE, AI. ȘERBAN, V. POPA, C. L. POPA	12:15
B1-05	Design of air cooling unit with PCM	Ç. SUSANTEZ, E. AKYOL, O. HACIHAFIZOĞLU, U. AKYOL	12:30
B1-06	Entropic model and optimization of a refrigeration machine	M. FEIDT, M. COSTEA, C. STANCIU, D. STANCIU	12:45
B1-07	Analysis of a proportional pressure regulator	M. AVRAM, M. F. ȘTEFĂNESCU, A. ȘERBAN, A. DOBROVICESCU, B. GRĂMESCU	13:00

Session B2 (24.05: 9:00 – 11:00)**Chairmen:**

Marin BICĂ, University of Craiova, Romania

Mugur BĂLAN, Universitatea Tehnică Cluj-Napoca

Code	Title	Authors	Start hour
B2-01	Evaluation of the thermal comfort for its occupants inside a vehicle during summer	P. DANCA, I. NASTASE, F. BODE, C. CROITORU, A. DOGEANU, A. MESLEM	9:00
B2-02	Heat transfer characteristics of a gas cooler	D. DIMA, S. BUCȘĂ, C. IONIȚĂ, E. E. VASILESCU, AI. DOBROVICESCU, E. NICULAE	9:15
B2-03	Kinematic beta-type stirling motor-driven compressor	V. M. HOMUTESCU, D. T. BĂLĂNESCU, C. E. PANAITE, A. G. LUPU	9:30
B2-04	Modelling of CO ₂ /acetone fluid mixture thermodynamic properties for compression/resorption refrigeration systems	R.J.B. MOREIRA-DASILVA, D. SALAVERA, A. CORONAS	9:45
B2-05	Numerical analysis on the performance and thermal behavior of PCM in hot water storage tanks	M. C. BĂLAN, C. A. IUGA, L. F. TUTUNARU, O. G. POP, A. C. ABRUDAN	10:00
B2-06	Theoretical and experimental features of the thermodynamic process in oil injection screw compressors	S. NEACȘU, C. N. EPARU, S. SUDITU, A. NEACȘA, N. TOMA, C. SLUJITORU	10:15
B2-07	A review of combustion properties of hydrogen usage in internal combustion engines	D. GHEORGHE, D. TUTUNEA, M. BICĂ, AI. GRUIA, M. CĂLBUREANU	10:30
B2-08	A review of emission characteristics of hydrogen in internal combustion engines	D. GHEORGHE, D. TUTUNEA, M. BICĂ, AI. GRUIA, M. CĂLBUREANU	10:45

COFFEE BREAK (11:00 - 11:30)

Session B3 (24.05: 11:30 – 13:00)

Chairmen:

Dan BĂLĂNESCU, "Gheorghe Asachi" Technical University, Iași, Romania
Salvadore Mugurel BURCIU, "Dunărea de Jos" University of Galați, Romania

Code	Title	Authors	Start hour
B3-01	A review of new technologies in valve systems of internal combustion engines and their effects	D. AKAL, U. AKYOL, K. UZUNEANU	11:30
B3-02	Experimental study of NO _x and CO ₂ emissions at load regimes for a passenger car powered with direct injection diesel engine	S. M. BURCIU, G. COMAN	11:45
B3-03	Prediction of the spark ignition engine consumption for different functional conditions using a theoretical model	V. VORNICU, T. ULIAN, E. RAKOSI, Gh. MANOLACHE, S. TALIF	12:00
B3-04	Reducing CO ₂ emissions from tractor engines by using the fuel mixture with rapeseed oil	S. M. BURCIU, M. LUPCHIAN, M. NEACȘU	12:15
B3-05	Reducing NO _x emissions from tractor engines by using the fuel mixture with rapeseed oil	G. COMAN, S. M. BURCIU, M. LUPCHIAN	12:30
B3-06	Study of the thermal stability of biodiesel and diesel fuel	D. GHEORGHE, D. TUTUNEA, M. BICĂ, A. GRUIA, M. CĂLBUREANU	12:45
B3-07	Study on performance of an innovative power system for hybrid propulsion consisting in a gas turbine with heat exchanger and steam turbine	D. T. BĂLĂNESCU, V. M. HOMUTESCU, C. E. PANAITE, A. POPESCU	13:00

Section C (Room G102):

- Renewable energy
- Energy use and storage
- Environmental impact of energy conversion

Session C1 (23.05: 11:30 – 13:00)

Chairmen:

Violeta RASHEVA, University of Food Technologies, Plovdiv, Bulgaria
Angel K TERZIEV, Technical University of Sofia, Bulgaria

Code	Title	Authors	Start hour
C1-01	Aerodynamic and structural analysis of a small-scale horizontal axis wind turbine using QBlade	D. ZAHARIEA, D. E. HUSARU, C. M. HUSARU	11:30
C1-02	Analysis of the terrain specifics and roughness factor on the wind shear over complex terrains	A. K. TERZIEV	11:45
C1-03	Basic geometric and physical parameters of pumpkin seeds	D. ATANASOV, M. GEORGIEVA, I. KIRYAKOV, V. RULEV	12:00
C1-04	Correlations between kinetic and thermodynamic parameters of the extraction of tobacco leaves	S. TASHEVA, V. GANDOVA, V. POPOVA, T. IVANOVA, S. DAMYANOVA, A. STOYANOVA	12:15
C1-05	Determining the expenses for heating of a residential building using different energy sources	G. KOMITOV, V. RASHEVA, I. BINEV	12:30

Session C2 (24.05: 9:00 – 11:00)

Chairmen:

Dănuț ZAHARIEA, "Gheorghe Asachi" Technical University, Iași, Romania
Dimitar ATANASOV, University of Food Technologies, Plovdiv, Bulgaria

Code	Title	Authors	Start hour
C2-01	Effect of yaw angle on the global performances of Horizontal Axis Wind Turbine - QBlade simulation	D. E. HUSARU, P. D. BÂRSĂNESCU, D. ZAHARIEA	9:00
C2-02	Modelling and simulation of a hydraulic system used for wind turbines	R. I. PELIN, I. TIȚA	9:15
C2-03	Numerical analysis of the influence of the lower hull angle of a round skirtless air cushion vehicle	M. S. PAVĂL, A. POPESCU, D. ZAHARIEA	9:30
C2-04	Trifold PV-T-TEG (photovoltaic-thermal-thermoelectric generators) panel characterization overview	A. G. LUPU, C. E. PANAITE, V. M. HOMUTESCU, D. T. BĂLĂNESCU, A. POPESCU	9:45
C2-05	Energy characteristics of the semi-coke obtained by two steps pyrolysis of chicken manure	E. POP, L. MIHĂESCU, G. LĂZĂROIU, I. PÎSĂ, G. NEGREANU, V. BERBECE	10:00
C2-06	Equilibrium moisture content of pumpkin seeds	I. KIRYAKOV, M. GEORGIEVA, D. ATANASOV	10:15

COFFEE BREAK (11:00 - 11:30)

Session C3 (24.05: 11:30 – 13:00)**Chairmen:**

Venelina POPOVA, University of Food Technologies, Plovdiv, Bulgaria

Gabriel NEGREANU, Politehnica University of Bucharest, Romania

Code	Title	Authors	Start hour
C3-01	Wastewater sludge to energy production. A review	N. VATACHI	11:30
C3-02	Examination of natural noise signals: preliminary results for aquatic environment	H. ZHIVOMIROV, I. NEDELICHEV	11:45
C3-03	Generating structural, interactional and processual order through synergetic entanglement is the essence for understanding and using Quantum Biological Thermodynamics with Finite Speed of the Cardio-Pulmonary System	S. PETRESCU, M. COSTEA, V. PETRESCU, R. BOLOHAN, B. BORCILA, M. FEIDT	12:00
C3-04	Investigation of the effect of drying air temperature on drying time by numerical method for textile bobbins	U. AKYOL, A. KARAKOCA, R. SHALIYEV, D. AKAL, K. UZUNEANU	12:15
C3-05	Kinetics coefficients of solid-liquid extraction of resinoid from tobacco leaves	S. TASHEVA, V. POPOVA, T. IVANOVA, A. STOYANOVA, G. VALTCHEV	12:30
C3-06	Sorption characteristics of subtropical fruit – lucuma powder	A. DURAKOVA, A. BOGOEVA, R. KRASTEVA, T. GOGOVA, A. KRASTEVA, N. GEORGIEVA	12:45

Poster Session (Building G, ground floor)

P-01	A Revised Approach for CFD Modeling of NREL Phase IV Experimental Wind Turbine	F. POPESCU, R. MAHU, I. V. ION	poster
p-02	About structural and thermal analysis of diesel engine piston using ANSYS software	M. FRĂȚIȚA, F. POPESCU, K. UZUNEANU, I. ION, C. M. ANGHELUȚĂ	poster
P-03	Assessing the SBES turbulence modelling approach using a generic car model	R. MAHU, F. POPESCU, I. V. ION	poster
P-04	Comparative analysis of the study of microclimate parameters in wooden houses in North-Eastern Bulgaria	P. ZLATEVA, K. YORDANOV	poster
P-05	Problems of gasification of waste for energy purposes	K. JESIONEK, G. WIECZORKIEWICZ, M. RYCHLIK, R. ROSZAK J. MARKOWSKI, K. WASIŃSKI	poster
p-06	Design and sizing of an air source heat pump for a building heating system	V. POPA, C. L. POPA	poster
p-07	The melting temperature of BCC perfect ternary alloy FeCrC under pressure	D. C. TRAN, G. COMAN, Q. H. NGUYEN, T. H. NGUYEN, Q. V. DINH	poster
P-08	Effects of wind speed, relative humidity, temperature and air pressure on PM10 concentration for an urban background area	S. PARASCHIV, L. S. PARASCHIV	poster
p-09	Thermodynamic properties of interstitial alloy FeC with BCC structure under pressure	T. H. NGUYEN, D. C. TRAN, Q. H. NGUYEN, G. COMAN, Q. V. DINH	poster