

**5th International Exergy, Life Cycle
Assessment, and Sustainability Workshop &
Symposium (ELCAS-5)**

09 – 11 July, 2017, NISYROS – GREECE



SYMPOSIUM PROGRAMME

Sunday 09 July 2017

Symposium Desktop – Room A

11:00 – 12:00 / 16:00 – 17:00

Registration

Sunday 09 July 2017

Session 1 - OPENING

17:00 – 19:30, Afternoon – Room A

17:00 – 17:30

Welcome Ceremony

C.J. KORONEOS: Exergy, Life Cycle Assessment and Sustainability

Mayor of Nisyros

KEYNOTE SPEAKERS:

17:30 – 17:50

ADVANCED EXERGY-BASED METHODS

G. Tsatsaronis

17:50 – 18:10

EXERGY AND THE 4TH INDUSTRIAL REVOLUTION

N. Moussiopoulos

18:10 – 18:30

SUSTAINABLE USE OF BIO-RESOURCES IN THE CONTEXT OF BIOECONOMY AND CIRCULAR ECONOMY

Anastasia Zabaniotou

18:30 – 18:45

THE CHALLENGE OF RESILIENCE FOR EUROPEAN DEFENCE ENERGY CRITICAL INFRASTRUCTURES

A. G. Konstandopoulos, G. Drosos, R. Metallinou

18:45 – 19:00

ADVANCED EXERGETIC ANALYSIS OF A HARD COAL OXYFUEL POWER PLANT

R. Castillo, G. Tsatsaronis & T. Morosuk

19:00 – 19:15

LCA COMPARATIVE ASSESSMENT BETWEEN LEAD ACID AND LITHIUM ION BATTERIES

P.L. Porta, G. Barberio, L. Cutaia, P. Masoni, V. Malvaldi, M. Politi

19:15 – 19:30

QUESTIONS AND DISCUSSION

- 09:30 – 09:45** *CLOSING CYCLES: CIRCULAR ENERGY, THE MISSING LINK*
R. Rovers, M. Ritzen, J. Houben & V. Rovers
-
- 09:45 – 10:00** *HEATING-EMISOR SYSTEM THAT SAVES ENERGY AND IMPROVES THE COMFORT SENSATION OF THE OCCUPANTS OF BUILDINGS AND VEHICLES*
F. Franco
-
- 10:00 – 10:15** *CEMIS FOR PRODUCTION-INTEGRATED ENVIRONMENTAL PROTECTION – WISH OR REALITY?*
Horst Junker
-
- 10:15 – 10:30** *EXERGY ANALYSIS APPLIED TO A CONCENTRATED SOLAR-ENERGY POWER PLANT IN EGYPT*
L. Elmorsy, T. Morosuk & G. Tsatsaronis
-
- 10:30 – 11:00** **COFFEE BREAK**
-
- 11:00 – 11:15** *ENERGY AND CLIMATE CHANGE: THE CHALLENGE OF BUILDING RESILIENCE*
T. Slini, N. Moussiopoulos
-
- 11:15 – 11:30** *RIVER IN THE URBAN STRUCTURE OF THE CITY - HYDROGEOLOGY OF RZESZOW*
A. Rybka, K. Kozłowska
-
- 11:30 – 11:45** *DEVELOPMENT OF METHODS FOR DECENTRALIZED ENERGY CONVERSION PROCESSES WITH BIOCHAR AS A BY-PRODUCT*
J. Rüdiger & F. Behrendt
-
- 11:45 – 12:00** *EVALUATION OF SMALL WIND TURBINES CONFIGURATION BY MEANS OF SUSTAINABLE ENERGY CRITERIA RELATED TO THE SITE OF APPLICATION*
T.N. Nikolaidis, E. Karadimos, C.C. Baniotopoulos
-
- 12:00 – 12:15** *ECONOMIC OPTIMIZATION IN PART-LOAD OPERATION*
S. Sayadi, T. Morosuk, G. Tsatsaronis
-
- 12:15 – 12:30** *IMPACT OF THE REFERENCE STATE SELECTION ON THE EXERGY ANALYSIS OF AIRCRAFT ENVIRONMENTAL CONTROL SYSTEMS*
D. Bender
-

12:30 – 12:45 *LIFE CYCLE ASSESSMENT OF A MULTI-STOREY RESIDENTIAL BUILDING USING SIMAPRO AND GABI: HOW UNIFORM RESULTS DO THEY PRODUCE*
N. Emami, J. Heinonen & B. Marteinsson

12:45 – 13:00 *ENVIRONMENTAL PRODUCT DECLARATION IN THE CEMENT INDUSTRY*
G. Baniyas, Ch. Achillas, N. Moussiopoulos, Ch. Karkania, A. Tsairelis, P. Skampeltzis, M. Psathas

13:00 – 13:15 *EXERGOECONOMIC ANALYSIS OF CRYOGENIC ENERGY STORAGE SYSTEMS*
S. Hamdy, T. Morosuk, G. Tsatsaronis

13:15 – 13:30 *ABOUT EXERGY BASED APPROACHES FOR ASSESSING ABIOTIC RESOURCE DEPLETION OF BATTERY PRODUCTION*
J. F. Peters, M. Weil

13:30 – 16:00 **LUNCH BREAK**

Session 3

17:00 – 19:30, Afternoon – Room A

Monday 10 July 2017

17:00 – 17:15 *EXERGY ANALYSIS OF A GAS REFINERY*
M.Sarcheshmehpour, G. Tsatsaronis

17:15 – 17:30 *ENVIRONMENTAL SUSTAINABILITY ASSESSMENT OF MULTI-USE OCEAN SPACE*
N. Elginoz, B. Bas

17:30 – 17:45 *EVALUATION OF A SUB-COOLING PROCESS WITHIN LARGE-SCALE LNG PLANTS*
E. Esfehiani, T. Morozyuk, and G.Tsatsaronis

17:45 – 18:00 *ENVIRONMENTAL AND EXERGETIC LIFE CYCLE ASSESSMENT OF PET BOTTLE-TO-FIBER RECYCLING*
T. S. Gomes, E. B. A. V. Pacheco, L. L. Y. Visconte & L. Stougie

18:00 – 18:30 **COFFEE BREAK**

18:30 – 18:45 *SIMULATION-BASED OPTIMIZATION OF PROPANE PRE-COOLED MIXED REFRIGERANT (C3MR) PROCESS USING EXERGY METHODS AND GENETIC ALGORITHMS*

Eko Primabudi, Tatiana Morosuk, George Tsatsaronis

18:45 – 19:00 *DIGITALISATION AND ITS INFLUENCE ON SUSTAINABLE WORK*

Th. Pietsch, B. Kettner

19:00 – 19:15 *SELECTED ASPECTS OF ECO-ENERGETIC ANALYSIS OF LIFE CYCLE OF A PHOTOVOLTAIC POWER PLANT*

I. Piasecka, Z. Kłos & A. Tomporowski

19:15 – 19:30 *STUDY CONCERNING THE CONCEPTION AND STRUCTURAL DESIGN OF DURABLE AIRPORT PAVEMENTS*

I. Scânteianu (Botezatu) & D. N. Dragoslav (Dima)

QUESTIONS AND DISCUSSION

Poster Session

COMPARATIVE ENVIRONMENTAL ASSESSMENT OF PLASMA-MEDIATED AND CONVENTIONAL NH₃ SYNTHESIS

A. Anastasopoulou, R. Keijzer, B. Patil, G. van Rooij, J. Lang & V. Hessel

Session 6 Plenary - Closure

09:30 – 13:00, Morning – **Room A**

Tuesday 11 July 2017

09:30 – 09:45 *RISK-HAZARD ANALYSIS APPLIED TO THE REGASIFICATION OF LNG INTEGRATED INTO AN AIR SEPARATION UNIT*

S. Tesch, T. Morosuk & G. Tsatsaronis

09:45 – 10:00 *ZEB RETROFIT: EMBODIED ENERGY AS DECISIVE PARAMETER AND PROXY*

R. Rovers

10:00 – 10:15 *A COMPARATIVE ASSESSMENT OF CSP AND PV POWER PLANTS WITH ENERGY STORAGE FOR FOLLOWING A SPECIFIC DEMAND CURVE*

M. Abdelmegid, J. Wellmann, T. Morosuk, G. Weinrebe

10:15 – 10:30 *LCA OF A NOVEL DESALINATION PRETREATMENT PROCESS*

J. Luo

10:30 – 11:00

COFFEE BREAK

11:00 – 11:15 *METHANOL PRODUCTION FROM NATURAL GAS – A COMPARATIVE EXERGOECONOMIC EVALUATION OF COMMERCIALY APPLIED SYNTHESIS ROUTES*

T. Blumberg, T. Morosuk & G. Tsatsaronis

11:15 – 11:30 *REMEDICATION OF LIGNITE POST-MINING AREAS BY CULTIVATION OF INDUSTRIAL HEMP (CANNABIS SATIVA)*

J. Mańkowski, P. Baraniecki, J. Kołodziej, K. Pudelko, A. Kubacki, I. Pniewska

11:30 – 11:45 *CONDUCTIVE PLATE TO IMPROVE THE PROTECTION OF THE BUILDING'S OCCUPANTS FROM RADIATION AND ENVIRONMENTAL ELECTROMAGNETIC FIELDS*

F. Franco

11:45 – 12:00 *ADVANCED EXERGOECONOMIC EVALUATION OF A HEAT PUMP PROVIDING SPACE HEATING*

V. Voloshchuk, A. Nikiforovich

12:00 – 12:15 *EXERGETIC AND ECONOMIC ANALYSIS FOR A HIGH-EFFICIENCY CONCENTRATED SOLAR POWER TOWER PLANT IN EGYPT*

M. B. Noaman, T. Morosuk & G. Tsatsaronis

12:15 – 12:30	<i>EXERGETIC ANALYSIS OF RENEWABLE FISCHER-TROPSCH FUELS PRODUCTION FROM BIOMASS, CO2 AND ELECTRICITY</i> <i>F. G. Albrecht & R.-U. Dietrich</i>
12:30 – 12:45	<i>STUDY FOR SUSTAINABILITY ASSESSMENT OF FLEXIBLE ROAD PAVEMENTS</i> <i>D. N. Dragoslav (married Dima) & I. Scânteianu (married Botezatu)</i>
12:45 – 13:00	CHAIRMAN'S CONCLUSIONS – CLOSURE <i>C. Koroneos</i>

ELCAS PROGRAMME SUMMARY

Sunday 09 July 2017, Registration (11:00 – 12:00), Symposium Desktop – Room A

Sunday 09 July 2017, Registration (16:00 – 17:00), Symposium Desktop – Room A

Sunday 09 July 2017

Session 1 Opening

17:00 – 19:30, Afternoon – Room A

Monday 10 July 2017

Session 2

09:30 – 14:00, Morning – Room A

Session 3

17:00 – 19:30, Afternoon – Room A

Tuesday 11 July 2017

Session 4 Closure

09:30 – 13:00, Morning – Room A