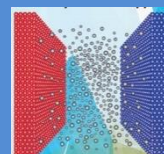
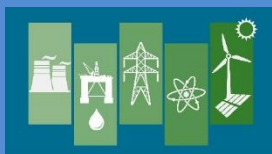


# Programme of COFRET2021

## Colloque Francophone en Energie, Environnement, Economie et Thermodynamique

---

## Conference on Energy, Environment, Economy and Thermodynamics



**Bucharest, Romania**  
**15-16 October 2021**



**2021**

[www.cofret2021.eu](http://www.cofret2021.eu)



Societatea Română  
a Termotehnicienilor

SOCIETY OF AUTOMOTIVE ENGINEERS OF ROMANIA

**SIAR**

SOCIETATEA INGINERILOR DE AUTOMOBILE DIN ROMANIA



[www.upit.ro](http://www.upit.ro)



[www.upb.ro](http://www.upb.ro)



**University of Pitești** ([www.upit.ro](http://www.upit.ro)) is a state multi-disciplinary university, founded in 1962. It now has about 10.000 students and approximately 500 teaching and administrative staff. It consists of 6 different faculties offering Bachelor, Master and Doctor Diplomas ([www.upit.ro](http://www.upit.ro)). The areas in which our university is active and delivers services are: education & training; scientific & applicative research; guidance & counselling; professional orientation; international cooperation in different fields; publishing activities.



**University “Politehnica” of Bucharest** ([www.upb.ro](http://www.upb.ro)) is a state technical university established in 1818 and it is the oldest and most prestigious engineering school in Romania. In 2021, University “Politehnica” of Bucharest has 15 faculties and more than 30,000 students at the three levels of education (license, master, doctorate).

**COFRET2021**



Idei



Oameni



Timp



Țintă



**Bucharest**  
**14 – 15 October 2021**

**TABLE of CONTENTS**

Short History of COFRET	.....04
The Honorary Committee	.....05
The Scientific Committee	.....05
The Organizing Committee	.....06
Congress Programme	.....07
Programme at a glance	.....09
Oral presentations (onsite and online)	.....10

**ENDORSED BY:**



## SHORT HISTORY of COFRET

First of all, COFRET is an acronym coming from the French expression “*Colloque Francophone en Energie, Environnement, Economie et Thermodynamique*”, meaning *Conference on Energy, Environment, Economy and Thermodynamics*.

Created in 2002, COFRET is an international conference at the beginning meant to be French-speaking in the fields of energy, environment, economics and thermodynamics, being organized every two years, usually once in France, the other time in Romania.

COFRET2021 is the 10<sup>th</sup> edition that will be organized by the University of Pitești and University "Politehnica" of Bucharest, Romania with the support of the French Society of Thermotechnics (SFT), Romanian Society of Thermotechnics (SRT), Society of Automotive Engineers of Romania (SIAR) and Society of Automotive Engineers of France (SIA).

The conference is an opportunity for delegates to:

- update their skills and knowledge by attending focused technical and scientific sessions,
- gain insights into the industry (technical visits to local industry will be organized),
- network with potential new partners, clients and suppliers,
- view the latest technology products and services in the commercial exhibition.

Below, there is a brief statistic of the past CAR Congress.

COFRET edition	Type	Number of participants	Number of papers	Endorsed by:
2002, Université "Politehnica" Bucarest, Roumanie	Francophone	74	50 en Français	SFT, SRT
2004, Université "Henri Poincaré" Nancy, France	Francophone	107	54 en Français	
2006, Université Polytechnique de Timisoara, Roumanie	Francophone	178	163 en Français	
2008, Ecole des Mines, Nantes, France	Francophone	118	75 en Français	
2010, Université Technique "Gheorghe Asachi" de Iasi, Roumanie	Francophone	115	94 en Français	
2012, Université Technique de Sofia, Bulgarie	Francophone	290	61 en Français 25 in English	
2014, Le Cnam Paris, France	International	104	73 en Français 27 in English	SFT, SRT, SIA, SIAR, ADEME, AUF
2016, Université "Politehnica" Bucarest, Roumanie	International	80	45 en Français 12 in English	SFT, SRT, SIA, SIAR
2018, INSA Strasbourg, France	International	85	51 en Français 15 in English	
2021, Université de Pitești, Roumanie	International	onsite & online conference	30 in English	

## HONORARY COMMITTEE

**Mihaela DIACONU** – President of the Senate of University Pitești  
**Dumitru CHIRLEȘAN** – Rector of the University of Pitești  
**Daniel PFRIMMER** – Managing director of SIA, France  
**Yves CARACTZANIS** – General Manager, Renault Romania  
**Alexander SIMIONESCU** – General Manager, Renault Technologie Roumanie  
**Stefan KANYA** – Managing Director AVL List Austria  
**Constantin PĂUNOIU** – Director of Nuclear Research Institute (ICN)  
**Șerban VALECA** – Professor of University of Pitești and President of the Scientific Committee of ICN  
**Fabrice LATURELLE** – President of SFT  
**Gheorghe DUMITRASCU** – President of SRT  
**Jacques GRAIZON** – President of SIA  
**Nicolae BURNETE** – President of SIAR

## SCIENTIFIC and TECHNICAL COMMITTEE

### 1. Thermodynamique. Transfert de chaleur et de masse. Combustion et Gazodynamique / *Thermodynamics. Heat and mass transfer. Combustion and Gas dynamics*

**Alberto CORONAS**

Université Rovira i Virgili Taragona

**Monica COSTEA**

Université "Politehnica" de Bucarest, Roumanie

**Gheorghe DUMITRASCU**

Université Technique "Gheorghe Asachi" de Iasi

**Philippe GUIBERT**

Sorbonne Université, France

**Céline MORIN**

Université Polytechnique des Hauts-de-France,  
Le Mont Houy, Valenciennes, France

**Emilia-Cerna MLADIN**

Université "Politehnica" de Bucarest, Roumanie

---

### 2. Machines thermiques / *Thermal machines*

**Radu CHIRIAC**

Université "Politehnica" de Bucarest, Roumanie

**Amélie DANLOS**

Le Cnam Paris, France

**Florian IVAN**

Université de Pitesti, Roumanie

**François LANZETTA**

Université de Franche-Comté, Belfort, France

**Plamen PUNOV**

Université Technique de Sofia, Bulgarie

---

### 3. Energie renouvelables et décarbonées, polygénération, stockage de l'énergie, gestion et contrôle des flux d'énergie / *Renewable and carbon-free energy, poly-generation, energy storage, management and control of energy flows*

**Jean CASTAING LASVIGNOTTES**

Université de Pau, France

**Christelle PERILHON**

Le Cnam Paris, France

**Patrick SALAGNAC**

Université de La Rochelle, France

**Assaad ZOUGHAIB**

Armines Paris

---

### 4. Economie et énergétique (thermoéconomie, exergoéconomie) / *Economy and energy (thermo-economy, exergo-economy)*

**Alexandru CHISACOF**

Université "Politehnica" de Bucarest, Roumanie

**Olivier LE CORRE**

Ecole des Mines de Nantes, France

**Lavinia GROSU**

Université Paris Nanterre, France

**Abdelaziz MIMET**

University Abdelmalek Essaâdi, Maroc

**5. Environnement et développement durable, recyclage, nouvelles ressources énergétiques / *Environment and sustainable development, recycling, new energy resources***

**Dumitru CHIRLESAN**  
Université de Pitesti, Roumanie

**George DARIE**  
Université "Politehnica" de Bucarest, Roumanie

**Michel FEIDT**  
Université de Lorraine, France

**Daniela GIOSANU**  
Université de Pitesti, Roumanie

---

**6. Matériaux. Carburants / *Materials. Fuels***

**Cătălin DUCU**  
Université de Pitesti, Roumanie

**Rodica NICULESCU**  
Université de Pitesti, Roumanie

**Ștefan TABACU**  
Université de Pitesti, Roumanie

**Ivelina IVANOVA**  
Université de Technologie Chimique et de Métallurgie (UTCM) à Sofia, Bulgarie

---

**7. Génie industriel / *Industrial Engineering***

**Daniel ANGHEL**  
Université de Pitesti, Roumanie

**Monica IORDACHE**  
Université de Pitesti, Roumanie

**Viorel NICOLAE**  
Université de Pitesti, Roumanie

**Eduard NITU**  
Université de Pitesti, Roumanie

**Alin RIZEA**  
Université de Pitesti, Roumanie

---

**8. Mobilité routière durable / *Sustainable road mobility***

**Alexandru BOROIU**  
Université de Pitesti, Roumanie

**Adrian CLENCI**  
Université de Pitesti, Roumanie

**Alexandru RACOVITZĂ**  
Université "Politehnica" de Bucarest, Roumanie

**Dănuț MARINESCU**  
Université de Pitesti, Roumanie



## ORGANIZING COMMITTEE

### Congress Chairmen

<b>Dumitru CHIRLEȘAN</b>	Rector of the University of Pitești, Romania
<b>Adrian CLENCI</b>	ViceRector Scientific Research, University of Pitești, Romania

### Members

#### University of Pitești, Romania

<b>Daniel ANGHEL</b>	Department Manufacturing and Industrial Management
<b>Alexandru BOROIU</b>	Department Automobiles and Transport
<b>Daniela GIOSANU</b>	Department Environmental Engineering and Applied Engineering Sciences
<b>Monica IORDACHE</b>	Department Manufacturing and Industrial Management
<b>Victor IORGA-SIMĂN</b>	Professor, University of Pitești, Department Automobiles and Transport
<b>Elena NEAGU</b>	Department Automobiles and Transport
<b>Viorel NICOLAE</b>	Department Automobiles and Transport
<b>Rodica NICULESCU</b>	Department Automobiles and Transport
<b>Eduard NIȚU</b>	Department Manufacturing and Industrial Management
<b>Dinel POPA</b>	Department Automobiles and Transport
<b>Alin RIZEA</b>	Department Manufacturing and Industrial Management

#### University Transilvania of Brașov, Romania

<b>Dinu COVACIU</b>	Website Coordinator, Transilvania University of Brașov
---------------------	--

#### University "Politehnica" of Bucharest, Romania

<b>Monica COSTEA</b>	Department Thermotechnics, Engines, Thermal and Refrigeration Equipment
<b>George DARIE</b>	Department Energy Production and Use

#### "Gheorghe Asachi" Technical University of Iași, Romania

<b>Gheorghe DUMITRAȘCU</b>	Department Mechanical Engineering and Road Vehicles
----------------------------	---

#### University "Politehnica" of Timișoara, Romania

<b>Ioana IONEL</b>	Department Thermotechnics, Thermal Machines and Road Vehicles
--------------------	---

#### University of Lorraine, Nancy, France

<b>Michel FEIDT</b>	Laboratory of Energetics and Theoretical and Applied Mechanics - LEMTA
---------------------	--

#### University of Burgogne FRANCHE-COMPTE, France

<b>François LANZETTA</b>	Department of Sciences and Energies
--------------------------	-------------------------------------

#### Society of Automotive Engineers of Romania (SIAR)

<b>Minu MITREA</b>	General Secretary
--------------------	-------------------



## **MOTTO**

***Scientia potentia est***

## **ENDORSED BY:**





## CONGRESS PROGRAMME at a GLANCE (onsite and online)

**THURSDAY, 14<sup>th</sup> of October** (University "Politehnica" of Bucharest, Conference Center)

**08h30 – 09h15: Registration**

**09h15 – 09h45: Opening speeches** (University "Politehnica" of Bucharest, Conference Center)

- Chairman of the Congress and representative of SIAR – Adrian CLENCI
- Rector of University of Pitești – Dumitru CHIRLEȘAN
- Rector of University "Politehnica" of Bucharest – Mihnea COSTOIU
- COFRET founder – Michel FEIDT

**09h45 – 11h15: Plenary Session** (University "Politehnica" of Bucharest, Conference Center)

- Elena CARCADEA, National Research and Development Institute for Cryogenic and Isotopic Technologies, Ramnicu Vâlcea, Romania  
*PEM Fuel Cells - On the Way from Modelling to Reality*
- Șerban VALECA, Dumitru CHIRLEȘAN, University of Pitesti, Romania  
*Sustainable development of the post-industrial society. Nuclear energy – inevitable alternative*
- Michel FEIDT, Université de Lorraine, Nancy, France  
*Energy – Environment: Optimizations and constraints*
- Gheorghe DUMITRAȘCU, "Gheorghe Asachi" Technical University of Iași, Romania  
*Analysis and design of closed irreversible cycles through finite physical dimensions thermodynamics*

**11h15 – 11h30: Coffee break**

**11h30 – 13h00: Simultaneous activities** - Oral presentations on sections (*onsite & online*)

**13h00 – 14h00: Lunch** (University "Politehnica" of Bucharest, Conference Center)

**14h00 – 18h00: Simultaneous activities** - Oral presentations on sections (*onsite & online*)

**19h00 – 22h00: Gala Dinner** (Restaurant "Bragadiru Palace")

**FRIDAY, 15<sup>th</sup> of October**

**09h15 – 11h15: Simultaneous activities** - Oral presentations on sections (*onsite & online*)

**11h15 – 12h00: Coffee break**

**12h00 – 13h00: Closing Ceremony** (*onsite & online*)

**13h00 – 14h00: Lunch** (University "Politehnica" of Bucharest, Conference Center)



## CONGRESS PROGRAMME – Oral Presentations (onsite and online)

THURSDAY, 14<sup>th</sup> of OCTOBER

11h30 – 13h00, Room 1

**CHAIRPERSON:** Michel FEIDT, *University of Lorraine*

COFRET21_001	<b>Innovation to Zero Emissions: Nuclear Energy trough Nonproliferation and Environment Protection- Romanian Experience for GEN 4</b> <i>Monica Valeca, Șerban Valeca, Daniela Giosanu</i>
COFRET21_002	<b>The identification of optimal operating parameters under high energy efficiency conditions for a single polymer electrolyte membrane (PEM) fuel cell</b> <i>Ion Gabriel Bratu, Radu Florian Ene, Madalina Vulpe, Florina Uleanu, Daniela Giosanu</i>
COFRET21_003	<b>Duhem and Natanson: Two Mathematical Approaches to Thermodynamics</b> <i>Janusz Badur, Michel Feidt, Paweł Ziolkowski</i>
COFRET21_004	<b>The efficiency of turbomachinery in the zero- and three-dimensional approaches</b> <i>Paweł Ziolkowski, Tomasz Kowalczyk, Janusz Badur, Michel Feidt</i>
COFRET21_005	<b>Influence of boundary conditions on the optimization of a geothermal heat pump studied by using a thermodynamic model</b> <i>Auxane Arz, Alicia Minghin, Michel Feidt, Monica Costea, Christian Moyne</i>

THURSDAY, 14<sup>th</sup> of OCTOBER

14h00 – 16h00, Room 1

**CHAIRPERSON:** Emilia-Cerna MLADIN, *University "Politehnica" of Bucharest*

COFRET21_006	<b>Entropy analysis in spray cooling for dosing water injection</b> <i>Stéphanie Lacour, Michel Feidt</i>
COFRET21_007	<b>Regenerative Stirling machine for cooling production at intermediate temperature range</b> <i>François Lanzetta</i>
COFRET21_008	<b>Innovative energy efficient thermal insulation to ensure indoor comfort in nzeb buildings</b> <i>Madalina Xenia Calbureanu – Popescu, Emilia-Cerna Mladin, Raluca Malcea, Diana Călbureanu</i>
COFRET21_009	<b>Experimental study of the spectacular heart-lung interaction improvement by performant physical therapy after a bad accident, in the frame of Quantum Biological Thermodynamics with Finite Speed</b> <i>S. Petrescu, A. Cristea, B. Borcila, M. Costea, M. Feidt, R. Bolohan, A. Carides, G. Stanescu, L. Timofan</i>
COFRET21_010	<b>A Numerical Approach of the Influence of Water Temperature in the Extinction of Fire Developed in Closed Spaces</b> <i>Puiu Cozma, Dragos Pavel, Carmen-Anca Safta, Alexandru Chisacof</i>

## THURSDAY, 14<sup>th</sup> of OCTOBER

14h00 – 16h00, Room 2

**CHAIRPERSON:** Ștefan TABACU, *University of Pitești*

COFRET21_011	<b>Composite materials based on natural fibres applied for structural reinforcement</b> <i>Ghiwa Bou Abdallah, Ivelina Ivanova, Jules Assih, Cheikhna Diagana, Dimitar Dontchev</i>
COFRET21_012	<b>Influence of design parameters over the structural response of an anti-tetra-chiral material</b> <i>Raluca Florentina Negrea, Paul Predoiu, Ștefan Tabacu, Sorin Moga</i>
COFRET21_013	<b>Study of the anisotropy of carbon steel sheet by tensile test</b> <i>Gina Sicoe</i>
COFRET21_014	<b>A model for monitoring the 8D and FMEA tools interdependence in the era of Industry 4.0</b> <i>Nadia Belu, Laurențiu Mihai Ionescu, Alin Gheorghiuță Mazăre</i>
COFRET21_015	<b>Comparative modal analysis for a twist beam rear axle destined to hybrid vehicle</b> <i>Laurian Tomseanu, Viorel Nicolae, Ionel Vieru, Dănuț Marinescu</i>

## THURSDAY, 14<sup>th</sup> of OCTOBER

16h00 – 18h00, Room 1

**CHAIRPERSON:** Amélie DANLOS, *Le Cnam Paris*

COFRET21_016	<b>Is it possible to turn diesel engine into a less pollutant device?</b> <i>Cosmin Ctin Suci, Daniel Ostoia, Nicolae Stelian Lontis, Ion Vetres, Sorin Vlad Igreț, Ioana Ionel</i>
COFRET21_017	<b>The effect of using different Biodiesel fuels on jet development in a Diesel engine</b> <i>Andrei Laurentiu Niculae, Radu Chiriac, Alexandru Racovitză</i>
COFRET21_018	<b>Study concerning the thermal energy balance in an internal combustion engine</b> <i>R. M. Popa, A. T. Borborean, V. Stoica, Ioana Ionel</i>
COFRET21_019	<b>Turbocharger surge behavior for sudden valve closing downstream the compressor and effect of actuating variable nozzle turbine</b> <i>Amélie Danlos, Pierre Podevin, Michael Deligant, Adrian Clenci, Plamen Punov, Stéphane Guilain</i>
COFRET21_020	<b>Assessment of the Miller cycle operation in a spark ignition engine via 1D numerical simulation</b> <i>Plamen Punov, Mihai Niculae, Adrian Clenci, Svetoslav Mihalkov, Victor Iorga-Siman, Amélie Danlos</i>

## THURSDAY, 14<sup>th</sup> of OCTOBER

16h00 – 18h00, Room 2

**CHAIRPERSON:** Ioana IONEL, University "Politehnica" of Timișoara

COFRET21_021	<b>Domestic peat pots biodegradation</b> <i>Florina Uleanu, Daniela Giosanu, Mădălina Vulpe, Gabriel Bratu, Loredana Vijan</i>
COFRET21_022	<b>Experimental research concerning the possibility of the cow manure conversion into biogas</b> <i>Ioana Ancuța Halmaciu, Ioana Ionel, Ion Vetres</i>
COFRET21_023	<b>Challenges and performance evaluation of livestock waste energy content</b> <i>Ioana Ancuta Halmaciu, Ioana Ionel, I. Vetres, R. M. Balogh, D. Bisorca</i>
COFRET21_024	<b>Water aeration researche using fine air bubble generators</b> <i>Vlad N. Sima, Nicolae Băran, Dorina N. Albu, Mihaela Petroșel, Ionela M. Constantin</i>
COFRET21_025	<b>The use of microtechnology's in the construction of water aeration installations</b> <i>Marilena Monica Boltinescu, Nicolae Baran, Albertino Giovani Roza, Mihaela Ionela Constantin</i>

## FRIDAY, 15<sup>th</sup> of OCTOBER

09h15 – 11h15, Room 1

**CHAIRPERSON:** Viorel NICOLAE, University of Pitești

COFRET21_026	<b>Opportunities to improve road traffic on short-length road connections by correlating intersection traffic lights</b> <i>Alexandru Boroiu, Elena Neagu, Andrei Alexandru Boroiu</i>
COFRET21_027	<b>Estimating the impact of a new bridge over the river Danube</b> <i>Adrian Viłcan, Viorel Nicolae, Mihaela Istrate, Ivana Martin</i>
COFRET21_028	<b>Electric bus platform for urban mobility</b> <i>Emil Tudor, Andrei Marinescu, Razvan Prejbeanu, Adrian Vintila, Tiberiu Tudorache, Dănuț G. Marinescu, Dan O. Neagu, Ionut Vasile, Ion C. Sburlan</i>
COFRET21_029	<b>Overview on the synthetic transport fuels</b> <i>Rodica Niculescu, Adrian Clenci, Mihaela Năstase, Victor Iorga-Siman, Cătălin Zaharia</i>
COFRET21_030	<b>Research on the influence of the clamping devices on the size of the perforated holes in long round pipes</b> <i>Dinu Iacob Poiana, Ioana Ionel, George Drăghici</i>