Pr. Amar TILMATINE

University of SidiBel Abbes

Abstract: This course will concern the presentation of several applications working with high voltage from **3** kV up to **60** kV. Following applications working with high-intensity electric field will be presented:

- Pulsed electric field treatment: application to food industry
- Plasma ozone generation: application to water /air disinfection and food industry
- Electrical curtains: application to particles movement /separation
- A brief review on Electrostatic separators of particles: application to recycling industry

Biography: Amar TILMATINEreceived the M.S. degree in electrical engineering and the Magister (Dr. Eng.) degree from the University of Science and Technology, Oran, Algeria, in **1988** and **1991**, respectively. He obtained the Doctorate degree in **2004** from the Electrical Engineering Institute of SidiBel Abbes University, Algeria. He is also a Senior IEEE member and past chair of IEEE Algeria section. He is also a founding member of the Algerian Academy of Science and Technology and director of the APELEC laboratory. He has published more than **100** papers in international scientific journals. His research topics are related to high voltage applications, the main domain being the applied electrostatics, in particular electrostatic separators and precipitators. He is also working on pulsed electric field applied in food industry and dielectric barrier discharge and their applications.

DESCRIPTION AND CONTENT

From **3**rd to **7**th November **2019**, a school on fundamental advances in fields of renewable energies and energy efficiency will be held at the ESSAT (High School of Applied Sciences of Tlemcen). This School will be organized in cooperation with the IPB (Polytechnic Institute of Bragança, Portugal) and University of Tlemcen. This event is an opportunity for the ESSAT students to interact with world-renowned researchers in an intensive week of seminars, courses and workshops. In addition, the academic environment will also provide the opportunity for ESSAT students as well as researchers to enhance their scientific knowledge in these fields.

The scientific engineering program focuses on solar energy, wind energy, distributed generation modeling and supervision, smart network as well as power converters, advance control and optimization related to renewable energies and grids.

This international School will contain lectures, presentations, seminars /applications, hand on training, visit of engineers' projects realized by ESSAT students

HONORARY CHAIR
Dr. Bouchrit ROUISSAT:
Director of the ESSAT School
GENERAL CHAIRS:
Dr. Fouad BOUKLI HACENE
Pr. Lotfi MERAD

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Dr Fayçal ARICHI
Dr Anis CHIALI
Dr Mohamed MEBROUKI
Dr Sidi Mohamed KHEFIF
Mr ZERIAB BENSENANE, Student , ESSA of Tlemcen

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Dr. Abdelfetah KERBOUA,	*ESSA of Tlemcen, Algeria*

Pr. Belkacem OULD BOUAMAMA
Polytechnic of Lille (France), CRIStAL Laboratory (UMR CNRS 9189)

Abstract: Solar and wind energies, as the most abundant energy sources, represent sustainable clean alternatives to confront the increasing climate change and pollution problem. However, regardless of their long-term sustainability, these sources are neither permanently available nor stable. The fact that the majority of renewable sources do not provide a stable power over a day time basis emphasizes the need of a power storage unit. As an interesting energy carrier, green hydrogen, if used as parallel energy storage, represents a suitable solution for long term and largescalestorage.

The produced hydrogen can be stored to then regenerate electricity as shown in the figure. Combined with multiple renewable energy sources, the electrolysis and the Fuel Cell represent interesting energy storage solution. They couple electricity, as the most common energy form, with hydrogen, as zero-emissions flexible energy storage to form an Hybrid Renewable Energy Systems (HRES).

The lecture deals with a review of multisource system control and proposes a generic tool named Event-Driven Hybrid Bond Graph (EDHBG) as an integrated tool not only for dynamic modeling but also for supervision including fault detection and isolation and fault tolerant control in degraded modes. The lecture is illustrated by a real application represented by a multisource system which consists of solar photovoltaic panels and wind turbine coupled with an electrolyze to producegreen hydrogen feeding a Fuel Cell.

Biography: **Belkacem OULD BOUAMAMA** is full Professor and head ofthe research at « EcolePolytechnique de Lille, France ». His main researchareas developed at CRIStAL laboratory CNRS**9189** where he leads "MOCIS"group, concern Integrated Design for Supervision of System Engineering. Their application domains are mainly intelligent transport, energy, andmechatronic systems. He is the author of more than one hundred international publications in thisdomain. He is co-author of five books in bond graph modeling and Fault Detection and Isolation area.

Research and teaching activities can be consulted at:
https://wikis.univ-lille1.fr/ci2s/membres/belkacem-ould-bouamama

Prof Antonio MASDIAS

Coruna University, Spain

Biography: Professor Antonio Masdias y Bonome, born in La Coruña, Spain in **1973**, (**45** years old) .

He studied Electrical Engineering at the Polytechnic University School of the University of La Coruña. In **1994** he started working at SIEMENS while collaborating in the drafting of various technical projects for building installations, as freelance engineer.

He is Industrial and Automatic Electronics engineer from the University of León, Master in Integrated Project Management from the University of La Coruña.

Today he belongs to the Electrical Engineering at Industrial Engineering department.

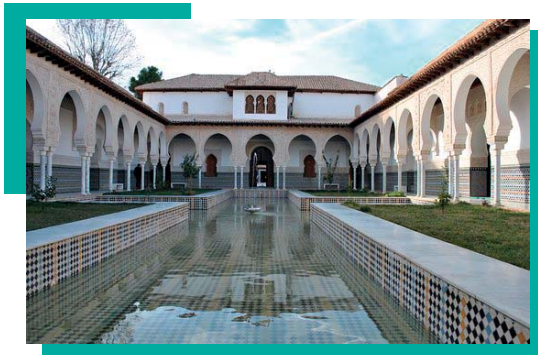
He teaches "Distributed Generation, Poly-generation, Micro-grids and Smart-grid" and "Energy audits and servic-es", within the University Master's Degree in Energy Efficiency. This International Master is made between the University of La Coruña (Spain) and the Polytechnic Institute of Bragança (Portugal)

City of Tlemcen

Tlemcen is one of the most beautiful towns in Algeria. With its sand red old city walls, elegant minarets and palaces filled with graceful arches and Moorish atmosphere, Tlemcen looks like the love child of Marrakesh and Cordoba. Tlemcenis a citylocated in north-west of Algeria and the capital of the province (Wilaya) of the same name. It is located sufficiently inland to avoid the humidity of the Mediterranean Sea coast but is near enough to receive cooling sea breezes in summer.

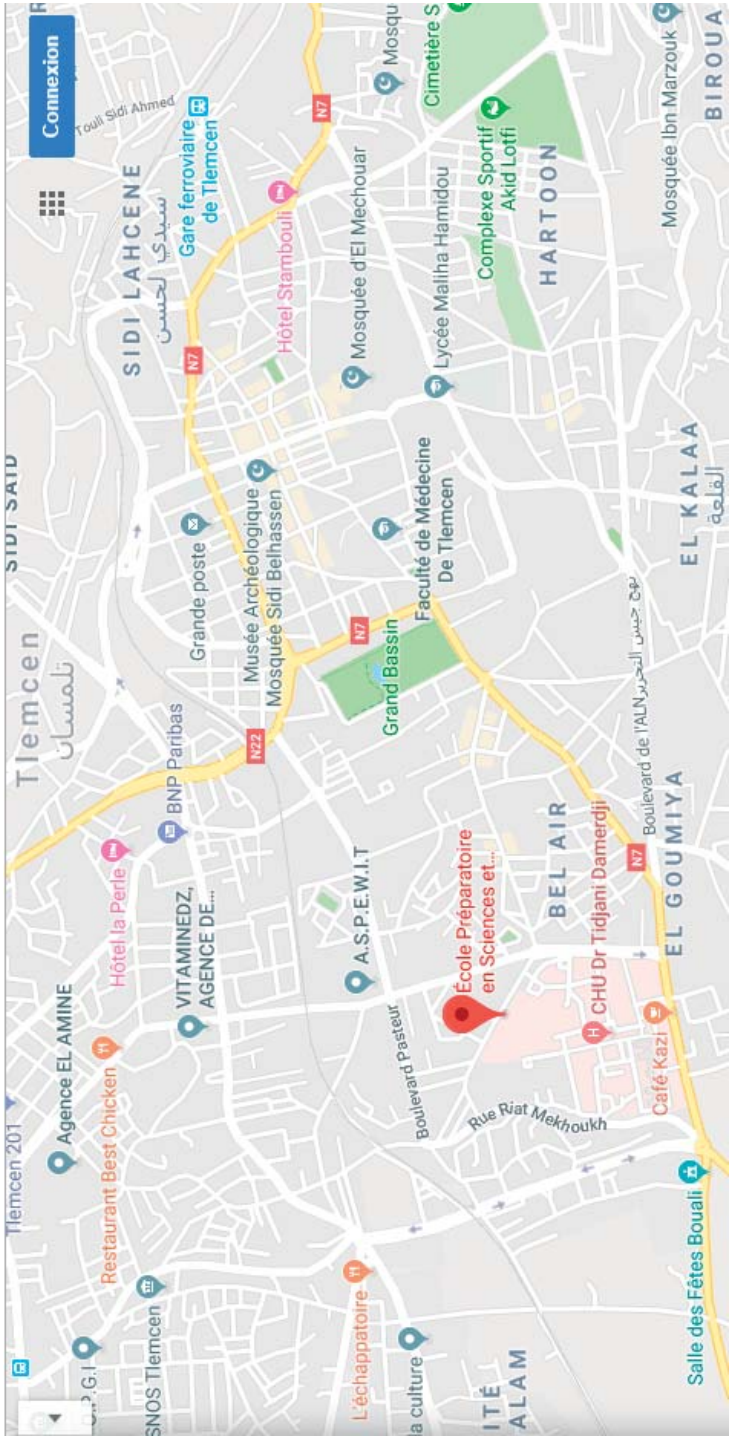
Tlemcen has more buildings dating from the **12**th to the **15**th century than any other town in Algeria. With the exception of the Great Mosque built by the Almoravids in the **12**th century, most of the city's medieval buildings strongly reflect the influence of Moorish (Muslim) Spain.

The Mosque of Sīdíbelhassan (**1296**, now a museum), the Mechouar, or citadel (**1145**, now a military hospital and barracks) and the Sahrij or Great Basin (a **14**th-century reservoir, now dry). Tlemcen's winding, narrow, arched streets are crowded with shops, cafés, and mosques.



The ruins of the Marīnid city of Mansoura to the west has notable examples of Hispano-Moorish art. Tlemcenhas more landmarks like the Cave of Beni Add which is about **65,000** years old. Thiscave located in the Tlemcen National Park which is about **10** kilometers from the city of Tlemcen.

How to get to ESSAT (Ex. EcolePréparatoire)



Pr.Lotfi BAGHLI

University of Tlemcen

Abstract: We intend to give a course in the field of electrical engineering and more precisely in microcontrollers, application to Motor Control and Internet of Things with lab experiments. The course is for Master students particularly for those who consider building experimental benches. The content will cover a survey of available microcontrollers and digital signal controllers, current, speed, position, temperature, pressure MEMS sensors, Wifi connected microcontrollers, Internet of Things (IoT), online SQL and no SQL databases (MySQL, Firebase). Experiments will show students how to deal with these new low cost technologies and how to interface digital sensors and connect to databases. I will bring with me several WEMOS ESP**8266** and different sensors to do the experiments with the students.

Biography: Lotfi BAGHLI (M'**12**) (**1971**) graduated in electrical engineering with honors in **1994** from the National Polytechnic School of Algiers, Algeria. He obtained his DEA and became a doctor in electrical engineering from the University Henri POINCARÉ, Nancy, France, respectively in **1995** and **1999**. He is a lecturer at the University of Nancy and member of the Research Group in Electrical Engineering and Electronics from Nancy. He is currently a professor at the University of Tlemcen. His work concerns digital control using DSPs, PSOs and genetic algorithms applied to the control and identification of electrical machines.

Pr. José Lima

IPB of Portugal

Biography: José Lima received the MSc and PhD in Electrical and Computer Engineering on Faculty of Engineering of University of Porto, Portugal in **2004** and **2009**. He joined the Polytechnic Institute of Bragança in **2002**, and currently he is a Professor in the Electrical Engineering Department (Embedded Systems, Power Electronics and Converters, Electronics and Mechatronics). He is also a researcher in Robotic and Intelligent Systems group of the INESC-TEC (Institute for Systems and Computer Engineering of Porto, Portugal) and the vice coordinator of Research Centre in Digitalization and Intelligent Robotics of Polytechnic Institute of Bragança. He has published more than **80** papers in international scientific journals and conference where he belongs to several program committees. He is Involved in **10** scientific national and international projects. Moreover, his research interests are in the field of robotics and automation.

November 3, 2019

8:00	Welcoming of participants
8:30	Inauguration
Session 1	**Chairman Pr.Lotfi BAGHLI**
9:00 10:15	Plenary 1 — Renewable Energy — Pr. Luis FROLEN RIBEIRO (IPB) of Portugal
10:15 10:30	Coffee break
10:30 12:15	Plenary 2 — Energy Efficiency — Pr. Luis FROLEN RIBEIRO (IPB) of Portugal
12:30 14:00	Lunch
Session 2	**Chairman Dr. F.BOUKLI-HACENE**
14:15 16:15	Course 1 — Supervision of Multi-Sources Energy and Green Hydrogen storage — Pr. Belkacem OULD BOUAMAMA Polytechnic of Lille University of Lille
16:15 16:30	Coffee break
16:30 18:00	Course 2 — Optimization Advanced methods 1 — Pr. Brahim CHERKI University of Tlemcen

Program

November 4, 2019

Session 3 — Chairman Pr.L. MERAD

8:30 10:15	Course 3	Renewable Energy – Resource evaluation Pr. Luis FROLEN RIBEIRO (IPB) of Portugal
10:15 10:30		Coffee break
10:30 12:15	Course 4	Power converter Pr. José LIMA (IPB) of Portugal
12:30 14:00		Lunch
14:30 17:30	Workshop 1	Power converter Pr. José LIMA (IPB)

Program

November 5, 2019

Session 4 — Chairman Dr Sid. KHEFIF

8:30 10:15	Course 5	Distributed generation Pr. Antonio MASDIAS University of A Coruña
10:15 10:30		Coffee break
10:30 12:15	Course 4	State of the art on µC / DSC for Motor control and Internet of Things Pr. Lotfi BAGHLI University of Tlemcen
12:30 14:00		Lunch
14:30 17:30	Workshop 2	Implementation of IOT with a WEMOS ESP8266 and MEMS sensors Pr. Lotfi BAGHLI University of Tlemcen

Pr. Brahim CHERKI

University of Tlemcen

Abstract: The course I will give in the coming school is about convex optimization, it consists of two parts:

1–Theoretical aspects of convex optimization **(1,5**h)

2–Applications **(1,5**h)

Biography: Currently is Professor of Automatic Control at the University of Tlemcen, Algeria. He obtained an engineering degree from the écolesupérieured'électricité (Paris), a master's degree from the University of Tlemcen in automatism and a doctorate in robotics from écoleCentrale de Nantes (France) in **1996**. His principal Research areas are linear and non–linear control. He is currently involved in projects on the control of wastewater treatment plants. He supervised **8** PhD theses and **14** magister.

Email :b.cherki@epst–tlemcen.dz, b.cherki@gmail.com

In the beginning of his career he was fully occupied with the early development of wind farms in Portugal, being a member of the engineering team that lead to the implementation of projected the **5** largest scale wind farms in mid and late **1990**'s. In **1996** he took an Assistant Professor position at IPB where he started to support applied research on renewable energies and energy efficiency, being promoted to Professor in **2000** and Coordinator Professor in **2008**, being the Director of Master Course on Renewable Energy and Energy Efficiency of the BRAGANÇA Polytechnic Institute, while maintaining regular research projects with the industry.

He was a member of several European Research projects such as the New European Wind Atlas and WindScanner.eu maintaining regular cooperation with the Danish Technical University – DTU Wind and the National Center for Atmospheric Research – NCAR, in the United States. Professor FRÖLÉN RIBEIRO was also an Independent Expert of the European Union in Energy and Innovation and a co-founder of the International Research Centre for Weather and Applications for the Portuguese Speaking Countries and Africa (Portugal, Brazil, Angola, Mozambique, East-Timor, São Tomé and Principe, Guinea Bissau, Equatorial Guinea and Cape Verde). He is the author of **4** scientific and technical books and a frequent reviewer of Energies and Applied Sciences International Journals from MDPI Editors (China and Switzerland). He also received **4** prizes related to innovations on wind energy and energy efficiency, awarded by international groups such as the EDP Group (Portugal-China), Altran Group (France), Everis (Spain) and the European and Middle East Consortium ETRERA **2020** (EU+Middle East countries).

Besides his research in innovative technologies, he is also responsible for the teaching innovation strategies in Engineering as the ones implemented at the international course of Product Development and Industrial Processing, a joint course between the ErhvervsakademietLillebælt, Denmark and IPB, Portugal.

He is the promoter of the MRIA project, an EU-Ukraine cooperation project that promotes short university courses that bridge a concrete multi-sectorial problem from a local Ukrainian company, to train the involved teachers in the execution of a Project Based Learning and Learning by Development course aided on e-learning platforms (mria.ipb.pt).

Program

November 6, 2019

Session 5 — Chairman Dr F.BOUKLI-HACENE

8:30 10:15	Course 7	Control systems Pr. José LIMA IPB of Portugal
10:15 10:30		Coffee break
10:30 12:00	Course 8	Smart networks, modeling and fault detection Pr. Antonio MASDIAS University of A Coruña
12:30 14:00		Lunch
14:30 17:30	Workshop 3	Modeling, intelligent control and anomaly detection Pr. Antonio MASDIAS University of A Coruña

Program

November 7, 2019

Session 6 — Chairman Dr A. CHIALI

8:30 10:15	Course 9	Optimization Advanced methods -2 Application Pr. Brahim CHERKI University of Tlemcen
10:15 10:30		Coffee break
10:30 12:15	Course 10	Applications of high-intensity electric field (developed in APELEC Laboratory) Pr. Amar TILMATINE University of Sidi Bel Abbes
12:30 14:00		Lunch
14:30 17:30	Workshop 4	Electrostatics and their applications Pr. Amar TILMATINE University of Sidi Bel Abbes

Friday, November 2019 ,7 Visit of Top Places inTlemcen

Keynote speakers

Pr. Luis FROLEN RIBEIRO

IPB of Portugal

Abstract: This is a fundamental course to address basic, and generally overlooked, principles of renewable energy technologies conversion, from the type of resource to the service it provides: electricity, heat or mechanical work. It also addresses myths and wrong ideas created in the media that circulates in the internet and the connection to real problems related to technology maturity, communication of results from aggressive marketing to the real and concrete possible application of technologies based in the maturity of the technologies.
How the transition in the world energy outlook will be and the possible trends and limitations associated to the economy of scale.

The topics are:

- Renewable natural resources
- Conversion technologies
- Energy services
- Reality and myths
- Technology maturity, communication and marketing
- World energy transition
- Trends driven by economy of scale

Biography: His more than **20** years research lies on the connection between experimental atmospheric turbulence and the reduction of uncertainties related to the implementation of wind farms, and the consequences on the financial viability of the large renewable investments.