

An Evaluation Report of ACRENA 2013 -

Advanced Control for Renewable Energy in North Africa

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The 2013 Course on Advanced Control for Renewable Energy (ACRENA 2013) was organized on October 26-28 October 2013 at the Faculty of Electronics and Computer Sciences, University of Sciences and Technologies Houari Boumediene, Algiers, Algeria.

There were a total 67 participants attending ACRENA 2013. The number of overseas participants was 17 from Tunisia, Morocco and Libya and the number of domestic participants was 44 from Algeria. The participants outside of the region were 6 (5 from France, 1 from Spain). Figure 1 shows the number of participants categorized by countries.

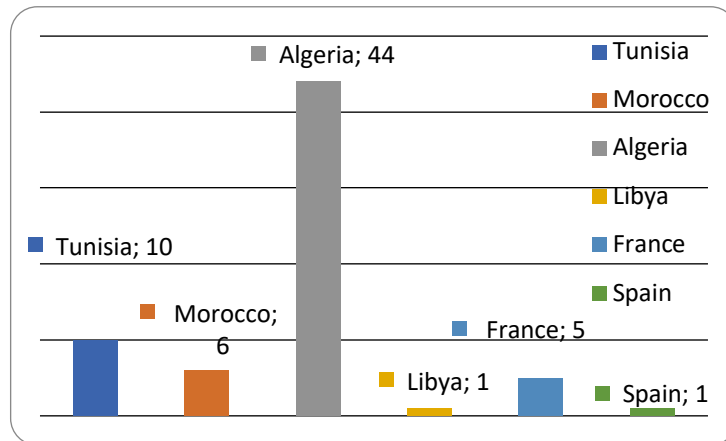


Fig.1: Number of participants

Fig. 2 show the number of domestic participants categorized by affiliation and region

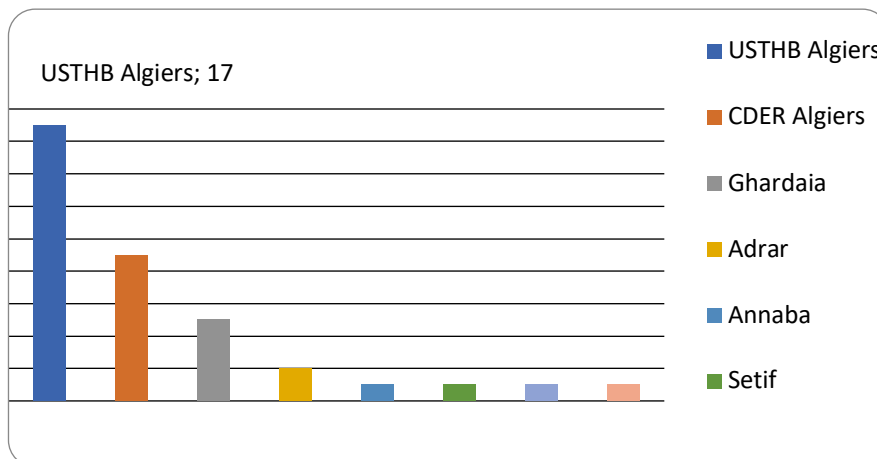


Fig. 2 Domestic participants students

Figure 3 shows the number of lecturers by countries.

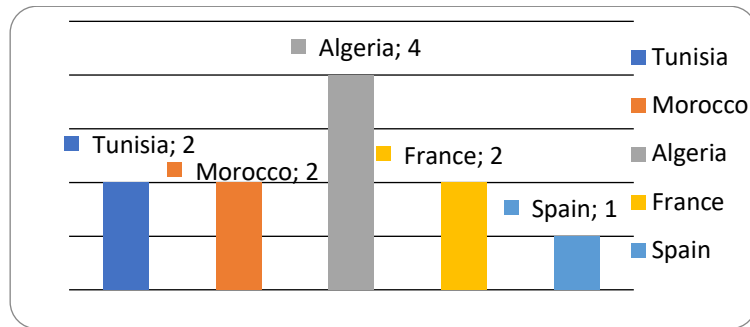


Fig. 3: number of lecturers by country

The following table summarizes the domestic and overseas participants and their role.

Position	Domestic participants	Overseas participants	Total
Student	37	11	48
Lecturer	4	7	11
Researcher	0	4	4
Coordinator	3	1	4
Total	44	23	67

The participants through the round tables suggested for the next edition of ACRENA to be held in another local country and they suggested the topic proposing some control in other applications.

- Control applications for smart grids (6)
- Control applications for power systems (4)
- Control applications for converters (6)
- Control applications for smart buildings (8)
- Introduction to fuzzy and neural network (7)
- Control of embedded systems (Arduino, Android) (4)
- Optimal control applications (2)
- Storage Technologies (5)
- Motion Control solutions (2)

The feedback of students regarding the scores of courses given is represented by the following figure. The rating is excellent (4), good (3), fair (2) and poor (1).

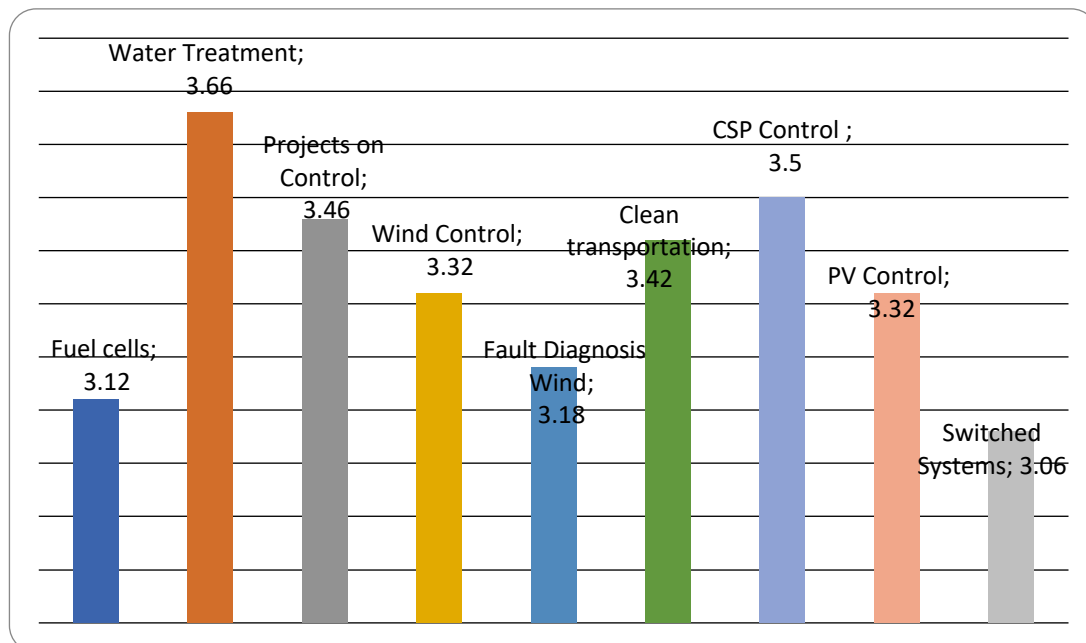


Fig. 4: Rating for the given courses on ACRENA

Also participants suggested that it will be interesting to propose:

- Some Laboratories in simulation in order to apply the theory.
- Also to have an example of project in renewable Energy and to explain the procedures in order to achieve the expected results.
- To have some data of renewable energy application in order to simulate the control and diagnosis.
- To invite overseas companies from Morocco, Libya and Tunisia in order to share their experience in control applications for renewable energy.
- ACRENA or similar courses should be held each two years.
- Continue to have a contact between Professors and students.
- To have some training ships between local partners : Algeria, Tunisia

The participants found that the organization of ACRENA was a success. The quality of accommodation (Ibis Hotel) for overseas participants was very good and also the quality of food. The domestic students from outside of the city of Algiers found the campus was very far away from the University taking more than 1 hour of transportation due to the traffic congestion. They suggested that for the (possible) next edition, it will be more interesting to be near the building where courses will be held.

Through the discussion, some proposals were given:

- Prof. Mohamed Boudour (USTHB) proposes for overseas students to have a training ships of 3 months or more in his Laboratory and Prof. Nourredine Yassaa, Director of CDER has opened his center of Renewable Energy for students interested by a training ship. They can support the accommodation.
- Prof. Mohamed Chaabane of University of Sfax (Tunisia) offers to receives one or 2 students in his Laboratory. He can support the accommodation.
- Prof. Benzaouia Abdellah from University Caddi Ayad of Marrakech gives some remarks. The number of Moroccan students is very low. The reason is that difficulties for students to travel outside Morocco. He suggests to organize next year in Morocco

a summer school for Moroccan students and he can invite lecturers from Algeria, Tunisia and France. The Moroccan students come from the region of Fes, Casablanca and Marrakech. The number of attendees' students is 20. This summer school will be supported by the University Caddi Ayad of Marrakech. This summer school in control and diagnosis is also open for Tunisian and Algerian students and he can support only the accommodation.

Proposed Spring School Timetable

Marrakesh, Morocco, May 19-22, 2014

	09:00 - 10:30	11:00 - 12:30	15:00 - 18:00
Monday	M01	M02	M01-T
Tuesday	M02	M03	M02-T/M-03T
Wednesday	M04	M04	M04-T
Thursday	M05	M05	M05-T

- M01: Lyapunov stability and LMI Techniques: Prof Abdellah Benzaouia (Morocco)/ Prof. Mesquine (Morocco)
- M02 : Internal stability and Controller parametrization: Prof. Driss Mehdi (France)/ Prof Mohamed Chaabane (Tunisia)
- M03 : High gain nonlinear observer design: Prof. Mohamed M'Saad (France)/Prof. Mohamed Seghir Boucherit (Algeria)
- M04 : Fuzzy control: Prof. EL Hajjaji (France)/ Prof. Mohamed Oudghiri (Morocco)
- M05 : Diagnosis and fault tolerant control: Prof. Abdel Aitouche (France) / Prof. Mustapha Ouladsine (France)
- M01-T , M02-T, M03-T, M04-T, M0-5T: Practical work on M01, M02, M03, M04 and M05..

The schedule was the following

ACRENA: SCHEDULE

26 th October 2013	27 th October 2013	28 th October 2013
8:30-9:00	8:30-9:00	8:30-9:00
Inauguration Welcome	Registration	Registration
9:00-9:15 Presentation of IFAC Foundation Abdel AITOUCHE (FR)	9:00-9:50 Control Applications to PV Solar Energy Nacer Greffou (DZ)	9:00-9:50 Advanced Control and Applications of Fuel Cells Joseba Quevedo Spain
9:15-9:30 Strategy of Renewable Energy in USTHB Mohamed Boudour (DZ)		
9:30-10:40 Research and Education for Automatic in the Region Ahmed Hammouch (MA) Mekki Ksouri (TN) Abdelhafid Aourag (DZ)	9:50-10:40 Control applications on Concentred Solar Power Energy Nacer Greffou	9:50-10:40 Industrial Benefits of Advanced Control Abdel Aitouche, Mohamed Boudour (Animation)
10:40-11:00 Break	10:40-11:00 Break	10:40-11:00 Break
11:00-11:50 Research and Innovation at Centre for development of Renewable Energy, CDER Yassine Yassaa (DZ)	11:00-11:50 Modeling and Control of nonlinear systems. Application to Wind Energy Systems Aghmed El Hajjaji (FR)	11:00-12:00 Round Table Closing
11:50-12:30 Round Table	11:50-12:30 Round Table	12:00-13:30 Lunch
12:30-14:00 Lunch	12:30-14:00 Lunch	13:30-17:00 Visit to the Center of Renewable Energy in Algiers (CDER)
14:00-14:50 Example of European Projects on Control : INTRADE, SCODECE, I-Mocca Abdel Aitouche (FR)	14:14:50 Advanced Control for power electronics Ferhat Fnaiech (TN)	
14:50-15:30 Sustainable Energy: clean transportation Lotfi Baghli (Dz)	14:50-15:30 Switched Systems. Application to transportation Abdellah Benzaouia (MA))	
15:30-15:50 Break	15:30-15:50 Break	
15:50-17:00 Posters: Exhibitions, Demonstrations, Discussions	15:50-17:00 Posters: Exhibitions, Demonstrations, Discussions	
20:00 Dinner	20:00 Dinner	20:00 Dinner

Additional information



Opening : Acrena



Room lecture



Prof. A. Aitouche and A. El Hajaji



Prof. Nacer Greffou; Prof. Joseba Quevedo; Prof. Ahmed Ksouri; Prof. Fnaiech Ferhat