Version May 23, 2012

Introduction

The 3rd SYSWIND Summer School is hosted by the Stochastic Mechanical Systems and Automation (SMSA) Laboratory (www.smsa.upatras.gr) of the University of Patras (www.upatras.gr), Greece. The School focuses mainly on state-of-the-art methods for the Control and Structural Health Monitoring (SHM) of wind turbines. The lectures are aimed at industry practitioners and engineers, post-graduate students and researchers interested in the use and development of effective techniques for application to the new generation of wind turbines. Professionals from the fields of mechanical, civil, structural, electrical engineering and computer science are expected to benefit from the course.

Topics to be Covered

The attendees will be provided with an overview of the state-of-art knowledge and techniques in a number of topics mainly focused on Control and Structural Health Monitoring (SHM) of Wind Turbines (WTs). These include problems and challenges in WT research, structural control of WTs, measurement techniques for WTs, model based estimation for WT control and maintenance, SHM of WTs via pattern recognition methods, composite materials for WT blades, structural dynamics and simulation of WT blades, monitoring of fibre-reinforced composites, fatigue of WT composite rotor blades, NDT and SHM for WT components, stationary and non-stationary identification of WT dynamics for SHM, and vibration based methods for SHM. A laboratory session is also planned, along with a technical visit to a wind turbine park.

Lecturers

The lectures in the summer school shall be delivered by experts of international reputation (in lecturing order):

- Dr P. Chaviaropoulos, Centre for Renewable Energy Sources, Pikermi Attikis, Greece
  Problems and challenges in wind turbine research
- Prof B. Basu, Trinity College Dublin, Ireland
  Structural control of wind turbines
- Dr D. Lekou, Centre for Renewable Energy Sources, Pikermi Attikis, Greece
  Measurements for WT condition monitoring
- Dr B. Pedersen, LAC Engineering, Hinnerup, Denmark
  Model based estimation for control and maintenance of wind turbines
- Prof K. Worden, Sheffield University, United Kingdom
  Structural health monitoring using pattern recognition
- Prof D. Saravanos, University of Patras, Greece
  Structural dynamics and simulation of WT blades
- Prof F. Aymerich, Università degli Studi di Cagliari, Italy
  Composite materials for wind turbine blades: issues and challenges
- Mr K. Borum, Technical University of Denmark (Risø DTU), Denmark
  Inspection and monitoring of fibre-reinforced composites for WTs
- Prof T.P. Filippidis, University of Patras, Greece
  Fatigue of WT composite rotor blades
- Dr A. Anastasopoulos, Envirocoustics NDT, Athens, Greece
  NDT and SHM for wind turbine components
- Prof S.D. Fassois, University of Patras, Greece
  Stationary and non-stationary identification for SHM
- Dr J.S. Sakellariou, University of Patras, Greece
  Laboratory experience (statistical time series vibration based methods for SHM)
- Prof C.-P. Fritzen, Universität Siegen, Germany
  Vibration based methods for SHM
- Mr Chr. Papadimitriou, Acciona Energiaki – Eoliki Panachaikou, Patras, Greece
  Technical visit

Tentative Itinerary

Monday, 16 July 2012		
9:00 - 9:30	Registration	
9:30 - 9:40	Welcome	S. D. Fassois
9:40 - 9:50	Introduction	S. D. Fassois
10:00 - 10:50	Problems and challenges in wind turbine research	P. Chaviaropoulos
10:50 - 11:10	Coffee Break	
11:10 - 12:00	Structural control of wind turbines	B. Basu
12:00 - 13:20	Lunch	
13:20 - 14:10	Structural control of wind turbines	B. Basu
14:20 - 15:10	Measurements for WT condition monitoring	D. Lekou
15:10 - 15:30	Coffee Break	
15:30 - 16:20	Measurements for WT condition monitoring	D. Lekou
16:40 - 17:30	Model based estimation for control and maintenance of wind turbines	B. Pedersen
Tuesday, 17 July 2012		
9:00 - 9:50	Structural health monitoring using pattern recognition	K. Worden
10:00 - 10:50	Structural health monitoring using pattern recognition	K. Worden
10:50 - 11:10	Coffee Break	
11:10 - 12:00	Structural health monitoring using pattern recognition	K. Worden
12:00 - 13:20	Lunch	
13:20 - 14:10	Structural dynamics and simulation of WT blades	D. Saravanos
14:20 - 15:10	Structural dynamics and simulation of WT blades	D. Saravanos
15:10 - 15:30	Coffee Break	
15:30 - 16:20	Structural dynamics and simulation of WT blades	D. Saravanos
Wednesday, 18 July 2012		
9:00 - 9:50	Composite materials for wind turbine blades: issues and challenges	F. Aymerich
10:00 - 10:50	Composite materials for wind turbine blades: issues and challenges	F. Aymerich
10:50 - 11:10	Coffee Break	
11:10 - 12:00	Inspection and monitoring of fibre-reinforced composites for WTs	K. Borum
12:00 - 13:20	Lunch	
13:20 - 14:10	Inspection and monitoring of fibre-reinforced composites for WTs	K. Borum
14:20 - 15:10	Inspection and monitoring of fibre-reinforced composites for WTs	K. Borum
15:10 - 15:30	Coffee Break	
15:30 - 16:20	Fatigue of WT composite rotor blades	T.P. Filippidis
16:40 - 17:30	Fatigue of WT composite rotor blades	T.P. Filippidis

Thursday, 19 July 2012		
9:00 - 9:50	NDT and SHM for wind turbine components	A. Anastasopoulos
10:00 - 10:50	NDT and SHM for wind turbine components	A. Anastasopoulos
10:50 - 11:10	Coffee Break	
11:10 - 12:00	NDT and SHM for wind turbine components	A. Anastasopoulos
12:00 - 13:20	Lunch	
13:20 - 14:10	Stationary and non-stationary identification for SHM	S.D. Fassois
14:20 - 15:10	Stationary and non-stationary identification for SHM	S.D. Fassois
15:10 - 15:30	Coffee Break	
15:30 - 16:20	Stationary and non-stationary identification for SHM	S.D. Fassois
16:40 - 17:30	Laboratory experience	J.S. Sakellariou
Friday, 20 July 2012		
9:00 - 9:50	Vibration based methods for SHM	C.-P. Fritzen
10:00 - 10:50	Vibration based methods for SHM	C.-P. Fritzen
10:50 - 11:10	Coffee Break	
11:10 - 12:00	Vibration based methods for SHM	C.-P. Fritzen
12:00 - 13:20	Lunch	
13:20 - 17:30	Technical visit	Chr. Papadimitriou

3rd SYSWIND Summer School
on Control, Health Monitoring,
and Wind Energy/Power Grid Energy
Patras, Greece, July 16-20, 2012

Location

The 3rd SYSWIND Summer School will be held in Patras, a historic and pleasant university town. Patras is very close to world heritage sites such as Delphi and Olympia. It may be reached via the Athens International Airport (220km, http://www.aia.gr) or the regional Araxos Airport (40km – Ryanair flights from/to London, Milan, Paphos/Cyprus, http://www.araxos-airport.com). Also via ferry from various Italian ports. The lectures shall be held at the Conference & Cultural Center of the University of Patras:

http://www.confer.upatras.gr/indexen.php

The Center is located in the Campus of the University of Patras, 7km north of the city centre, at the pleasant and very alive suburb of Rion. Travel and area information shall be available on the web sites (see the right column).

Accommodation

Summer school participants may choose from a number of hotels in the area. Each participant is responsible for making his/her own reservation. Special rates have been agreed with the Achaia Beach Airotel. Alternatively participants may choose to stay at the nearby Stavropoulos Foundation Dormitory.

Achaia Beach Airotel

http://www.airotel.gr/hotel/achaia_beach_hotel

Right on the beach at Rion, with beautiful sunsets and sea/pool swimming. Special rates for SYSWIND participants – single 58€ / 67€, double 67€ / 76€, including breakfast and taxes. Availability is limited. Please fill and fax the special hotel reservation form before May 20th, 2012.

The Stavropoulos Foundation Dormitory

http://www.stavropouloufound.gr/index.php?lang=en

Close to the Achaia Beach Airotel, it offers rooms at about 15€ per night. Please contact the Dormitory directly at info@fep.gr to make a reservation and mention SYSWIND Summer Course. Availability is limited.

Registration *(deadline: June 10, 2012)*

To register for the course please fill and send the Course Registration Form along with proof of fee payment (150€, non-refundable). Please note that travel cost and accommodation are not included in the registration. The number of attendees is limited due to space restrictions. *Please register as soon as possible – registration deadline is June 10, 2012.* Free accommodation at the Stavropoulos Foundation Dormitory may be granted to the first 10 external participants registering for the course upon their request and subject to availability.

Forms and Further Info

Please visit::

The SYSWIND summer school site:

http://syswind.eu/summerschool.html

The site of the Stochastic Mechanical Systems and Automation (SMSA) Laboratory at the University of Patras:

http://www.smsa.upatras.gr

Organization

The 2012 SYSWIND Summer School is organised by the Scientific Committee of the SYSWIND project and co-sponsored by the University of Patras.

"I look forward to welcoming you to the 3rd SYSWIND Summer School in Patras."

Prof Spilios D. Fassois, Lead organiser of the 2012 SYSWIND Summer School