

## 1. Project Objective for year (2009):

Provided Objectives (Anexa IIa)		Realized Objectives	Realization grade	Remarks**
1	A 3-D boundary layer form of equations on the rotating blade.	A 3-D boundary layer form of equations on the rotating blade	totally	
2	Rotational effects on the boundary layer and flow field structure, using viscous-inviscid interaction methods	Rotational effects on the boundary layer and flow field structure, using viscous-inviscid interaction methods	totally	
3				

\* totally / partially / unfulfilled

\*\* For partially / unfulfilled objectives it is to argue.

## 2. Projects Activities for 2009:

Provided Objectives (Anexa IIa)		Realized Objectives	Realization grade	Remarks**
1	A 3-D boundary layer form of equations on the rotating blade.	A 3-D boundary layer form of equations on the rotating blade.	totally	
2	Numerical calculus and analysis of the influence terms of second order (centrifugal and Coriolis acceleration) on the main flow on profile	Numerical calculus and analysis of the influence terms of second order (centrifugal and Coriolis acceleration) on the main flow on profile	totally	
3	Comparison with numerical results of Navier-Stokes model	Comparison with numerical results of Navier-Stokes model	totally	
4	Extension of inviscid-viscous interaction method from 2D profiles to 3-D rotating case	Extension of inviscid-viscous interaction method from 2D profiles to 3-D rotating case	totally	
5	Developing a simplified model in the case of a frictionless flow after separation	Developing a simplified model in the case of a frictionless flow after separation	totally	
6	Comparisons of results of the two methods	Comparisons of results of the two methods	totally	
7	Identification of vortex structures responsible of increasing aerodynamic forces on rotating blades	Identification of vortex structures responsible of increasing aerodynamic forces on rotating blades	totally	
8	Development of corrections for the effect of rotation on the aerodynamic characteristics of profile (Cl - Cd).	Development of corrections for the effect of rotation on the aerodynamic characteristics of profile (Cl - Cd).	totally	
9	Application of correction formulas for calculating the characteristic power	Application of correction formulas for calculating the characteristic power	totally	

\* totally / partially / unfulfilled

\*\* For partially / unfulfilled objectives it is to argue

### 3. Results delivered for year - 2009 :

Provided Objectives (Anexa IIa)		Realized Objectives	Realization grade	Remarks**
1	2 paper published/accepted in indexate ISI indexed journals: 1 - (ZAMM, GERMANIA) 2 - Proceedings of the Romanian Academy, Series A Mathematics, Physics, Technical Sciences, Information Science	2 paper published in ISI indexed journals: 1 - (ZAMM, GERMANIA) - published 2 - Proceedings of the Romanian Academy, Series A Mathematics, Physics, Technical Sciences, Information Science -published	totally	
2	3 papers to publish in international database indexed journal: 2 - (PAMM , Germany) 1 - (Proceedings of European Wind Energy Conference, 2009)	3 papers to publish in international database indexed journal: 2 - (PAMM , Germany) 1 - (Proceedings of European Wind Energy Conference, 2009)	totally	
3				

\* totally / partially / unfulfilled

\*\* For partially / unfulfilled objectives it is to argue

### 4. Performance criteria:

Performance criteria	NUMBER (Provide)	NUMBER (Realized)	Title*	Remarks**
Articles accepted for publication in ISI indexed journals	2	2	1. H. Dumitrescu, V. Cardos, Inboard boundary layer state on wind turbine blades, ZAMM - Journal of Applied Mathematics and Mechanics, 89, 3, 2009, pp. 163-173.	
			2. H. Dumitrescu, A. Dumitrache, V. Cardos, F. Frunzulica, <b>Low-frequency noise prediction of vertical axis wind turbines</b> , Proceedings of the Romanian Academy , Seria A, Volume 11, Number 1/2010, pp. 47-54.	
Articles accepted for publication in international database indexed journal	3	3	1. H. Dumitrescu, V. Cardos, Three-dimensional turbulent boundary layer on wind turbine blades, PAMM Vol. 8, 1, Dec. 2008, pp. 10611-10612.	
			2. A. Dumitrache, H. Dumitrescu, V. Cardos, Aerodynamic and aeroacoustic phenomena due to non-uniform flow of wind turbines, PAMM, vol. 8, 1, dec. 2008, pp. 10669-10670	
			3. H. Dumitrescu, V. Cardos, Inboard stall-delay for wind turbine blades, Proceedings of European Wind Energy Conference and Exhibition (CD-rom Edition), Marseille, 2009	

National patent applications filled				
International patent applications filled				

\* Structura informations structure for papers : author, title, journal, year, page

\*\* For partially / unfulfilled objectives it is to argue

**5. Publications or results arising from research and reported to the state budget funded by state budget and names mentioned UEFISCSU contract number:**

**Not**

(Selectati)

**6. Website address made on the project in progress:**

[http://www.ima.ro/PNII\\_programme/ID\\_880/IDEI\\_152\\_07.htm](http://www.ima.ro/PNII_programme/ID_880/IDEI_152_07.htm)

**7. There have been requests for the vacant position funding for scientists in training in 2009:**

**Not**

(Selectati)

**8. Failures / difficulties encountered in the project in the reporting year::**

By reducing the budget initially foreseen for 2009 and rescheduling activities included in the plan of implementation could not achieve an appropriate involve (as funding) of doctoral students in project activities.

### **9. Suggests on reporting:**

Taking into account of deadlines and budget originally planned in the contract.
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**LEGALITY AND IS THEREBY CERTIFY THE ACCURACY CONTAINED  
IN THIS ANNUAL ACTIVITY REPORT**

**DATA: 15.09.2009**

**RECTOR/DIRECTOR,**

Name, Surname: Acad. Marius Iosifescu

Signature:

**DIRECTOR EC./CONTABIL SEF**

Name, Surname: Grigore Florica

Signature:

**PROJECT DIRECTOR,**

Name, Surname: Dumitrescu Horia-Teodor

Signature