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Institute of Fluid Flow Machinery
Polish Academy of Sciences
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Partnership and European project realisation from the perspective of Partner, Coordinator and Reviewer

Partnership in European Projects

Project realisation

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Partners in European projects

Member Countries of the European Union (27)

Evolution –

4th Framework – only member states

5th Framework (1999) – member states and associated partners,
very few associated partners from the beginning – later inclusion program

6th Framework (2005) – full rights as members of the EU, both as partners and coordinators – EC policy favoured projects including new-member states

7th Framework (2008) – favours world wide cooperation, inclusion of „new member states partners" lost its priority

Who can participate?

A legal entity *"natural person„ or a "legal person„* no matter where it is established

There are minimum conditions to participation from the EU and Associated countries. These vary between funding scheme and may vary from call to call

The EU Member States are:

Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom.

The Associated Countries are:

a) *Iceland, Liechtenstein, and Norway (subject to amendment procedure of EEA agreement)*

b) *Switzerland, Israel (subject to satisfactory conclusion of bilateral S/T agreements)*

c) *Turkey, Croatia, and Serbia (subject to satisfactory completion of the decision-making procedure associating these countries via a Memorandum of Understanding)*

Other countries *may become associated during the course of FP7. The latest news will be posted on the CORDIS web site*

Who can participate?

List of International Co-operation Partner Countries (ICPC) -

- AFRICAN (48)
South Africa 2 UM,
- CARIBBEAN (14)
- PACIFIC (15)
- ASIA (23)
China 2** LM, India 2** L,
- EASTERN EUROPE AND CENTRAL ASIA (EECA) (12)
Armenia 3 LM, Azerbaijan 3 LM, Belarus 3 LM,
Georgia 3 LM, Moldova 3 LM, Russia 2** UM, Ukraine 2,3 LM,
- LATIN AMERICA (17)
Argentina 2 UM, Brazil 2** LM, Chile 2 UM, Mexico 2 UM,
- MEDITERRANEAN PARTNER COUNTRIES (MPC) (9)
Algeria 3 LM, Egypt 2,3 LM, Jordan 3 LM, Lebanon 3 UM,
Libya 3 UM, Morocco 2,3 LM, Palestinian administered areas 3- LM,
Syrian Arab Rep. 3 LM, Tunisia 2,3 LM
- WESTERN BALKAN COUNTRIES (WBC) (2)
Bosnia-Herzegovina 4 LM, Kosovo 5 LM

2 Signed an agreement with the EC covering Science & Technology

South Africa, China, India, Russia, Ukraine,
Argentina, Brazil, Chile, Mexico, Morocco, Tunisia

3 These countries are also part of the European Neighbourhood Policy (ENP).

Armenia, Azerbaijan, Belarus, Georgia,
Moldavia, Russia, Ukraine, Algeria,
Egypt, Jordan, Lebanon, Libya,
Morocco, Palestinian adm. Syrian Arab Rep., Tunisia

4 Until the country becomes Associated to FP7

Bosnia-Herzegovina

5 As defined by UNSC resolution 1244 of 10 June 1999.

Kosovo

Rich countries

as USA, Japan, Australia, Canada, South Korea

Are welcomed to cooperation.

However, those countries may not be supported financially from EU.

Also, the basis of the cooperation is sharing knowledge about new and brake-through technologies. This is apparently a problem with US partners, but it seems to be accepted by partners from Australia and Canada.

Cooperation with countries beyond Europe borders:

As partners in research projects.

Invitation of experts to project calls evaluation sessions.

Experts from beyond Europe are sometimes invited for final meetings of selected projects.

EC takes care to invite a fair representation from all member and associated countries to evaluation sessions.

The Szewalski Institute of Fluid Flow Machinery

Polish Academy of Sciences

IMP PAN

Department of Transonic Flows and Numerical Methods

4th FP
1994 – 1999 EUROSHOCK
I and II (in Karlsruhe)

5th FP
AITEB

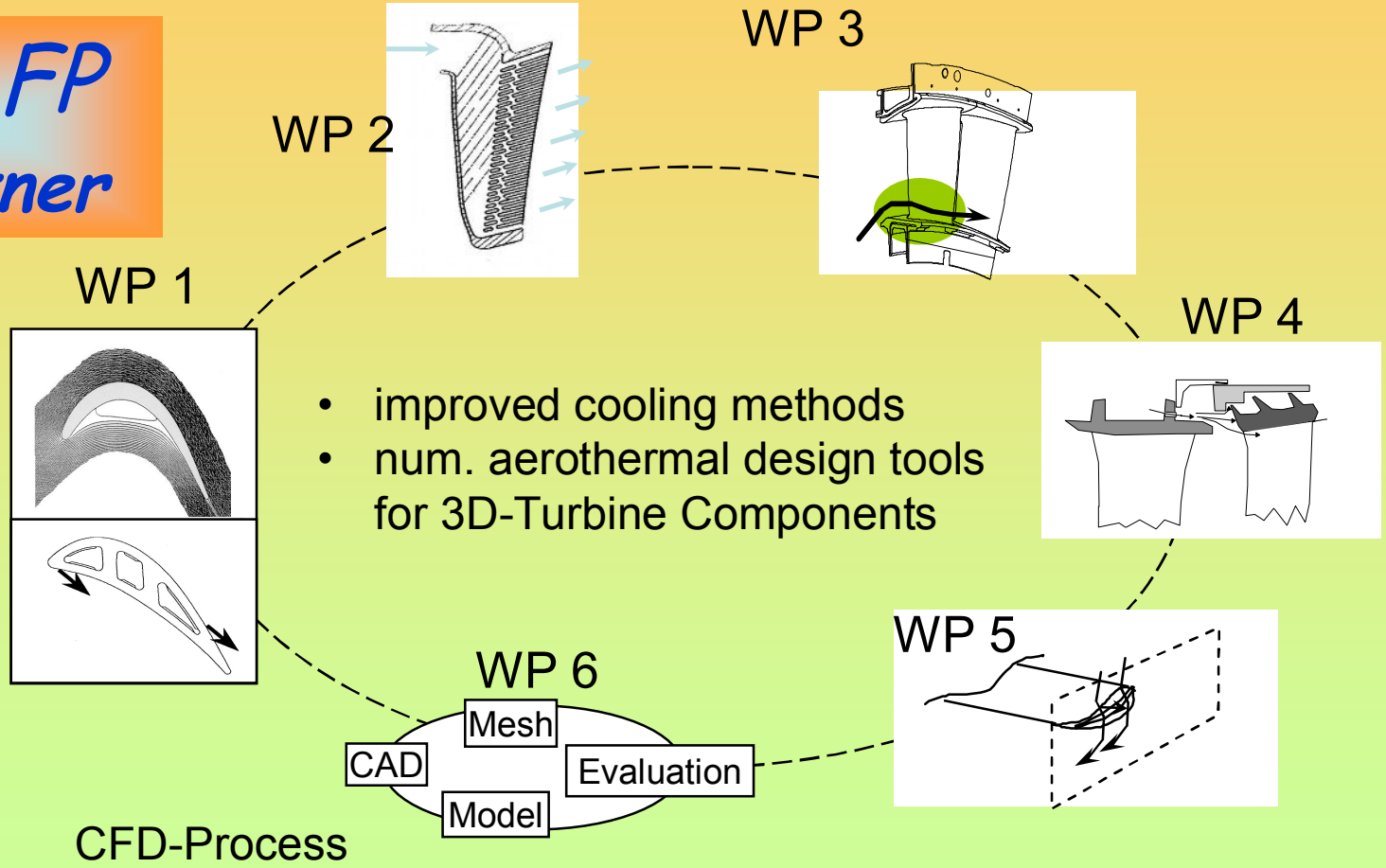
AITEB-2
FLIRET
TLC
Coordination - *UFAST*

Cooling of gas turbines blades and end walls

Aerothermal **I**nvestigations on **T**urbine **E**ndwalls and **B**lades (**AITEB**)

Co-ordinator: Frank Haselbach, Rolls-Royce-Deutschland

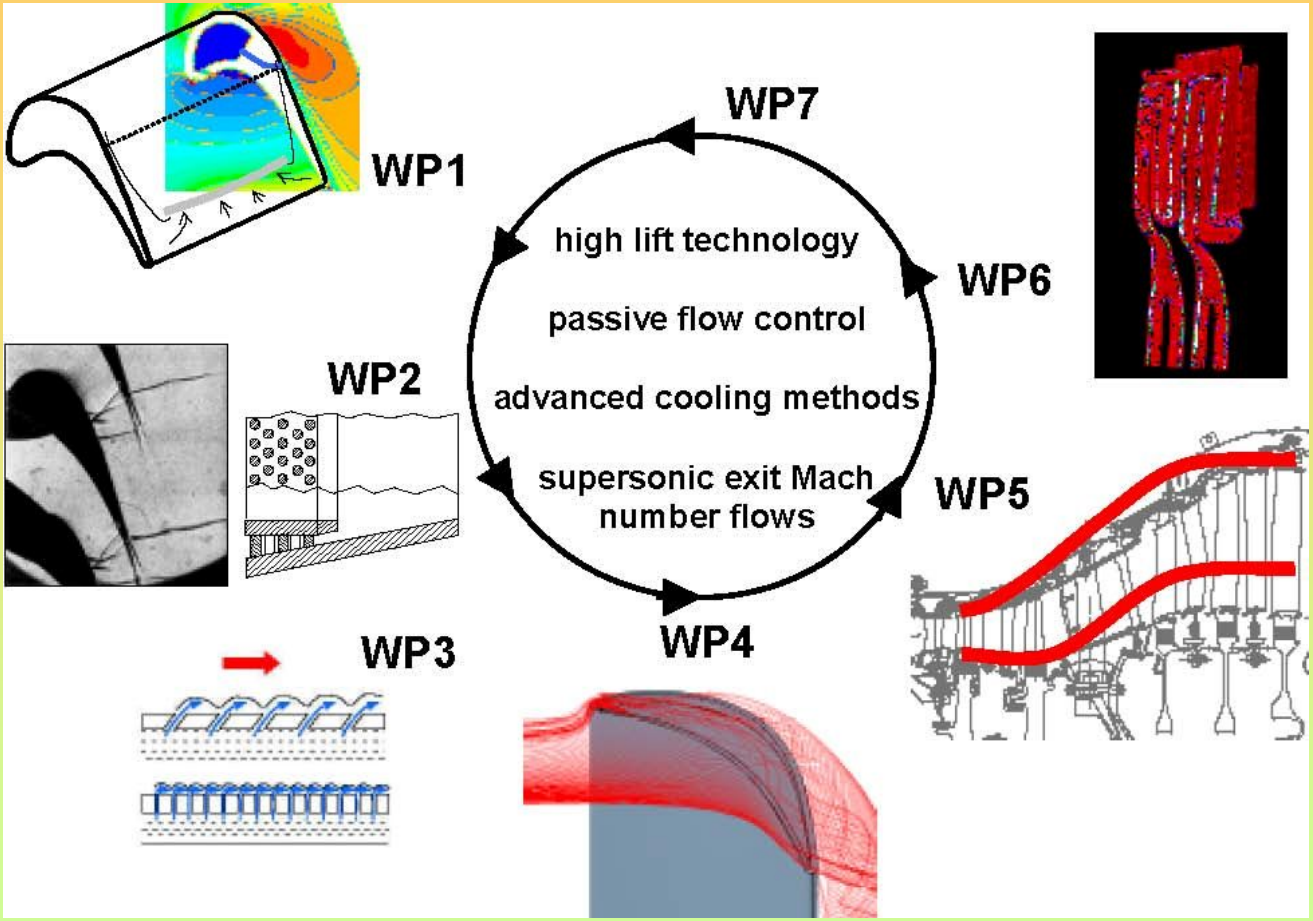
5th FP partner



- improved cooling methods
- num. aerothermal design tools for 3D-Turbine Components

Cooling of gas turbines blades and end walls

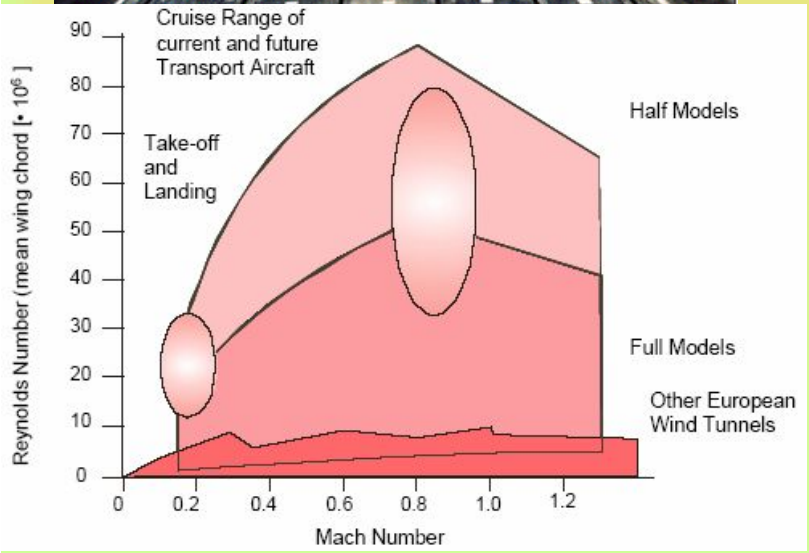
AITEB-2



Flight Reynolds Number Testing

Coordinator – Airbus Germany

Supports interference with model measurements in transonic wind tunnels



WP 1 is dedicated to supports for complete wind tunnel models (high speed).

WP 2 considers the main unsteady effects which play a major role in cryogenic testing: buffet onset and model vibrations (high speed).

WP 3 deals with half models for high lift configurations (low speed).

WP 4 provides the integration which is split into CFD, models, testing and recommendations for the future.

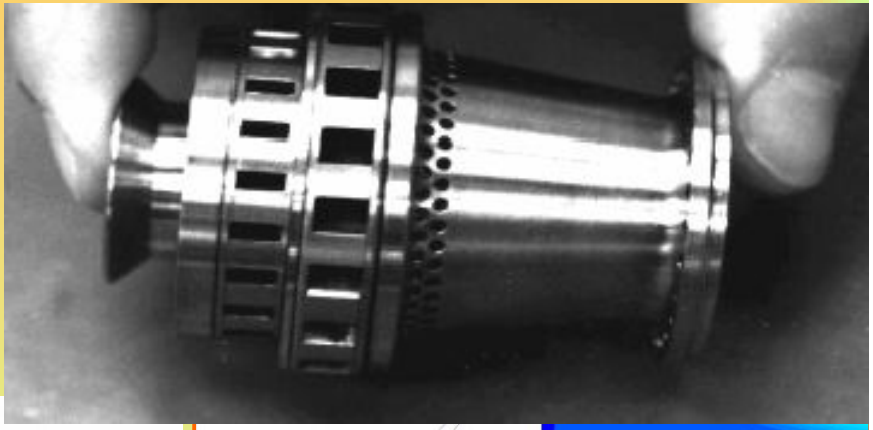
TLC - *Towards Lean Combustion*

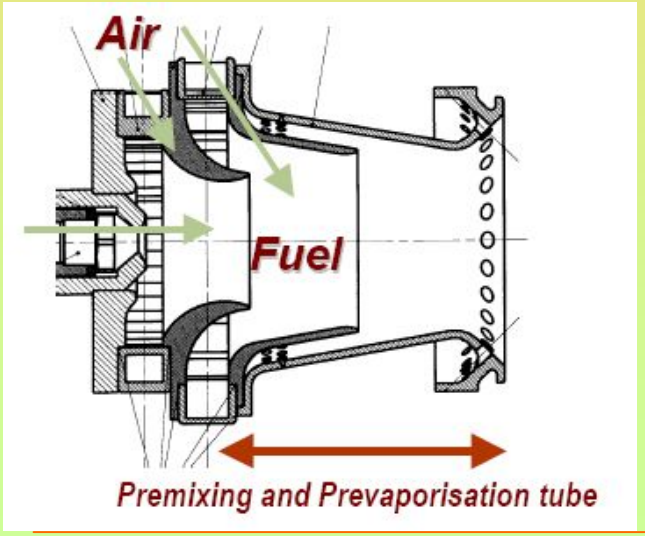
Coordination - SNECMA

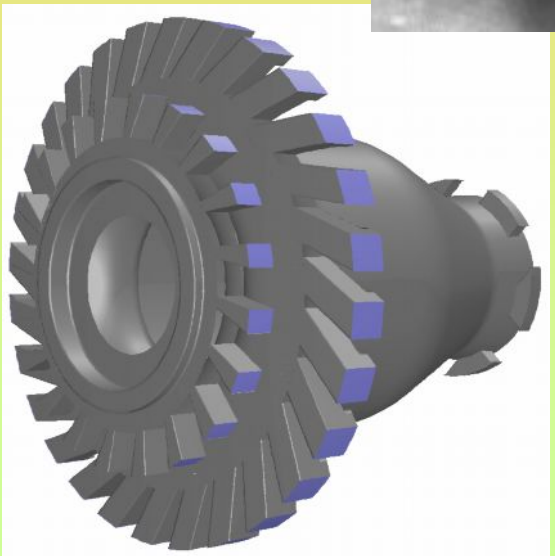
Low-emission combustion of liquid fuel in aircraft engine combustors.

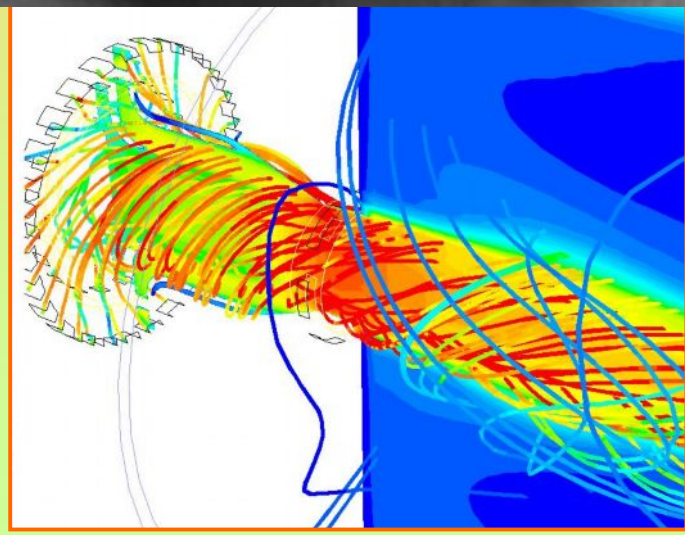
Many specific difficulties have to be solved from the physical point of view (auto-ignition, flashback, instabilities, lean extinction limit).

Geometry of LPP duct and combustion chamber









Unsteady effects in shock wave induced separation UFAST

Coordination by IMP PAN

Industry Observer Group:

RRD,
Ansys Group
Alenia
Dassault aviation

No	Full name	Short name	Country
1	The Szewalski Institute of Fluid Flow Machinery Polish Academy of Sciences	IMP PAN	Poland
2	CNRS Lab. IUSTI, UMR 6595, Marseille	IUSTI	France
3	ONERA: (DAFE, DAAP)	ONERA	France
4	University of Cambridge, Dept. of Engineering	UCAM-DENG	Great Britain
5	Queens University Belfast, School of Aero. Eng.	QUB	Great Britain
6	Russian Academy of Science, Siberian Branch, Novosibirsk, Inst. of Theor. App. Mech.	ITAM	Russia
7	Delft University of Technology, Aerodyn. Lab.	TUD	Holland
8	Romanian Institute for Aeronautics	INCAS	Romania
9	University of Southampton, (SES)	SOTON	Great Britain
10	University of Rome "La Sapienza"	URMLS	Italy
11	University of Glasgow, Dept. of Aero. Engin.	UG	Great Britain
12	NUMECA, Belgium, SME	NUMECA	Belgium
13	de Toulouse	IMFT	France
14	FORTH/IACM, Found. for Res. and Techn.-Hellas	FORTH	Greece
15	Ecole Centrale de Lyon	LMFA	France
16	EADS-M, Deutschland GmbH Military Aircraft	EADS-M	Germany
17	Institute of Aviation, Warsaw	IoA	Poland

Objectives of UFAST:

*The **first objective*** of the UFAST project is to provide a comprehensive **experimental data base**

Experiments of "basic"interaction (WP-2)

and with flow "control devices" (WP-3) ***e.g. perforated walls, sublayer vortex generators, stream-wise vortex generators, synthetic jets, electro-hydrodynamic actuators EHD/MHD***

*The **second objective*** - application of recent developments in numerical simulations:

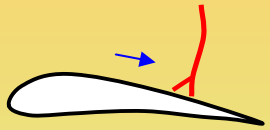
RANS/URANS (WP-4),

hybrid RANS-LES and LES (WP-5).

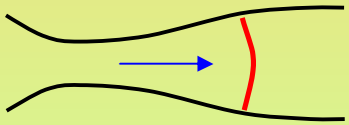
"best-practice guidelines"

*The **third objective***, **improvement in physical understanding** of unsteady effects in shock induced separation

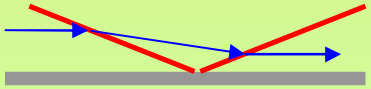
Interaction types considered in UFAST:



Transonic interaction



Nozzle flow



Oblique shock reflection

Conclusions

The idea of cooperation in research has proven itself to be very effective. In Europe competing industry works together on new technologies on the pre-competitive research phase.

Research is industry driven and it is not easy to get project on more upstream research topics.

Success rate is not high and often disappointing regarding the large effort needed to prepare research projects in a consortium often reaching even 20 partners.

New „tool" in aeronautics - JTI „Clean Sky" gives hope for some additional chance to get projects, however these will be demonstrator driven topics.

Thank you for your attention