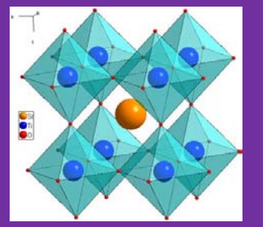

Careers involvement

Under or Post – graduate students may contact the project coordinator for thesis subjects

Future Events

• The next project meeting will take place inYerevan,Armenia in June 2015, hosted by Institute for Physical Research

The meeting will follow a public presentation of the project anda press conference.

Communication
Coordinator

Vassilis Stathopoulos

Assistant Professor

General Department of Applied Sciences
Technological Educational Institute of StereaEllada
34400 Psahna, Chalkida
Greece

Tel. +302228099621
www.teihal.gr
Email: vasta@teihal.gr

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3RD SEMESTER BULLETIN ON PROJECT UPDATE

TheBarCode Newsletter

AIM

TheBarCode advances the efficiency of power generation in gas turbine processes by the development of advanced parts of significantly improved performance and software providing optimized process parameters.

In this issue

Development of multifunctional Thermal Barrier Coatings and modelling tools for high temperature power generation with improved efficiency

Thermal spraying methodology has been developed and applied on inter-projectdeveloped materials (Perovskites, nanocomposites, metal cladded powders).Most of them have been successfully deposited already by either wet or drythermal spraying methods.

Liquid feed thermal spraying optimisation isunder way exhibiting rather interesting and promising comparative advantages.

Modelling, optimization and prediction tools are now in line in close collaborationwith the end-user. Theoretical data is provided and experimental data isgenerated for the support of model and calculations. The increase ofengine efficiency will be predicted numerically

Tests on their thermal shock and lifetime performance has been initiated with promising results mainly due to bondcoat layer modifications and orgraded structuring of the prepared TBC. This result is achieved using as topcoat a commercially available YSZ material. Similar tests are currently being performedon the WP1 materials prepared, according to schedule. New materialspreparation reactors have been engineered, introducing new features tomaterials. At the same time new testing devices have been engineered and put inuse pushing coatings to their lifetime limits, aiming to improve their performanceand finally increase the efficiency of the engine to be applied on.

www.thebarcode.eu

Patent Application

A patent application has been made on Multi-layer thermal barriercoating and itspreparationmethod.

Application number: AM20140038,

Filing date: Mar 28, 2014.

Overall the project for the 1st 18 monthshad :

- **1 patent application**
- **2 scientific publications**
- **10 Communications at Conferences**
- **3 other dissemination activities**

Partners meeting in Goslar

Project results

According to the contingency planning over the technical part of the non YSZ TBCs development an alternative plan is also considered over the TBCs development.

o A top down approach by modifying the YSZ based systems. Thus the most promising results generated such as the effect of a modified bondcoat interlayer of cladded powder under the topcoat may be introduced towards a graded / layered modification of YSZ based TBCs. Furthermore the nanocomposites or similar materials prepared may be used as a functional protective layer of an YSZ based topcoat. However this is a matter of continuous technological assessment of the generated results in the upcoming months.

o An alternative material as a diffusion barrier was selected, synthesized and will be investigated in the upcoming period.

Implementation difficulties have also been faced but also handled without jeopardising the project.).

Overall the projects deliverables and milestones are within the scheduled timeline.

A very promising technical improvement has been achieved with the development and application of an intermediate layer (developed within the Project). Additional modifications currently under application are expected to further performance improvements, which will be reflected to respective additional enhancement of engine efficiencies.

The project is implemented from 1/1/2013 until the 31/12/2015