



EUROPEAN
COMMISSION

Community Research

RAPHAEL

Contract Number: **516508 (FI6O)**



DELIVERABLE (D-PM3.1) **Plan of EUROCOURSE**

Author(s):

Dr. Walter Scheuermann

.....

Reporting period: 15/04/2006– 14/04/2007

Date of issue of this report : 02/11/2006

Start date of project : 15/04/2005

Duration : **48 Months**

Project co-funded by the European Commission under the Euratom Research and Training Programme on Nuclear Energy within the Sixth Framework Programme (2002-2006)

Dissemination Level (place an X in the appropriate cell)

PU	Public	
RE	Restricted to the partners of the RAPHAEL project	
CO	Confidential, only for specific distribution list defined on this document	X

RAPHAEL (ReActor for Process heat, Hydrogen And ELectricity generation)





ReActor for Process heat, Hydrogen And Electricity generation (RAPHAEL)		
Sub-project: SP-PM Work package: 3	RAPHAEL document no: RAPHAEL-0607-D-PM3-1	Document type: D=Deliverable / M=Minute / P=Progress report / S=Support
Issued by: IKE (Germany) Internal no.: IKE-EU-WN-1	Document status: Final	

Document title						
Plan of EUROCOURSE						
Abstract						
This deliverable describes the plan of the EUROCOURSE on HTR technology chosen by the RAPHAEL project as the tool to promote HTR technology and to disseminate the knowledge about this technology and the RAPHAEL project. It will address the following topics: - Overview of the VHTR design issues - Possible thermodynamic cycles - Very high temperature fuel and components - Very high temperature materials - Very high temperature heat applications (in particular hydrogen production) To establish a long connection between researchers and participants, the EUROCOURSE will be organised in three seminars, planned next to important meetings of the Project so that students involved in R&D in the frame of the Project can both attend the training session and be involved in the life of the Project. It will cover the life time of the project involving all main areas of V/HTR technology. A budget plan based on the costs for one seminar day is also included.						
Revisions						
Rev.	Date	Short description	Author	WP Leader	SP Leader	Coordinator
00	02/11/2006	First issue	W.Scheuermann, IKE 	W.Scheuermann, IKE 	E.Bogusch, Areva ANP 	E.Bogusch, Areva ANP 
01						

1 Introduction

Regarding the “nuclear challenges”, a better knowledge management strategy, both on national and EU level, is needed, focussing on the coupled system “production / dissemination and transfer / exploitation” of knowledge (PDE), illustrated in Figure 1. These 3 components are strongly linked: together they represent the backbone of knowledge management. Community research (FP-6) is located in the middle of Figure 1, but is actually just a catalyser in the integration process. This process will lead naturally to the desired durable common knowledge base while optimising value for money in EU research programmes (in line with the Lisbon 2000 strategy) [1].

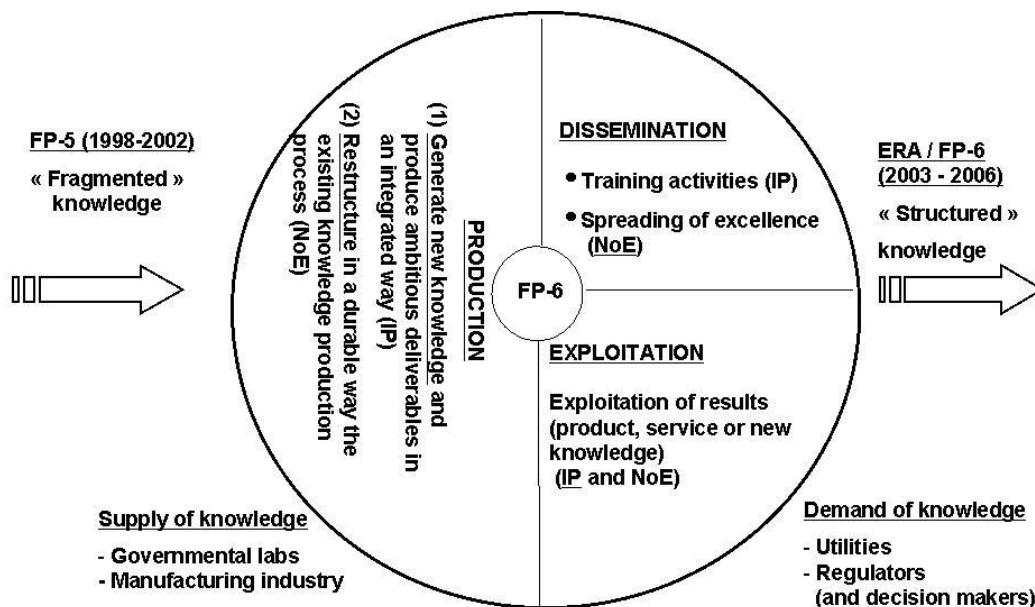


Figure 1: Production / Dissemination / Exploitation of Knowledge (‘PDE’ cycle or system)

So Education and Training has become an essential task in all FP6 projects. To contribute to a better knowledge management and the dissemination of knowledge within the RAPHAEL project it was decided to organise a EURCOURSE on V/HTR technology.

2 Targets of the EUROCOURSE

Following the goals of the PDE cycle to disseminate and also to preserve knowledge the targeted audience for this course are students and young engineers working in the field of nuclear technology and related areas, e.g. heat users, hydrogen production.

The major goals of this EUROCOURSE are:

- To promote V/HTR technology as a mid and long term technology to provide energy resources in form of electricity as well as for heat intensive industrial processes like hydrogen production, etc.
- To communicate a basic and broad understanding of the V/HTR technology so that young researchers and engineers working in a specialised field can better understand the coherences their work is embedded in.

3 Overall Structure of the EURCOURSE

To give the participants the unique opportunity not only to follow the EUROCOURSE but also to allow them to follow the projects progress and to establish long term connections with the partners of the RAPHAEL project, the EUROCOURSE will be split into 3 seminars. The seminars will be 2 to 3 day long. The first seminar is planed for end of March 2007 and will be held at IKE in Stuttgart (Germany). The second seminar will be held at Cadarache (France) or NRG (Netherlands) and the location of the third and last seminar has been tentatively selected to be held at AREVA in Lyon (France). The time distance between the seminars will be approx. 9 month.

One seminar day will consist of two sessions, a morning and an afternoon session with time for discussions at the end of the day. The last day of each seminar is dedicated for visits of facilities if possible.

The lecturers will be selected mainly from the RAPHAEL partners. At the time it is planed to have not more then 2 lecturers per session.

4 EUROCOURSE Content

The EUROCOURSE will cover all main aspects of HTR technology.

The first seminar is aimed to provide a basic overview of HTR's discuss different designs, as well as the role of HTR/VHTR in the scope of Generation IV (GIF) reactors and other FP6 projects including the role of the RAPHAEL project.

In the view of the inherent safety features of HTR's the main phenomena of core physics and thermal hydraulics in the core will be discussed also.

The second seminar will cover two major topics: The first one is dedicated to fuel elements, their characteristics and fabrication and waste management, including the findings of the PUMA project. The second major topic will discuss severe accident conditions and accident management.

The third and last seminar planed will address the more integral aspects of HTR technology such as materials, system and components, possible applications and processes as well as economics and the results of the subproject system integration.

5 Dissemination plan

To advertise the EUROCOURSE different communication channels will be used. First a flyer will be produced and distributed mainly by e-mail. The course will also be announced on different web sites, like the web site of the RAPHAEL project, the ENEN web site and the web sites of the partners in RAPHAEL, if possible.

For the distribution of the flyer there are to main partners who can help advertising the course.

Mainly for the young engineers this will be done with the assistance of the industrial partners of RAPHAEL and for the students this will be the European Nuclear Education Network (ENEN) association, an association of more then 40 universities and research centres in Europe. Both partners should act as multipliers in their countries.

6 Budget plan

The table below gives an overview of the estimated costs for the first seminar. In case the first seminar is held in March 2007 at the university in Stuttgart no fee is charged for the seminar room. In case the seminar will take place in April 2007 no rooms are available at the university due to lessons in the summer semester. But rooms can be booked at the Telecom education and conference centre which is also located at the university campus. The rental fee of a seminar room there is approx. 1600.- € including refreshments and lunch for approx. 60 participants. Not included are possible incomes from young engineers from companies who are not partner of the RAPHAEL project. For those participants a fee of approx. 200. € per seminar will be charged. The participation for students is free of charge.

Flyer production (material only)	100.- €
Preparation of the course material	100.- €
University: (Rental fee of the seminar room free of charge) Refreshments approx.:	900.- €
Telecom education and conference center: Rental fee of the seminar room (including refreshments and lunch)	1600.-€/day

Table 1: Estimated costs for a seminar day in Stuttgart