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AFFAIRE : RAPHAEL – EVO TECHNICAL SPECIFICATION

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RAPHAEL – EVO TECHNICAL SPECIFICATION			

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**FRAMATOME ANP**

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TITRE :

RAPHAEL IP - FP6**Technical specification related to the feedback of design,
construction and operation from EVO**

TITRE ABREGE :

RAPHAEL**EVO TECHNICAL SPECIFICATION**

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1. INTRODUCTION

As part of the sixth Framework Programme – RAPHAEL's IP (**Re**Actor for **P**rocess, heat, **H**ydrogen **A**nd **E**lectricity generation-Integrated Project), this technical specification defines the work to be done by EVO (Name of the subcontractor): Energie Versorgung Oberhausen AG in Germany.

The work to be performed is focused on the feedback of design, construction and operation of a 50MW helium power conversion system, including helium turbine, from EVO. Framatome ANP, as RAPHAEL's IP Partner 01, will be responsible for placing the sub-contract. Framatome ANP will be responsible for the commercial, contractual and technical aspects.

2. REPORTS AND INPUT DATA

The applicable report is as follows:

- FP6 RAPHAEL Integrated Project – Annex I – Description of work, November 30th, 2004: contract n°516508 (FI6O), domain "Other Activities in the Field of Nuclear Technologies and Safety"

3. DEFINITION OF THE WORK TO BE DONE

3.1 General definition

The main objective is to recover the past experiences from EVO.

3.2 Definition of the tasks

The experience to be gathered is the one which had been developed or acquired by EVO on the components at very high temperature during the construction and operation of the helium turbine-plant in Oberhausen operated during 1974 and 1988.

EVO will deliver the following documentation :

1. Recuperator

- 1.1 main drawings plus one or two detail drawings
- 1.2 materials
- 1.3 operation experiences and measurement results

2. Pre- and inter-cooler

- 2.1 main drawings plus one or two detail drawings
- 2.2 materials
- 2.3 operation experiences and measurement results

3. Hot gas ducts including bends, tees, compensators and junctions

- 3.1 main drawings plus one or two detail drawings

- 3.2 materials
- 3.3 operation experiences and measurement results

4. Valves

- 4.1 main drawings plus one or two detail drawings
- 4.2 materials
- 4.3 operation experiences and measurement results

5. Helium purification system

Documentation on Helium-Cleaning-System, Oil-Helium-Separation-Equipment, Helium-Storage and Helium-Supply. The items to be presented in the Deliverable (see §4) will be as follows:

- Description of main process units,
- Structure and function of the Helium-related auxiliaries,
- Handling and operation of the Helium-related auxiliaries,
- Operation results concerning Helium-purity,
- Transferability from EVO technologies to RAPHAEL IP project.

3.3 Meeting

EVO will be available for one or two meetings in Germany or in France to explain the material and discuss questions connected with it.

4. DELIVRABLE

One Deliverable, providing an English synthesis including relevant data useful for RAPHAEL IP project and detail information in appendices which can be in German language for already existing reports, will be elaborated by the subcontractor and submitted for acceptance to Framatome ANP. The subcontractor shall take into account the Framatome ANP comments and shall up-date the Deliverable. The title of the Deliverable will be: Past experience from EVO useful for VHTR. The Deliverable identification will be: D-CT1.2.

4.1 Quality assurance

The subcontractor is responsible for the quality assurance of the work performed for the tasks as listed in the paragraph 3.2 of this specification, following the internal quality assurance programme of his organisation.

4.2 Corresponding members

The corresponding members of the subcontractor will be:

- Contractual and financial aspects : Mr. François Luquet from Framatome (francois.luquet@framatome-anp.com)
- Technical aspects: M. D. Besson from Framatome (daniel.besson@framatome-anp.com)

The subcontractor will nominate associated corresponding members from its company.

4.3 Time schedule

- Meeting participation : during the year 2006,
- Delivery of the first issue: January 2006,
- Delivery of the final issue: March 2006.

4.4 TAKING OVER

After the approval of the synthesis from Framatome, the corresponding invoice can be sent.