



Minutes of Exhaust Systems PG Meeting

15 March 2012, Statoil Offices, Bergen, Norway

Attendees:

Dave Carroll	AAF
Dingo Kist	Aarding Thermal Acoustics
Herwart Hoenen	RWTH Aachen
David Champneys	BIHL
Liam Hewitt	Frazer-Nash
Terje Kaspersen	Kanfa-Tec
Ole Torp	Mjørud
Paul Setchfield	Mjørud
Pekka Kangas	Neste Oil
Joerg Gottwald	Total SA
Arne Skjelbakken	TechPart AS
Amélie Pesquet	Total
Claude Prébende	Total
Karen Geris	ETN

1. Review of the minutes of the teleconference on 27 January 2012.

The minutes of the meeting were approved.

There was a short discussion on the participation of users in the Project Group. EDF and E.ON have expressed an interest in the group but would most likely join at a later stage, when the standard for the HRSG will be discussed. ETN and TOTAL will approach them to come to the next meeting.

2. Update on the progress of the merged standard

The different groups discussed the approach they have taken during the review of their sections of the standard. Most of the review has been finished; the revision of the following sections still needs to be completed:

Section	Member	Update	Date
Turbine exhaust and flue gas system	Frazer-Nash and RWTH Aachen	A work plan for the benchmark case has been made and presented. A Description of Work needs to be written	05 April 2012
Mechanical and thermal design	Frazer-Nash and RWTH Aachen	See above	05 April 2012
Installation, commissioning	Total, Kanfa-Tec	Total will review this section and forward it to Statoil. It was highlighted that the end user is more aware of this issue than the exhaust system designer.	05 April 2012

The group reaffirmed the decision to make a separate standard for the Waste Heat Recovery Units (WHRU) and Heat Recovery Steam Generators (HRSG). TOTAL agreed to take out all sections related to HRSG from the current merged standard. There was a short discussion the fact that an HRSG standard for off-shore application would differ from an HRSG for power generation because of a smaller boiler. One would also have to make a separate standard for simple exhaust systems. The group agreed that for now, there would be two different standards: one for WHRU and one for HRSG.

The participants had a short discussion on the definition of certain terms in the standard. One such example is the definition for lifetime: it could be expressed in the amount of years or starts-stops. The group agreed that the definition should be decided upon and used consistently throughout the document.

David Champneys (BIHL) stated that ISO and API decided to end their cooperation. Joerg Gottwald (STATOIL) indicated that Shell had shared their standard on the condition that the Group would aim to have a ISO Standard. The Project Group members decided that it would be better to work towards an ETN standard first, and an ISO standard later. Ole Torp (Mjorud) stated that in an earlier stage of the Project Group, Matt Loveless (Tulsa Heaters) had made a document on the roadmap. Liam Hewitt (Frazer-Nash) offered to share Frazer-Nash' internal document. This document is describing the road map towards an ISO standard.

It was also decided that the standard give an overview of local legal standards which a supplier/operator should adhere too. The group decided against basing the standard on the European directives as it should be a standard which is applicable worldwide

The group agreed on the following approach with regard to the revision of the overall standard

1. Any missing sections of the standard should be send to Amelie/ETN by 5 April 2012
2. Amelie and Karen would restructure and rewrite the standard on 11 April 2012
3. ETN would send out the standard on 30 April 2012
4. All partners would send their comments to Karen before 7 September 2012

Karen agreed to make a clear inventory of the comments in an excel file listing the section, the comment on the section, how it would have to be changed and why. Smaller comments like grammatical errors or simple rewording can be done by Karen. The evaluation of more technical comments will be done by a yet to be determined person. David Champneys volunteered to do this together with another project group member. Any remaining comments will be discussed during a project group meeting on 19 October 2012 in Brussels.

The datasheet will be discussed once the structure of the standard is clear.

3. CFD Benchmark Case – [CFD Validation Case](#) , [Instrumentation and Measurements](#)

Presented by Liam Hewitt (Frazer-Nash) and Herwart Hoenen (RWTH Aachen)

During an earlier meeting, the group decided that that the importance of CFD simulation should be highlighted in the standard. Liam Hewitt (Frazer-Nash) suggested including a decision tree in the standard which the purchaser could use to determine the time and the cost that would be associated with a certain desired level of CFD modeling. David Champneys (BIHL) insisted that the standard should specify that the decision of the required CFD level is a purchaser requirement.

The group agreed that the best way to validate the CFD code is the use of a benchmark case in the appendix of the standard. Total offered the possibility to perform the testing during the string test of a unit in Korea. GE has already agreed to the test as long as an NDA will be signed by GE, Total, ETN and possibly RWTH Aachen and Frazer-Nash. Herwart Hoenen would review the content of the NDA

Liam Hewitt (Frazer-Nash) and Herwart Hoenen (RWTH Aachen) presented a work plan and budget related to the testing of the unit.

The presentation raised a lot of questions with regard to the financing of the benchmark case. The Exhaust System manufacturers raised the issue that a user would be able to contribute a larger amount of money.

The question was raised whether it would be possible to fund the benchmark case with the income of the ISO standard. The money contributed by the different companies could be restituted by the income of the ISO standard, in the same ratio as the contributions made by the different companies. As it was unknown who would receive the income of the sale of the ISO standard, this question could not be answered.

With ETN's current legal status – it does not have a VAT number - it is unsure if it would be impossible for ETN to receive income from the ISO standard or contract the benchmark case. This would be unbeneficial as one would be unable to reclaim the taxes spend during the benchmark case. It was suggested that maybe a separate foundation could be set up to handle the financials of the Exhaust Systems PG. ETN and Herwart Hoenen (as treasurer of ETN) would look into the different issues with regard to the financials

It was suggested that a minimum fee could be instated, allowing participating members to get access to only part of the results. ETN and Total reassured the project group members that independent of whether they would participate in the benchmark case, they would always have access to the ETN standard.

It was also proposed that there might be possibilities to European funding for writing of standards. ETN would look into this issue.

ETN suggested making a clear Description of Work (DoW) which would include a clear description of the necessity and the benefits (cost- benefit analysis, example) of the CFD benchmark case. It should also include a clear overview of the costs and possible financing methods (eg. paying over the duration of two years). This DoW should be distributed to the Project Group members at the beginning of April, and the PG members would have the possibility to ask questions about the Description of Work of the benchmark case during the end of April. A GO/NO GO decision should be taken Mid-May to allow ample time for the preparation and procurement of the test set-up.

4. Upcoming Actions

Review of the sections of the standard and the datasheet should continue as stated above with the addition of Frazer-Nash and RWTH who will define the “mechanical and thermal design” of the standard.

Action Owner	Description	Deadline date
Liam Hewitt/ Herwart Hoenen	send the Description of Work of the benchmark test to ETN	10 April 2012
ETN	send the Description of Work of the benchmark test to all project group members	20 April 2012
Herwart Hoenen	review the NDA for the benchmark test	11 April 2012
ETN	discuss the financial issues/questions related to the benchmark case	25 April 2012
ETN	contact ISO with regard to selling of the standard	25 April 2012
ETN	explore the opportunities to get European funding for the benchmark test/writing the standard	25 April 2012

5. Next Meetings

26 or 27 April 2012	Teleconference in which project group members can present any questions about the Description of Work of the benchmark case
15 May 2012	GO/NO GO teleconference for benchmark test
19 October 2012	Physical Meeting in Brussels to discuss and implement the comments on the WHRU Standard