TÜV SÜD Industrie Service GmbH · 80684 München · Deutschland

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CDM Executive Board

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Your reference/letter of	Our reference/name	Tel. extension/E-mail	Fax extension	Date/Document	Page
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Response to Request for Review

Dear Sirs

Please find below the response to the request for review formulated for the CDM project with the registration number 0099. In case you have any further inquiries please let us know as we kindly assist you.

Yours sincerely,

Thomas Kleiser
Carbon Management Service

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Response to the CDM Executive Board

Request 1:

Further clarification is required on how the DOE verified the reliability and completeness of quantity of adipic acid production as it is mentioned in the verification report that the detail of the adipic acid production quantity was crosschecked for some random chosen days using the log sheet record, the daily report and SAP data.

Response from DOE:

Preliminary note: How is the production of Adipic Acid measured and recorded?

In the Onsan plant the Adipic Acid (AA) finished product is stored in a silo R42500 feeding the packaging lines where different commercial articles are packed based on the sales orders e.g. 25 kg paper bags, 500 kg and 1,000 kg Big-Bags.

The daily production data (P_AdOH parameter) is measured by the weight of the packed articles in a particular day and adjusted for the variation of the silo inventory.

The source of data for the packed articles quantity is the log-sheets of the packaging workshop where each bag and/or pallet is prepared and weighed by the shift operators. The controller in charge of the packaging checks the actual quantities and edits a Daily Packing Report from the log-sheets.

The source of data for the silo inventory variation is the silo weight continuously recorded and registered on the Distributed Control System (DCS) of the plant.

Data from the Daily Packing Report are validated and entered daily in SAP (Rhodia group information system) by the production engineer, with crosschecking by the Supply Chain engineer every working day.
Production daily data (P_AdOH) are transferred every working day to the Daily Production Report and to SAP by the production engineer. The Daily Production Report contains all the validated data of the current month.

Finally the Daily Report data are transferred to the Workbook ER ONSAN on a weekly basis by the process engineer. The Workbook ER ONSAN contains i) all the daily data, ii) the monthly cumulative production and iii) the production for the period.

To ensure that all reporting is complete and reliable the process engineer checks the raw material mass balance in moles on a weekly and monthly basis (Rhodia internal plausibility and consistency check before the DOE's on-site assessment).

All production related and all specific CDM activity related items are clarified between the above mentioned function owners during i) Daily production meetings and ii) the Monthly production meeting.

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How and what does the DOE verify ?

Step 1: Verification if the data collection system is in place

TÜV SÜD has validated during the initial verification that the data collection system for AA is implemented in conformity with the methodology and the PDD Monitoring Plan and meets all needs and requirements. The entire data collection system is reported in the ongoing latest revision of Rhodia Onsan's Data-Handling-Protocol (DHP) provided to UNFCCC together with the Verification Report upload.
TÜV SÜD checked and continuously monitors during each verification period if

i) the procedures are in place and are followed (see DHP + packing procedure),
ii) responsibilities are defined (see DHP),
iii) data validation and crosscheck is performed (Daily production meeting + Monthly production meeting),
iv) function owner and CDM project associated plant staff are trained,
v) IT systems are reliable and secured,
vi) all CDM project related equipments are timely and correctly adjusted and/or calibrated
vii) all uncertainty analyses are up-to-date e.g. if the accuracy is in line with the documents ANGEKO Data Accuracy Rationale Rev 02 and ANGEKO Uncertainty Rev 02, + Calculation of adipic acid and nitric acid precision (sheet "IC AdOH" in the Workbook ER ONSAN)

Step 2: Verification of the data of the period

During the on-site audit, firstly, the TÜV SÜD assessment team reviews the log sheets and the Daily Packing Reports of the Packing and Shipment department.
Secondly, the TÜV SÜD assessment team verifies the Daily Production Reports and the SAP data to see whether there is any inconsistency between the above documents.
Thirdly, the values in the Workbook ER ONSAN and the Monitoring Report are checked for the consistency with the Daily Production Reports regarding the monthly production data and the total production during the period.
The monthly production in the Workbook ER ONSAN is systematically compared with the Daily Production Report and SAP data as a check for reliability of the production data. SAP is the official data management system used by all the functions of the company to manage the sales orders, stocks, logistics, invoicing and production costs.

Finally, the consumption data of raw material (KA Oil) are reviewed for cross-checking of the adipic acid production by a detailed mass balance in the Workbook ER ONSAN (document provided to the UNFCCC as a confidential document).
The KA Oil mass balance is a suitable crosscheck since the consumption of the KA Oil is directly compared in kmoles with the kmoles of products coming out of the process, knowing that one mole of KA Oil will deliver one mole of AA or by-product (DBA). This is given in the Workbook ER ONSAN and checked by TÜV SÜD for the % deviation between *"moles-in"* and *"moles-out"* as shown in the sheet "AV_HNO3,KA oil". The deviation % = - 0,38 % at the end of the Period 21 indicates a plausible and a solid plant specific correlation between the adipic acid production and by-products (moles out) and the raw material KA Oil (moles in) both being measured independently.

In addition to the production data, the TÜV SÜD assessment team verifies that the calibration of the weight scales for the packed products and of the silo weighing cell have been performed

in time and correctly performed thanks to the calibration reports as planned. The annual calibration of the silo occurred on December 17, 2008 (Verification Report PV21, Annex 1, item 42) and the annual calibration of the packaging scales were done and verified in April 2008.

Through the above steps it can be verified that the monitoring system works in a consistent and reliable way.

The TÜV SÜD assessment team also focuses on specific days during which special events have affected the adipic acid production. This is an additional spot-check verification performed as a crosscheck of the event. That is why TÜV SÜD has manually recalculated the adipic acid production of November 27 and December 16, 2008 from the production log sheets and the silo level. As verified on the DCS graphs ONSAN N2O EMISSION REDUCTION - DATA EXTRACTION PERIOD #21 rev.0, on November 27 and December 16 (stated in the "Daily Event" Excel sheet of the Workbook ER ONSAN rev.1), the adipic acid production unit has reduced its production rate to adapt to the regional Adipic acid market demand.
The statement in the Verification Report was not detailed enough as the days selected are not exactly "random" but chosen based on specific events.
The details of November 27, 2008 are illustrated below:

1. Evidence for packed quantities (Appendix 1) showing a total of 406 t packed (234 t in 500 kg bags + 160 t in 1,000 kg bags + 12 t in 25 kg bags)
2. Daily Production Report of November (Appendix 2) showing a packed quantity of 406 t and a daily production of 403 t = 406 + (37 – 40) to account for the silo inventory variation, The total production of the month is 13,023 t
3. SAP prints screens of November 2008 (Appendix 3) with for this date :

M. code 98101 = 12 t (25 kg bags)
M. code 98108 = 234 t (500 kg bags)
M. code 98115 = 160 t (1,000 kg bags)

4. Workbook ER ONSAN "Data File" cell B492 showing the parameter P_AdOH = 403 t.

Step 3: Assessment of Reliability and Completeness

The AA production is a key parameter in the project for the base line calculation, and so requires a special focus during reporting and verification.
The check of the reliability and completeness of quantity of adipic acid production is not performed thanks to spot-check as the one performed on November 27 and December 16 2008.
The data reliability and completeness, as well as the consistency, the transparency and the correct application of the PDD and the methodology, are checked both thanks to the validation of the data collection system in place and the verification of the data of the period.

In particular for data reliability, the data accuracy is checked through the Uncertainty analysis of the Initial verification in July 2006, the follow up of the calculation of adipic acid precision (sheet "IC AdOH" in the Workbook ER ONSAN), and the verification of the timely and correct calibration of the involved equipment.

The data credibility for reliability is supported by the review of the log-sheets, the procedures in place, the quality of the IT system the internal data verification and validation process and the detailed verification of specific days related to specific events. All the daily production data are reviewed in order to make sure that the set of data is complete (no missing day). Furthermore, the AA versus KA Oil mass balance crosscheck reflects both the reliability and completeness of

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the AA production value. If the AA production data were incomplete or inaccurate, a significant deviation between moles in and out would occur.

The following documents are translated and provided as the PDF documents attached to this response.
Appendix 1 – Daily Packing Report and Log Sheet of November 27, 2008
Appendix 2 – Daily Production Report of November 2008
Appendix 3 – SAP data of November 2008