



EMISSION MEASUREMENTS

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Twinning project - Air Quality Improvement

An EU-funded project managed by the European Agency for Reconstruction

OVERALL OBJECTIVE

- To improve the air quality in The former Yugoslav Republic of Macedonia!



ACTIVITIES

- Activity 4.6.1 Check instruments of mobile emission laboratory and prepare plan for improvement and support to repair and renew equipment (10/2006)
- Activity 4.6.2 Check the results (3/2008)
- Activity : 4.6.3. Training course (Part 1) on emission measurements (basic principles) (2/2008)
- Activity 4.6.4 Training course (Part 2) on emission measurement (advanced emission measurement techniques) and emission measurement audit on a selected industrial source (2/2008)
- Activity 4.7.1 Preparation a draft specification and priority list of investment (software, laboratory equipment and additional equipment for mobile emission laboratory) (10/2006)

PARTICIPANTS IN THE TRAINING COURSE

- Several experts of MEPP
- Industrial enterprises who took part in the training courses:
 - OKTA (oil refinery): continuous emission measurement equipment (SO₂, NO_x, CO, CO₂, O₂, dust, flow) since November 2007.
 - OHIS (chemical plant): emissions measured by central laboratory of MEPP
 - OSLOMEJ (power plant): emissions measured by TEHNOLAB,
 - ALKALOID (chemical plant): emissions are measured by central laboratory of MEPP
 - TOPLIFIKACIJA (heating plant): emissions measured by their daughter company
 - TITAN (cement plant): Sick-continuous analysers (SO₂, NO_x, O₂, water content, dust, flow). Maintenance and calibrations on regular basis by Sick.
- Private emission measurement laboratories:
 - TEHNOLAB
 - FARMAHEM

CONTENTS OF TRAINING COURSES

- Absorption sampling
- On line measurement of gaseous components
- Introduction to emission measurements
- Standardisation for emission measurements in European Union
- Requirements for emission measurements in LCP- and WI-directives
- Principles of particulate measurements
- Principles of flue gas calculations
- Principles of EN 14181-standard “Quality Assurance of Automated Measuring Systems”
- Emission measurement campaign at Toplifikacija

REMARKS FROM THE EMISSION MEASUREMENT CAMPAIGN AT TOPLIFIKACIJA ON 6.2.2008

- Positive attitude to perform measurements!
- Good information sheet for process data collection
- It is recommended that a visit is made to the plant before the actual measurement campaign. During this visit it will be agreed on e.g:
 - contact person with the plant
 - measurement places (visual check of the suitability of the measurement plane and ports)
 - there should be enough ports in order to be able to measure according to the standard procedures



RECOMMENDATIONS (1)

- It is recommended that an emission measurement team will be created at the Central Environmental laboratory which is a part of MEPP. In this team there must be a team leader on permanent base, who is in charge of the activities but also all the other personnel (technicians etc) in this team must be trained for emission measurements. Only then the quality of emission measurement activities can be guaranteed!
- National comparison measurements for emission measurements should be organised in the BC in the near future
- Laptop should be procured for the control calculation of the measurements during the field measurement as well as for the calculation of emission measurement results

RECOMMENDATIONS (2)

- A separate volumetric gas meter is needed for the calibration of gas mass flow meter in the particulate measuring control unit
- New tools and other working accessories for emission measurement activities should be procured to the laboratory of MEPP. Tools are such as work wrenches, ring spanners, adjustable wrenches, screw drivers, side cutters, flashlights, multimeter, pipe wrenches. Other working accessories are safety gloves, safety helmets, respirators, personal gas alarm analysers etc.
- The old and empty calibration gas cylinders should be removed from the mobile emission measurement van, so that there would be place for new cylinders which are needed for calibration at the site

RECOMMENDATIONS (3)

- New particulate sampling probes (In-Stack-filtration and Out-Stack-filtration) are needed
- A new balance is needed for the determination of the water content of sampled gas
- Finnish emission measurement handbook could be translated into Macedonian language
- It is advised that the laboratory of MEPP will actively look for the possibility of having accreditation according to EN 17025 procedures for their emission measurement activities in the future

CONCLUSION

- The experts of VTT want to thank MEPP for the interesting and fruitful discussion during these missions and wish for the continuation of co-operation in the future!