**AGENDA**

**IAEA National Workshop IRA/2/011-9016-01 on**

**Acquaintance with Methods of Vibration Monitoring of Rotating Machines Including RCP and Turbine-Generator**

**8 – 11 September 2014**

**IAEA Headquarters, M0E24**

**Vienna, Austria**

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| ***Day 1 – Monday, 8 September 2014*** | | |
| **Time** | **Presentation Title** | **Speaker** |
| 09:00 – 09:30 | IAEA welcoming, introduction; objectives and scope of the workshop | Janos Eiler, IAEA |
| 09:30 – 10:15 | Iranian needs | Iranian counterpart |
| 10:15 – 10:40 | Photo session and break | |
| 10:40 – 11:40 | Overview of the off-line vibration monitoring of rotating machinery at the Paks NPP | Gabor Kiss  Paks NPP |
| 11:40-12:40 | Description of Temelin and Dukovany on-line monitoring systems of large rotating machinery and lessons learned | Jaroslav Brom  Temelin NPP |
| 12:40 – 14:00 | Lunch Break | |
| 14:00 – 15:00 | Vibration analysis theory and practice | Gabor Kiss  Paks NPP |
| 15:00 – 15:15 | Break | |
| 15:15 – 16:15 | Online monitoring of the vibration of MCP, turbine, and turbine driven feedwater pump at the Kozloduy NPP | Bisser Radoslavov  Kozloduy NPP |
| 16:15 – 16:45 | Discussions and closing the day | All |

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| ***Day 2 – Tuesday, 9 September 2014*** | | |
| **Time** | **Presentation Title** | **Speaker** |
| 09:00 – 10:00 | Description of the system of off-line monitoring of rotating machinery at Temelin and Dukovany NPPs and lessons learned | Jaroslav Brom  Temelin NPP |
| 10:00 – 11:00 | Off-line monitoring at the Kozloduy NPP by mobile devices | Bisser Radoslavov  Kozloduy NPP |
| 11:00 – 11:30 | Break | |
| 11:30 – 12:30 | Description of the online diagnostic system on RCP’s at the Paks NPP | Gabor Kiss  Paks NPP |
| 12:30 – 14:00 | Lunch Break | |
| 14:00 – 15:00 | Description of tip-timing system installed in the low pressure part of the Temelin NPP turbines | Jaroslav Brom  Temelin NPP |
| 15:00 – 15:15 | Break | |
| 15:15 – 16:15 | Online monitoring of rotating machines by the Shock Pulse Measurement (SPM) method | Bisser Radoslavov  Kozloduy NPP |
| 16:00 – 16:45 | Discussions and closing the day | All |

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| ***Day 3 – Wednesday, 10 September 2014*** | | |
| **Time** | **Presentation Title** | **Speaker** |
| 09:00 – 10:00 | New turbine monitoring and protection system at the Paks NPP | Gabor Kiss  Paks NPP |
| 10:00 – 10:15 | Break | |
| 10:15 – 12:15 | Demonstrations at IAEA rotating machinery rooms | All |
| 12:15 – 13:45 | Lunch Break | |
| 13:45 – 15:45 | Demonstrations at IAEA rotating machinery rooms (cont’d) | All |
| 15:45 – 16:00 | Break | |
| 16:00 – 16:45 | Discussions and closing the day | All |

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| ***Day 4 – Thursday, 11 September 2014*** | | |
| **Time** | **Presentation Title** | **Speaker** |
| 09:00 – 10:00 | Using diagnostic results in maintenance decisions at the Paks NPP:  a. Introduction of the ExpertAlert and TermoAlert web front-end.  b. Maintenance efficiency monitoring tasks.  c. Pre-outage expert activity.  d. Case studies. | Gabor Kiss  Paks NPP |
| 10:00 – 11:00 | Pipeline vibration measurement and mitigation methods | Bisser Radoslavov  Kozloduy NPP |
| 11:00 – 11:30 | Break | |
| 11:30 – 12:30 | General answers to the following questions:   1. The systems of vibration status monitoring (hardware including types of sensors and their location, software including method of calculation). 2. The root causes for different types of vibration mechanisms of rotating machinery, analysis of the vibration and finding the defects with the monitoring techniques, with focus on the reactor coolant pump and the turbine-generator. 3. The identification, prevention and maintenance (preventive, predictive, condition based) approaches to protection of rotating machinery against vibration-induced failures. 4. How to perform the monitoring of cooling machines (measurement parameters, permissible values). 5. The relation of parameters monitored by permanently installed systems and portable measurement devices. | Discussion by all participants, moderated by Jaroslav Brom,  Temelin NPP |
| 12:30 – 14:00 | Lunch Break | |
| 14:00 – 15:00 | Discussions and closing | All |