**Safety Review for 660kVA SML Modulators – RFQ, DTL and MBeta**

***13th March 2018, ESS, Lund, Sweden***

**Agenda**

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| **Time** | **Title** | **Presenter** |
| *13:00 – 13:05 ESS Welcoming and Introduction to Modulators Safety for ESS* | John Weisend |
| **Session 1: Reserved** |
| 13:05 – 13:10 | Executive session – Review Committee only |  |
| **Session 2 : Electrical hazards and protection** |
| 13:10 – 13:20 | Identification of electrical hazards:* Direct contact;
* High Voltage;
* High Power;
* High Stored Energy;
* High Short Circuit Power;
 | Carlos Martins, ESS |
| 13:20 – 13:30 | Direct contact – IP protection by the enclosure; Door switches; Grounding | Jose de la Fuente, Jema |
| 13:30 – 13:40 | High Voltage - Tank sealing and HV cables/receptacles sealing | Carlos Martins, ESS |
| 13:40 – 13:50 | High Power - Sizing of power cables | Jose de la Fuente, Jema |
| 13:50 – 14:10 | High Short Circuit Power - Sizing of circuit breakers; Protection against explosion and arcs | Jose de la Fuente, Jema; Carlos Martins, ESS |
| 14:10 – 14:30 | High Stored Energy – Emergency discharge systems; Capacitor short circuiting and grounding | Carlos Martins, ESS |
| 14:30 – 14:50 | *Discussion* |  |
| 14:50 – 15:10 | Coffee break |  |
| **Session 3: Fire and environmental hazards and protection** |
| 15:10 – 15:20 | Risk of fire in Low Voltage cabinet and prevention | Jose de la Fuente, Jema |
| 15:20 – 15:50 | Insulation oil: risk of fire and prevention | Carlos Martins, ESS |
| 15:50 – 16:00 | Insulation oil: risk of oil spills and prevention; storage of large quantity of oil | Carlos Martins, ESS |
| 16:00 – 16:20 | *Discussion* |  |
| **Session 4: Transportation and handling hazards and protection** |
| 16:20 – 16:40 | Lifting by crane and forklift; Rolling over the floor; Extraction and opening of the HV oil tank | Carlos Martins, ESS |
| **Session 5: CE marking** |
| 16:40 – 17:00 | Jema policy in CE marking applied to ESS modulators | Jose de la Fuente, Jema |
| **Session 6: Reserved** |
| 17:00 – 17:20 | Executive session – Review Committee only |  |
| **Session 7: Conclusion** |
| 17:20 – 17:30 | Safety Review Committee decision, recommendations and preliminary conclusions | John Weisend |
| 17:30 – 17:40 | Close-out | John Weisend |