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Webinar: Digital excitation and AVRs for reliable operation of power plants and industries

Q 1: Whether it is required to readjust PSS setting in case of commissioning of New Generator in the Substation?
A: Power system stabilizer (PSS) setting has to be re-adjusted in case of commissioning of New Generator. Based upon new generator’s parameter PSS needs to be configured and retuned. Please get in touch with our team for further information on the same.

Q 2: Have you done any failure rate analysis in recent period. If so, what is the failure rate for 1000 and 6000 series as most consultants ask always for 2A + 2M channel AVR?
A: Failure rate analysis is available for UNITROL 6000 Series and UN1000 series. However please note that 2A+2M is preferred in market for the redundancy purpose as AVR is one of the critical equipment in Power plant.

Q 3: What is the benefit of PSS in new model of AVR. In existing models, it is not available still it is working.
A: The purpose of the power system stabilizer (PSS) is to dampen the power oscillations between generator and network due to network faults or network operations close to stability limits. The impact of PSS can be demonstrated using step test by activating/de activating PSS feature. Please get in touch with our team for further information on the same.

Q 4: UNITROL 1020 model can have communication protocol IEC61850?
A: IEC 61850 is available only in UN6000 systems.

Q 5: Does ABB supply Excitation system for Brushless?
A: Yes, ABB offers Excitation System for Brushless systems.

Q 6: In my system, I am using UNITROL 5000 and want to upgrade on UNITROL 6000. I would like to know more details.
A: Please get in touch with our team for further information on the same.

Q 7: Do you have any feature to monitor rotating rectifier healthiness for brushless machine?
A: Yes. ABB Excitation systems has in-built rotating diode monitoring feature.

Q 8: Have you supplied excitation system to any pumped storage plant?
A: Yes. We have engineered, manufactured and successfully commissioned Excitation systems for pumped storage hydro power plants globally. More details can be provided by Local ABB team, you can contact them directly.

Q 9: For carrying out Stability Studies at initial stage of Project when Excitation/AVR are not known which IEEE model one can use for the Studies.
A: For brushless system, ABB follows AC11C/AC10C IEEE and for Static Excitation System it is ST10C IEEE model.
Q 10: Do you have any integrated AVR, Generator Protection Relay and Governor for Power Plant, which connected via Ethernet or other fast communication system?
A: IN ABB can provide solution comprising of AVR, protection panel & Governor for power plant. Same can be connected via ethernet or IEC 61850 communication protocol.

Q 11: Please share the Recommended IEEE Models for UNITROL 1020 & UNITROL 6080.
A: For UNITROL 1010/1020 system ABB follows AC11C IEEE model and for UNITROL 6080 system in brushless excitation system ABB follows AC10C IEEE model and with UNITROL 6080 system in static Excitation System ABB follows ST10C IEEE model.

Q 12: In Cement Plant Grid is being used for support purpose and almost floating load will be on Grid than how we can maintain Grid Power factor 0.99 on consistent basis.
A: Please provide more details about your operation. Once the system is synchronized with Grid, please switchover to PF mode to maintain the PF of the system.

Q 13: What system provided for rotating diode & fuse in excitation
A: The UNITROL 1000 & 6000 Series is having integrated feature for monitoring rotating diode.

Q 14: Adaptive PSS you have not introduced in India, why?
A: Kindly note that Adaptive PSS can be provided on request. Please get in touch with our local team.

Q 15: Is time synchronization with ECT (UNITROL 6080) possible? If it is possible, to get events with actual time.
A: Yes, it is possible. However please note that ECT has to be connected to external time server using SNTP protocol.

Q 17: Do you have a rule, when to use AC or DC breaker?
A: No specific rule for AC or DC breaker, we can provide both based on the end customer requirement.

Q 18: For synchronous generator ceiling voltage is more important or ceiling current, which should be considered while designing.
A: Kindly note, both shall be proportional and hence both are important. However, ceiling voltage determines the voltage levels of the excitation transformer.

Q 19: For upgradation of UNITROL 5000 to 6000, is converter modules of 5000 also need to upgrade or the same converters of 5000 can be retain?
A: There are two options, either complete UN5000 systems can be upgraded or only the control portion alone can be upgraded to UN6000 by retaining the power section.

Q 20: How PSS settings are set. how is it calculated
A: PSS setting values are calculated using proprietary ABB algorithms based on the parameters like Grid reactance, etc.

Q 21: Can ABB provide retrofitting service in excitation system i.e. supply, dismantling, erection, testing and commissioning?
A: Yes, definitely ABB can provide the complete support in Excitation retrofitting. We request you to contact OUR team.

Q 22: PSS is required for STG only or for every generator?
A: PSS shall be applicable for all types of plants connected to grid.

Q 23: What happen at the time of failure of grid
A: In case if the grid is disconnected then the system will continue to operate at island mode maintaining the generator voltage in auto mode.

Q 24: Can ABB provide solution for automation for back pressure turbine?
A: We request you to provide more details and contact our team for further clarification.

Q 25: Is UNITROL 1005 suitable for G3 environment?
A: UNITROL 1005 does not comply with G3 environment.

Q 26: We have 12 MW pump, our major load is induction furnace, during load throw off reactive power is not controlling. Could you please help on the above problem?
A: We request you to provide more details. Please contact our team for further clarifications.

Q 27: Difference between conventional 3 pole arrangement field discharge system and ABB Thyristor fired field discharge system /crowbar system. Please clarify?
A: Kindly note that ABB can provide both options. Please note the configuration using 3 pole breaker with discharge contacts is an older practice and there are very few breakers of this type available.

Q 28: In case of redundant auto channel and redundant bridge suppose channel 1 is for bridge 1 and similarly channel 2 for bridge 2. In case channel 2 and bridge 1 is failure can we still run by controlling bridge 2 by channel 1?
A: Yes, possible in case of H configuration UN6000 system.

Q 29: While selection of AVR main what are to be considered in Generator?
A: Please share us the details of generator, our team shall suggest which are the parameters to be considered for selection of AVR.

Q 30: We understand that ABB is also providing the Dynamic PSS. Please put some focus on the same?
A: ABB can provide the Adaptive PSS based on your requirement.

Q 31: How long we can keep the back-up channel in service, if both the main 1 & 2 AVR failed in UNITROL 6800 in a thermal power plant of 210MW?
A: Plant can continue to run in Back-up channel continuously, however, please note that only MANUAL mode is possible, and it is recommended to bring back the AUTO mode at the earliest.

Q 32: When more advanced model of UNITROL 6000 X is expected to be available?
A: All product in ABB follows a life cycle, currently the UNITROL 6000 is in active phase and our most advanced product. We communicate the launch of new products early enough.

Q 33: from where we can download the simulator for hands on practice?
A: This simulator software is developed by ABB, to have a hands-on practice please contact our team for further details about the simulator.

Q 34: Can a previous model auto-synchronizer of a 3rd party be replaced and retrofitted with ABB? Make auto-synchronizer for a 250 MW generator?
A: Yes, it can be retrofitted with our latest product SYNCHROTACT 6.

Q 35: It is possible to conduct UNITROL 1020 modular maintenance during running the generator.
A: Online maintenance facility is not available in UNITROL 1020 system.

Q 36: We have UNITROL 5000 and need to upgrade to 6000. Can we modify the simile thyristor cubical to withdrawable converter?
A: Yes, it is possible to modify. Please contact our team for further details.

Q 37: What is max excitation current of MEGATROL??
A: MEGATROL is available in three ranges Light, Medium and Power. The portfolio meets the requirements of all gas turbine power plants from small to very large. Please share your requirement to proceed further.

Q 38: Can the provision of RAP be made in existing ABB make DVR?
A: Yes, it is possible to provision of RAP be made in existing ABB make DVR.
Q 39: Can you offer support for other make AVR?
A: In case of other make AVRs, we can support only in replacement.

Q 40: Is it possible for online fault attending of UNITROL 5000?
A: Online troubleshooting is not available in UNITROL 5000

Q 41: Submarine excitation available from ABB?
A: Yes. Please provide more details.

Q 42: What is difference between Generator equipped with PSS and not with PSS?
A: Kindly note that the difference between generators equipped with and without PSS shall be in output power quality of both the generators. PSS dampens the electromechanical oscillations in the Power circuit.

Q 43: As cyber security issue can this remote access is secure?
A: Yes. It is secured.

Q 44: Why we used 400hz frequency in excitation system?
A: Excitation systems are designed to accommodate 400 Hz to suit the PMG supplies.

Q 45: Can we get spare for UN 5000?
A: Yes, still spares for UNS000 are available. However, we recommend you upgrade your system to latest UN6000 systems at the earliest, since UNS000 is not in Active phase of Life Cycle.

Q 46: Which IEEE or ETAP model closely represents UNITROL 1000 & 6000?
A: For UNITROL 1010/1020 system ABB follows AC11C IEEE model and for UNITROL 6080 system in brushless excitation system ABB follows AC10C IEEE model and with UNITROL 6080 system in static Excitation System ABB follows ST10C IEEE model.

Q 47: What are the benefits of PSS-4B over PSS-2B?
A: Four separate bands, dedicated respectively to the very low, low, intermediate and high frequency modes of oscillations, are used in this delta-omega PSS. The low band is typically associated with the power system global mode, the intermediate band with the inter-area modes and the high band with the local modes. Each of the four bands comprises a differential filter, a gain and a limiter.

Q 48: In 5000 UNITROL system, whether historian trending of parameters is possible?
A: If ECT is used in the project then the trending is possible.

Q 49: How AVR set point is calculated in AVR?
A: AVR setpoint has to be set depending on the rated Generator voltage in case of AUTO mode.

Q 50: PSS in excitation is for transient stability improvement?
A: The purpose of the power system stabilizer (PSS) is to dampen the power oscillations between generator and network due to network faults or network operations close to stability limits. The impact of PSS can be demonstrated using step test by activating/de activating PSS feature. Kindly request you to get in touch with our team for further details.

Q 51: We are having UNITROL 1000 tuned for 5 A Excitation current now as our Excitation requirement increased we want to increase to 7.5 A but when we are doing same generator going in over voltage. Please suggest?
A: Kindly request you to get in touch ABB team for further support in parametrization.

Q 52: The system can be utilized for black start of Hydro Power plant?
A: Yes, ABB Excitation system can support Black start.
Q 53: We have UNITROL 6080 recently procured for ALSTHOM 21.625 MVA Generator. Kindly provide us the detail of maintenance tool. 
A: You can procure ECT SW license as maintenance tool.

Q 54: Is it possible by ABB to retrofit only control part, with the existing power module of 3rd party? 
A: Yes, it is possible. However, confirmation shall be provided after complete study of your existing system.

Q 55: Is it possible for online fault attending of UNITROL 5000? 
A: Online troubleshooting is not available in UNITROL 5000.

Q 56: How much harmonics distortion will be generated in ABB static excitation System with thyristor bridge such as 3rd, 5th ........21st order 
A: The harmonics shall vary depends upon the system, please provide the details of generator to calculate the harmonics.

Q 57: FCB can be on ac side before thyristor in put? 
A: FCB can be provided on either AC or DC side based on customer requirement.

Q 58: Can you please provide details to upgrade UNITROL-5000 to UNITROLI-6000? 
A: Kindly request you to get in touch ABB team for details.

Q 59: In case of ac side what about suppression? 
A: If FCB is on AC side, still the suppression circuit has to be on DC side only.

Q 60: We are seeking support for commissioning of ABB supplied DVR. Since it was procured few years back, how best ABB can assist for commissioning? 
A: Kindly request you to get in touch ABB team for details.

Q 61: During immediate after synchronization is it required to control reactive power manually and then only, we have to switch on in auto mode for PF control 
A: After synchronization if the system is properly tuned and commissioned, we can switch to Auto Mode directly.

Q 62: Can ABB provide modelling services involving excitation systems from other suppliers? How effective such studies can be? 
A: We cannot provide modelling services of 3rd party Excitation systems.

Q 63: We are planning to upgrade from UNITROL 5000 to UNITROL 6000 controller only. What are the field tests to be performed before commissioning? 
A: Control Upgrade is a task that depends on existing hardware conditions and response. We request you to contact our team for specific study and customized solution.

Q 64: Where to use reactive power compensation (droop) and where not to use. What is the criteria? 
A: The reactive power compensation (droop) to be used where the AVR is connected to the GRID or running with generators in parallel on same bus.

Q 65: In UNITROL 5000 PSS output command parameter no 12010 can wired for monitoring to DR. Whether this parameter is analogue value of digital value? 
A: PSS Output signal cannot be wired to terminals to monitor at DR. This is an analog value but not a standard signal.

Q 66: Does CMT tool provide some additional diagnostics and whether it is provided to customers also? 
A: Yes, CMT tool provide additional diagnostics like data logger, event logger. CMT tool will be provided to customers also along with UNITROL 1000 Series module.

Q 67: We need to have Simulation software for Tuning of AVR Panels.
A: Please contact our team for procuring the software.

Q 68: What details ABB can give to user for user to be sure that the response he is getting from simulations is correct and meets ABBs requirements?
A: The result can be verified with actual system performance.

Q 69: What is the advantage of using UNITROL 6000 and MEGATROL when compared to UNITROL 5000?
A: Kindly note, MEGATROL product range is only for Gas Turbines. MEGATROL uses UNITROL 6000 technology for the excitation part of the system. UNITROL 6000 is the successor of the UN5000 system with numerous advantages like fiber optic communication, modular design, improved redundancy, IEC 61850 protocol option, advanced touch screen HMI with trending, disturbance recorder, power chart, etc. Kindly request you to get in touch with our team for further details.

Q 70: In dual channel UN1010, can we replace one controller by using UN1020?
A: UNITROL 1010 and 1020 controller are having different current range namely 10 amps and 20 amps. UNITROL 1020 is having SCP mounted on the module itself. In case of dual channel for ease of operation and parameter setting it is always preferable to use same set of modules. However, in case of single channel system 1020 can always be installed in place of 1010.

Q 71: For static excitation system UNITROL 5000, what would be the behavior ceiling voltage and field forcing if transient fault occurs at terminal of generator. Due to voltage drop during terminal voltage how ceiling voltage will behave.
A: We would need system details like Generator Data sheet and plant data to check and calculate. We request you to contact our team for further calculation and clarifications.

Q 72: How Long Service Support/ Spares, Availability in India for UNITROL 6080?
A: All product in ABB follows a life cycle, currently the UNITROL 6080 is in active phase, post active phase the product will be in classic phase where spares and service support will be available. After classic phase, the product will be in limited phase and till that time spares will be available.

Q 73: Do you have solution for replacement of existing system installed in 2MW DG SET?
A: We can Offer UN1005/UN1010 product for 2 MW DG set.

Q 74: Can only controls be replaced for upcoming model keeping other hardware same?
A: Yes. Replacement of controls makes a lot of sense since the life time of other parts are typically longer. However, other parts can also be replaced incrementally.

Q 75: For a PSS up to how much capacity can be safe.
A: Up to 1000 MW

Q 76: Can ABB supply ADAPTIVE parameterization of the AVR and PSS? at least for new model?
A: Yes, we can provide Adaptive PSS based on the requirement. Kindly request you to get in touch with our team for further details.

Q 77: Does ABB have similar solution like MEGATROL (for Gas?) for Coal based generating units.
A: MEGATROL is only used in gas turbine power plants. For coal based generating units, UNITROL 6000/UNITROL 1000 series are to be used.

Contact Details of Local ABB team Member

CHETAN AGARWAL – chetan.agarwal@in.abb.com
VIVEK C - vivek.c@in.abb.com