

INSTALLATION AND MECHANICAL/TECHNOLOGICAL COMMISSIONING OF ELECTRICAL SYSTEMS											
The checklist relates to the scope of work carried out during the shutdown of the at											
Due to the varying nature of shutdown overhauls at different complexes/plants, the checklist must be reviewed and adjusted each time to reflect current needs, taking into account the overhaul requirements, tasks arising during the course of the shutdown, and the conditions for commissioning.											
No.	Activities/tasks Scope: specified in the file.	Done correctly?			Contractor Company Name:	Signature of the Contractor	Date	Comments	Signature PCC	Date	Comments
		YES	NO	N/A							
1.	Has all the work been completed?										
2.	Are there any remnants of overhaul work remaining in the area designated for commissioning?										
3.	Has the contractor submitted a statement confirming readiness for commissioning (entry in the work log)?										
4.	Verification of cable routing	Done correctly?			Nazwa firmy wykonawczej	Podpis Wykonawcy	Date	Comments	Podpis PCC	Date	Comments
		YES	NO	N/A							
	Are the cable routes firmly fixed, with no loose parts?										
	Are the cable routes grounded?										
	Are the cable routes arranged as per the documentation?										
	Are cable transits adequately protected?										
	Are the sharp edges of cable trays that could damage the cables properly secured?										
	Are there no elements near the cable routes that could damage them?										
5.	Verification of the connection of on-site devices										
5.1	Electric motors	Done correctly?			Nazwa firmy wykonawczej	Podpis Wykonawcy	Date	Comments	Podpis PCC	Date	Comments
		Motor Labelling:									
		YES	NO	N/A							
	Are the cross-sections and types of cables in accordance with the design?										
	Are the cables not at risk of damage?										
	Are the cable lugs properly terminated and connected?										
	Have the cable glands been tightened?										
	Are the cables permanently marked? (from - to + cable number)										
	Does each cable have an adequate spare length margin?										
	Are the shielded cables properly connected?										
	Are the junction boxes sealed?										
	Are the engine sensors connected?										
	Have electrical bondings been made?										
	Are the local control boxes clearly marked and identifiable?										
	Does the motor have a legible nameplate and a stamped service number?										
	Is the equipment/apparatus correctly installed?										
	Have test and measurement reports been provided?										
	Has a protocol confirming the proper operation of the emergency stop switch been presented?										
	Have the rotation directions been checked?										
	Has the emergency shutdown from the DCS been tested?										
	Have the process interlocks been tested?										
	Has the safety relay and emergency stop switch operation been verified?										
	Have the recommendations from the diagnostic report been implemented?										
Has the alignment of the motor/pump unit been carried out?											
Have the motor bearings been lubricated?											
5.2	Lighting system	Done correctly?			Nazwa firmy wykonawczej	Podpis Wykonawcy	Date	Comments	Podpis PCC	Date	Comments
		YES	NO	N/A							
	Are the cross-sections and types of cables in accordance with the design?										
	Are the cables not at risk of damage?										
	Have the cable glands been tightened?										
	Are the cables permanently marked? (from - to + cable number)										
	Are the fixtures tightly sealed and labelled?										
	Are the junction boxes sealed and labelled?										
	Is the equipment/apparatus correctly installed?										
	Have test and measurement reports for lighting been submitted?										
	Has the operation of the light fixtures been checked?										
	Has the cleanliness and clarity of light diffusers been checked?										
	Has the consistency of circuit designations been checked against the switchboard protection?										
	Has the operation of the emergency lighting been checked?										
	Are emergency luminaires properly marked (e.g. with yellow tape)?										
	Has the operating time of the luminaires until battery discharge been verified?										
	Has the illumination level been measured along evacuation routes, at fire-fighting equipment, and at alarm buttons?										
	Does the emergency lighting system meet the minimum 1-hour operating time requirement?										
	Have test and measurement reports for emergency lighting been submitted?										
	5.3	Socket system	Done correctly?								
YES			NO	N/A							
	Are the cross-sections and types of cables in accordance with the design?										
	Are the cables not at risk of damage?										

	Have the cable glands been tightened?										
	Are the cables permanently marked? (from - to + cable number)										
	Are the sockets mounted securely and stably?										
	Are sockets/connection boxes sealed and labelled?										
	Are the junction boxes sealed and labelled?										
	Is the equipment/apparatus correctly installed?										
	Have test and measurement reports been provided?										
	Has the operation of the plug sockets been checked?										
	Has the consistency of circuit designations been checked against the switchboard protection?										
5.4	Heating system	Done correctly?			Nazwa firmy wykonawczej	Podpis Wykonawcy	Date	Comments	Podpis PCC	Date	Comments
		YES	NO	N/A							
	Are the cross-sections and types of cables in accordance with the design?										
	Are the types of heating cables suitable?										
	Are the cables not at risk of damage?										
	Have heating cables been installed in accordance with the manufacturer's OMM?										
	Are the junction boxes sealed and labelled?										
	Have the cable glands been tightened?										
	Are the cables permanently marked? (from - to + cable number)										
	Has the insulation access point been executed adequately?										
	Are the contactors and thermostats of individual heating circuits operational?										
	Have the temperature settings for each heating circuit been checked against the design or the technologist's setting sheet?										
	Have heating cables been laid in accordance with the manufacturer's OMM?										
	Is the equipment/apparatus correctly installed?										
	Have test and measurement reports been provided?										
	Have functional tests been carried out?										
5.5	Lightning protection and earthing system	Done correctly?			Nazwa firmy wykonawczej	Podpis Wykonawcy	Date	Comments	Podpis PCC	Date	Comments
		YES	NO	N/A							
	Is the electrical bonding system marked properly?										
	Have electrical bondings been made for pipelines?										
	Is the continuity of the flange connections maintained?										
	Are there any components connected to the system, e.g. tanks?										
	Are the system components protected against corrosion?										
	Is the lightning protection system made in accordance with the design (number of lightning spires, rods, etc.)?										
	Have isolation gaps been maintained?										
	Are all control connectors permanently labelled?										
	Have the test terminals been properly protected against corrosion?										
	Is the equipment/apparatus correctly installed?										
	Has the torque of bolted connections been verified, taking into account the bolt class and diameter?										
	Have test and measurement reports been provided?										
	Have earthing and electrical bonding system components been clearly marked to indicate their purpose?										
6.	Verification of switchgear devices	Done correctly?			Nazwa firmy wykonawczej	Podpis Wykonawcy	Date	Comments	Podpis PCC	Date	Comments
		YES	NO	N/A							
	Has a programme for first switch-on been presented?										
	Is the switchboard clearly and uniquely labeled for identification?										
	Are the switchboards permanently fixed?										
	Are the switchboards grounded?										
	Are the switchboards fully assembled?										
	Does the apparatus used comply with the design?										
	Are the values of the safeguards used in accordance with the documentation?										
	Do all devices have their own markings?										
	Do all cables connected to the switchboards have their own markings?										
	Are all devices parameterised?										
	Is the cleanliness of the switchboard acceptable and free of concerns?										
	Are there any unprotected cables in the switchboard?										
	Do the connection layouts correspond to the documentation?										
	Is the switchboard protected against external influences?										
	Are the cables connected correctly?										
	Have test and measurement reports been provided?										
	Does the switchboard have a nameplate?										
	Has the exchange of signals with the DCS been verified?										
	Are the devices parameterized in accordance with the design documentation, such as circuit breaker settings and automatic transfer switch (ATS) automation?										
	Have functional tests of the switchboard been carried out to verify the correct operation of all power circuit breakers, interlocks, and ATS automation?										
	Has the inability to restart equipment after an emergency shutdown signal has been confirmed?										
	Have functional tests been carried out on the receivers connected to it?										
	Are the appliances properly installed?										
7.	Generator Set Inspection	Done correctly?			Nazwa firmy wykonawczej	Podpis Wykonawcy	Date	Comments	Podpis PCC	Date	Comments
		YES	NO	N/A							
	External visual inspection of the generator set										
	Has the cleanliness of the generator set been checked?										
	Have any mechanical damages been identified?										
	Are there any leaks?										

	Has the condition of the V-belts been checked?										
	Fuel System Inspection in the Generator Set										
	Have the fuel filters been replaced?										
	Has the fuel system been checked for leaks?										
	Has the fuel level been checked?										
	Does the fuel filler cap have a seal?										
	Cooling System Inspection in the Generator Set										
	Has the quality and level of the coolant been checked?										
	Have the flexible connections been inspected?										
	Has the cooling system been checked for leaks?										
	Has the engine preheating system been tested for correct operation?										
	Lubrication System Inspection in the Generator Set										
	Have the oil filters been replaced?										
	Has the oil been changed?										
	Has the oil level been checked?										
	Has the system been checked for leaks?										
	Starting System Inspection in the Generator Set										
	Has the condition of the batteries been checked?										
	Has the internal resistance of the battery been measured?										
	Has the battery charging voltage been measured?										
	Has the electrolyte level been checked?										
	Has the low-voltage system been inspected?										
	Has the starter motor operation been checked?										
	Has the alternator been tested for correct operation?										
	Has battery charging been measured during generator operation?										
	Starting System Inspection in the Generator Set										
	Has the oil pressure sensor been tested for correct operation?										
	Has the coolant temperature sensor been tested for correct operation?										
	Have the measuring indicators and pressure gauges been checked?										
	Has the control and monitoring system been inspected?										
	Generator System Inspection in the Generator Set										
	Has insulation resistance of the generator windings been measured?										
	Has the condition of electrical connections been checked?										
	Has the voltage regulator been inspected?										
	Air Supply System Inspection in the Generator Set										
	Has the condition of the air filters been checked?										
	Has the air filter been cleaned if necessary?										
	Has the operation of air intakes and outlets been verified?										
	System Operation Check, Corrections and Adjustments										
	Has the generator been tested for correct operation without load?										
	Has the generator been tested for correct operation under load for at least 2h?										
	Have any alarms been detected?										
	Has the generator operation been checked for unusual noises?										
	Has output frequency and voltage been monitored? Has engine operating temperature been monitored? Has oil pressure been monitored?										
	Has the generator emergency stop switch been tested?										
	Has proper generator start-up after mains power failure been confirmed?										
	Has the impossibility of backfeeding power to the grid been verified?										
	Completion of works										
	Have all tasks related to the generator set inspection been completed?										
	Is the generator set operational and ready for use?										
8.	UPS Inspection	Done correctly?			Nazwa firmy wykonawczej	Podpis Wykonawcy	Comments	Date	Podpis PCC	Date	Comments
		YES	NO	N/A							
	Visual inspection										
	Has the unit been cleaned?										
	Is the device nameplate legible?										
	Are warning labels and user instructions available near the unit?										
	Have all bolted connections been checked?										
	Are there no foreign objects inside or near the unit?										
	Have any mechanical damages been identified?										
	Are there no loose or hanging wires inside the unit?										
	Are cable connections and routing consistent with the documentation?										
	Have all power and signal terminals been checked?										
	Is the grounding connection correct?										
	Are the battery connections correct?										
	Has an inspection of the internal and external bypass of the UPS been carried out?										
	Has the external electrical installation been visually inspected?										
	Have battery electrolyte leaks been checked?										
	Electrical Tests										
	Has internal battery resistance been measured?										
	Has the voltage across all battery strings been measured?										
	Has a battery capacity test under UPS load been performed?										
	Has battery charging been checked?										
	Have input and output parameters of the UPS been measured and recorded?										
	Are the batteries in good working condition?										
	Functional Tests										
	Has the UPS ventilation system been tested for correct operation?										
	Has the correct operation of the device been tested?										
	Has the monitoring and alarm signalling system been tested?										

	Has the correct operation of all operating modes been verified (electronic bypass, mechanical bypass, battery mode, and inverter mode)?											
	Has the UPS been tested under a mains power failure scenario?											
	Completion of works											
	Have all tasks related to the UPS inspection been completed?											
	Is the unit operational and ready for use?											
9.	24V/110V DC Rectifier Inspection	Done correctly?			Nazwa firmy wykonawczej	Podpis Wykonawcy	Comments	Date	Podpis PCC	Date	Comments	
		YES	NO	N/A								
	Visual inspection											
	Has the unit been cleaned?											
	Are there any mechanical damages?											
	Have the device markings and nameplate been checked?											
	Have dust filters been replaced?											
	Have the operating conditions of the device and any additional equipment been inspected?											
	Have cable connection terminals, protective conductors, and power paths been checked?											
	Ventilation Check											
	Has the operation of the device’s fans been verified?											
	Has it been confirmed that ventilation is not blocked and provides proper airflow?											
	Electrical Tests											
	Have the device’s input and output parameters been checked?											
	Have the electrolytic capacitors been inspected?											
	Have the internal power supplies been tested?											
	Has the protection equipment, fuses and disconnector, been checked?											
	Has the battery pack been inspected?											
	Has the stability of output voltage and frequency been verified in both mains and battery operation modes?											
	Has the battery charging current been measured?											
	Functional Tests											
	Has the rectifier’s response to switching from mains to battery mode and back been tested?											
	Has the switchover time to battery power been verified?											
	Has the battery charging system been tested for proper operation?											
	Has the alarm system been tested, including display control, messages, and audible signalling?											
	Has the correct operation of all rectifier operating modes been confirmed?											
	Has the rectifier’s ability to signal potential issues such as overtemperature or overload been tested?											
	Has the current software version been verified for proper functioning?											
	Has external communication functionality been checked?											
	Completion of works											
	Have all tasks related to the rectifier inspection been completed?											
	Is the device operational and ready for use?											
	10.	24VDC/110VDC Lead-Acid Battery Inspection	Done correctly?			Nazwa firmy wykonawczej	Podpis Wykonawcy	Comments	Date	Podpis PCC	Date	Comments
			YES	NO	N/A							
		Visual inspection										
		Are there any mechanical damages?										
		Have internal battery connections been checked?										
		Has the cleanliness of external surfaces been verified?										
		Have all bolted connections been properly tightened?										
		Is the room ventilation system functioning correctly?										
		Battery Capacity Check										
		Have all battery cells been measured?										
Has the electrolyte density of all cells been measured?												
Has a controlled battery discharge test been performed in accordance with PN EN 60896-11?												
Has the battery been recharged after the controlled discharge test?												
Has the battery room temperature been measured?												
Has the actual measured battery capacity been determined based on the results?												
Is the measured battery capacity within acceptable limits?												
Completion of works												
Have all tasks related to the battery inspection been completed?												
Is the battery in working order and ready for continued operation?												
11.		6kV Switchgear Inspection	Done correctly?			Nazwa firmy wykonawczej	Podpis Wykonawcy	Comments	Date	Podpis PCC	Date	Comments
			YES	NO	N/A							
		Have the interiors of incoming, outgoing, longitudinal and transverse busbar connector panels, and measuring compartments been vacuum-cleaned?										
	Have all bolts and screws in electrical connections been tightened with appropriate torque?											
	Has the condition of paint coatings been checked (especially for signs of corrosion or contamination)?											
	Has the quality of seals been inspected?											
	Has the condition of circuit breakers, disconnectors, isolators, and other switching devices been checked?											
	Has the mechanical interlock system been tested three times to ensure proper operation and smooth door opening?											
	Have the microswitches installed in the compartments been tested three times?											
	Has the correct operation of individual protection components in the switchgear panels been verified?											
	Has one switching cycle been performed on each device where triggering is possible?											
	Have the electrical connections in current and grounding paths been inspected?											
	Has the operation of limit switches been checked?											
	Has the condition of all insulating components in the panel been verified?											
	Have the fixed contacts of the circuit breakers been lubricated with Molykote HSC Plus or an equivalent conductive grease?											
	Have the grounding switch contacts been lubricated with Molykote HSC Plus or a similar conductive grease?											
	Have all door hinges been lubricated with Isoflex Topas NB 52 grease from Klüber or a suitable equivalent?											

	Have the louver guides in two-part panels been lubricated with Isoflex Topas NB 52 grease from Klüber or an equivalent?										
	Completion of works										
	Have all tasks related to the 6kV switchgear inspection been completed?										
	Does the switchgear comply with applicable standards, regulations, and OMM, and is it fit for further use?										
12.	Load Arrestors	Done correctly?			Nazwa firmy wykonawczej	Podpis Wykonawcy	Comments	Date	Podpis PCC	Date	Comments
		YES	NO	N/A							
	Is the installed load arrestor compliant with the documentation?										
	Has the load arrestor been dismantled and its technical condition inspected?										
	Has the load arrestor been cleaned?										
	Have the bolted connections of the grounding wire been checked?										
	Has the load arrestor, including the grounding wire, been correctly reinstalled?										
	Have all tasks related to the inspection of the load arrestors been completed?										
	Are the load arrestors fit for continued operation?										
	Has a report of the completed inspection, or an email statement confirming the inspection and fitness for continued operation, been received?										
13.	Inspection of Ex equipment	Done correctly?			Nazwa firmy wykonawczej	Podpis Wykonawcy	Comments	Date	Podpis PCC	Date	Comments
		YES	NO	N/A							
	Has the nameplate of the device been checked for legibility?										
	Does the device have technical documentation, including the ATEX and IECEx certificates, operating manual and specification sheet?										
	Has the condition of the device housing been checked for cracks or damage?										
	Has the technical condition of the power circuit components been checked?										
	Has the condition of the bolts connecting the parts of the flameproof enclosure been inspected?										
	Has the device’s sealing condition, including the gaskets and their fastening, been inspected?										
	Has the electrical condition of the device been checked, including the sealing of connectors, condition of cables, connections, contacts and earthing?										
	Has the condition of the dedicated electrical protections for the device been verified?										
	Has the technical condition of motor windings, coils, chokes and supply cables been checked?										
	Has the internal and external fan and their mountings been checked?										
	Have the required creepage and clearance distances been verified?										
	Has the routing and layout of intrinsically safe circuit cables in relation to non-intrinsically safe circuit cables been verified?										
	Have the test and measurement reports been submitted?										
	Has an inspection report or an email statement confirming the inspection and that the Ex equipment is fit for continued operation been received?										
14.	Inspection of fireman's switch	Done correctly?			Nazwa firmy wykonawczej	Podpis Wykonawcy	Comments	Date	Podpis PCC	Date	Comments
		YES	NO	N/A							
	Is the emergency switch clearly marked?										
	Has the technical condition of the device been checked?										
	Have the electrical connections and contacts of the device been inspected?										
	Has the proper operation of the emergency switch been verified?										
	Have all required devices been de-energised upon activation of the emergency switch?										
	Has a report from the inspection and functional tests been received?										
15.	inspection of LV Circuit Breakers	Done correctly?			Nazwa firmy wykonawczej	Podpis Wykonawcy	Comments	Date	Podpis PCC	Date	Comments
		YES	NO	N/A							
	Has the technical condition of the breaker, main contacts and arc chambers been visually inspected?										
	Has the open/closed indication and readiness status of the breaker been checked?										
	Has the mechanical operation of the breaker been tested?										
	Have the control cables been visually inspected?										
	Has the condition of control boxes/enclosures been visually inspected?										
	Has the cleanliness of the breaker been verified?										
	Has the manual opening/closing operation of the breaker been checked?										
	Has the manual charging of the breaker drive been checked?										
	Has the electrical charging of the breaker drive been checked?										
	Has the electrical opening/closing operation been verified?										
	Has mechanical maintenance of the breaker been carried out?										
	Has the correct operation of the breaker’s protection system been verified?										
	Have resistance measurements of the main contacts been performed?										
	Have insulation resistance measurements of the main circuits been taken?										
	Have measurements of operating times and synchronisation of opening and closing been carried out?										
	Have insulation resistance measurements of auxiliary circuits been taken?										
	Have functional tests of the breaker been conducted, including spring charging mechanism operation, closing and tripping releases, and mechanical operation?										
	Have inspection, test and measurement reports for the breaker been received?										
	Is the circuit breaker operational and fit for continued service?										
16.	Frequency converters	Done correctly?			Nazwa firmy wykonawczej	Podpis Wykonawcy	Comments	Date	Podpis PCC	Date	Comments
		YES	NO	N/A							
	Visual inspection										
	Has the external cleaning of the device been carried out?										
	Has the internal cleaning of the device been carried out?										
	Have the air filters been cleaned or replaced?										
	Capacitor inspection										
	Have the capacitors been checked for leaks, bulging, discolouration or damage?										

	Has the equivalent series resistance of the capacitors been checked?										
	Have capacitance measurements of the capacitors been taken?										
	Cooling System Check										
	Has the proper operation of the fans been verified?										
	Has the device's temperature during operation been checked to ensure it does not exceed the permissible limit?										
	Electrical Parameter Measurements										
	Have the input and output voltages been verified to be within the acceptable range?										
	Have the input and output currents been checked?										
	Has the converter's output frequency been verified to match the application's requirements?										
	Electronic Circuit Check										
	Have the transistors, diodes, control circuits, and other power components been checked?										
	Has the correctness of input and output signals in the control circuits been verified?										
	Have the protection systems (overload, overvoltage, overtemperature) been checked for proper operation?										
	Mechanical Components Check										
	Have all screws, nuts and mounting elements been checked for proper tightening?										
	Has the housing been checked for damage, cracks, or other signs of wear?										
	Operational Tests										
	Has a start-up test of the device been performed?										
	Is the device operating correctly?										
	Has the proper operation of the device under full load been verified?										
	Software and Settings Verification										
	Are all operating parameters compliant with the application requirements?										
	Has the software version been verified?										
	Have the current settings been backed up to external storage?										
	Completion of works										
	Has a detailed inspection report been received, including measurement results, technical condition, list of all converter parameters, and recommendations for further use and maintenance?										
17.	Capacitor Bank Inspection	Done correctly?			Nazwa firmy wykonawczej	Podpis Wykonawcy	Comments	Date	Podpis PCC	Date	Comments
		YES	NO	N/A							
	Visual inspection										
	Have the capacitors been inspected for physical damage, cracks, leaks, corrosion or bulging?										
	Have the condition of cables and connectors been checked?										
	Has the ventilation and cooling system been verified for correct operation?										
	Has the temperature of individual capacitors been measured?										
	Is the capacitor bank panel clean and tidy?										
	Electrical measurements										
	Have the voltages at the capacitor terminals been checked against the rated values?										
	Has the current through each capacitor been measured to detect potential faults?										
	Has the capacitance of the capacitors been measured?										
	Has the equivalent series resistance of the capacitors been measured?										
	Has the load balance across all capacitors been verified?										
	Are the measured voltages of individual capacitors equal?										
	Functional Tests										
	Have the protection systems (fuses, breakers) been tested for proper operation?										
	Has the capacitor bank been tested under load in real operating conditions to confirm correct functionality?										
	Are the protection values used consistent with the documentation?										
	Has the voltage level in protective circuits and switching elements been verified?										
	Is the capacitor bank correctly compensating for reactive power?										
	Control System Inspection										
	Have all components of the control system (capacitor monitoring, switching systems, auto-start units) been checked for proper operation?										
	Has the software version been verified?										
	Have the configured operating parameters been reviewed for accuracy?										
	Protection and Insulation Measurements										
	Has the insulation resistance between the capacitors and earth been measured?										
	Has the insulation resistance between individual capacitors been measured?										
	Are all capacitors properly earthed?										
	Are the protective circuit breakers functioning correctly?										
	Completion of works										
	Has a detailed inspection report been provided, including test and measurement results, inspection findings, any identified irregularities, and recommendations for continued operation?										
	Has the capacitor bank been switched back to automatic mode following the inspection?										
18.	Dismantling of Temporary Electrical Systems	Done correctly?			Nazwa firmy wykonawczej	Podpis Wykonawcy	Comments	Date	Podpis PCC	Date	Comments
		YES	NO	N/A							
	Have all cables, devices, and apparatus forming the temporary electrical installation been properly disconnected from power sources, dismantled, and secured?										
	Has it been verified that no hazards (such as damaged installations or devices) were created during dismantling?										
	Has the area previously occupied by the temporary electrical installation been cleared of unnecessary materials, equipment, and fittings?										
	Have all components, devices, fittings, and cables of the temporary installation been properly restored to their original condition and confirmed not to pose any hazards?										
	Has the restored original installation been verified for compliance with legal requirements regarding safety and protection of persons and property after the removal of the temporary system?										
	Has the restored original installation been adequately protected against accidental damage following the dismantling of the temporary installation?										

	Has it been confirmed that the earthing and bonding system was not damaged during the removal of the temporary installation?										
	Has the restored original installation undergone functional testing?										
	Have the tests confirmed that the original installation is operational and fit for continued use?										
	Have any modifications made to the electrical and building installations been properly documented?										

Prepared by

Form Approved By:

Date and signature

Date and signature