

ภาคผนวก ข-24

เอกสารการฝึกอบรมเกี่ยวกับกลไกต่าง ๆ ของเครื่องจักร

Chanuwat & Chakkaphan

Main Plant	Basic Theory	Component	Safety HAZOP	Start up	Shut Down	Routine Operation	Maintenance	Document Reference	Date	Day
Feed Pretreatment								I-HyCO-081,087, Mass balance	14-Sep-2023	1
Desulphurizer								I-HyCO-100,103, limitation catalyts, suphiding cat.	14-Sep-2023	1
Prereformer								Heat up S / U, limitation catalyts	14-Sep-2023	1
Boiler Feed Water System								I-HyCO-45,47,48,60, limitation control parametor	28-Mar-2025	2
Reformer									30-Apr-2025	3
Burner Management System(BMS)								I-HyCO-80	30-Apr-2025	3
Emergency Shut Down(ESD)									30-Apr-2025	3
Process Cool Down									23-May-2025	4
MDEA									23-May-2025	4
CO2 compressor									23-May-2025	4
Adsorber									30-iun-2025	5
Cold Box									30-jun-2025	5
CO Turbine									12-Sep-2025	6
CO Compressor									13-Feb-2026	7
PSA Theory Training / Adsrober									13-Feb-2026	7
Distillation Theory									13-Feb-2026	7
Safety Relate Shutdown									13-Feb-2026	7
Control System & Process control									18-Mar-2026	8
LMPC control									18-Mar-2026	8
HyCO start up Refresh Training									18-Mar-2026	8
HyCO Prepare shutdown									18-Mar-2026	8
Elctrical &Reliability program										
HyCO Trouble Shooting										
Routine Operation Workshop										
Utility										
Cooling Water System										
Boiler Package										
CO2 Import										
Environmental Control										
Report										
Permit to work Workshop										
Monthly Report Training										
Daily Report Training										
Causal Tree Analysis										
HyCO Quality plan										
HyCO&H2 Site Safety Rule										

ภาคผนวก ข-25

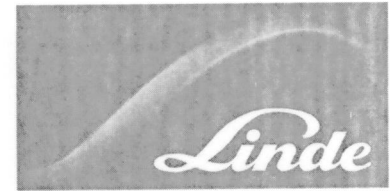
การตรวจสอบอุปกรณ์และเครื่องจักร

Work Order Shop Paper

Order	83936833	Order type	0C20 0C20 Planned Maintenance
Description	RECIPROCATING COMPRESSOR		
Reported By	IP1020260527		
Start date	06.06.2026		
End date	06.06.2026		
Priority	3	OC-Medium Risk	
Status	REL NMAT PRC SETC		
Funct. location	9149-14-93-07	NATURAL GAS PIPELINE	
Equipment	TH-HCO1MT-00002268	COMPRESSOR NG FEED C10501	
Main work center	OPER 9149	Operation Group	
Maintenance plan	329131		

Operation	Description	Activity Type	Est Hours/ Qty	Act Hours/ Qty
0010	Reciprocating Compressor 1M	ENGR	0.5	

Close



Maintenance Checklist

Reciprocating Compressor 1 monthly

PM Category:	Tasklist:	PRT Document:	Standard Text:
RECPCOMP	T0118227	GT016526	G016526

	Task Description	OK	Not OK	Not Applicable
10	Review compressor variable data if available. Compare against historical and allowable values. Some compressor operating parameters are captured in the PLC / HMI. Where possible, review parameters such as bearing vibrations and temperatures, suction/discharge pressure and temperature. Compare against historical and allowable values. If the compressor has a local control panel then check all parameters for any deviation from the norm or for any alarms. Raise a notification for corrective measures in the event of significant deviation.	☒	☐	☐
20	Record / trend interstage pressures and temperatures for multiple stage units (if applicable). A change in interstage pressures or rise in temperatures can be an indication of valve malfunction, ring bypassing, or unloader malfunction.	☒	☐	☐
30	Record and trend suction and discharge valve temperatures (infrared gun or RTDs if equipped). 35% of all reciprocating compressor unscheduled shutdowns are due to valves so correct valve maintenance and planning for valve maintenance is essential. Valve bypassing due to failure of springs, plates, poppet's, etc. will cause higher valve temperature due to gas recirculation. High valve temperatures indicate a valve failure. Create a notification for valve replacement.	☒	☐	☐
40	Check machine train for loose/missing bolts and cracked foundations. Foundation deterioration is very serious and can lead to compressor failure due to increased piping stresses, distortion of casing and loss of internal machine clearances. Minor looseness on reciprocating machine frames or components can quickly deteriorate and result in failures of fasteners, mechanical impact of fixed components and/or fatigue cracking or ultimate failure. Visually inspect holding down bolts and foundation shim/shim packs. Place hands on the lower corners of the frame and feel for any signs of movement. Any deficiencies must have a corrective maintenance notification created. Any oil leaks must be mitigated and then corrected when possible.	☒	☐	☐
50	Check all pipework, pulsation vessels and coolers for damage, corrosion, and mechanical integrity. Check for excessive vibration, cracking, and looseness of any component. Tightness of compressor cases and compressor distance pieces, cylinders, and pulsation bottles is important as any looseness can lead to stress on bolting and cracking flanges, pipework and large cast components. In addition, pulsation in bottles or pipework can adversely affect the smooth operation of the valves resulting in machine inefficiencies.	☒	☐	☐



60	If the machine is fitted with valve unloaders or cylinder clearance unloaders then ensure that no leaks exist and that they are functioning correctly. Valve unloaders function by forcing open the valve seat such that compressed gas is passed back into the suction as well as the discharge. As indicated they unload the machine reducing power consumption and production. Cylinder unloaders function by changing the volume clearance in the cylinder. Cylinder unloaders do something similar but have greater volume control. Unloaders can be manually actuated or use actuators. Ensure that the valves move / function and that no leaks exist. Ensure that the loader is in the position required. When the machine is loaded, no air pressure is placed on the unloader and no air should exist in the tubing. If possible, remove a dead-end tubing connection to the unloader and check for gas. If an unloader solenoid valve or diaphragm is leaking, then air, CO2 or ammonia will be detected in the tubing.	☒	☐	☐
70	Check for loose/missing covers and guards. Rectify as required. Guards and covers for personnel protection must remain securely in place. Any deficiencies can result in increased risk to safety.	☒	☐	☐
80	Check for unusual noise or vibrations on the complete machine train. If possible, place hands on machine to detect any unusual vibrations or pulsations. It is possible to have noise and vibration around the compressor that is not detected by the machinery protection system. Investigate any abnormal noises or vibrations for the source. Serious compressor problems have been detected by technicians with a good ear or feel for audible changes in the machine.	☒	☐	☐
90	Listen for any sign of noise / knocking from the cylinder heads. There can be tight clearances between the pistons and the cylinder head, especially if the machine is fitted with unloaders. Listen for any unusual signs of knocking which might indicate a loose piston, a foreign object inside the cylinder (ie damaged valve parts) or the pistons are hitting the cylinder heads	☒	☐	☐
100	Inspect distance piece for evidence of oil leakage past oil scrapers, excessive gas packing leaks, and piston rod surface condition (where possible). The distance piece is a structural member connecting the cylinder to the compressor frame. Any process gas leakage past the seals is typically vented at the distance piece. Gas packing leaks should be small but must be monitored. Any increase in leakage indicates gas wiper seal wear. Oil scrapers are designed to prevent oil migration to the process gas and again, any leak should be negligible. Some compressors have a drain valve located underneath the distance piece. Open and check for presence of any oil. Measure and record any oil drained out. Significant amounts of oil suggest that the oil scrapers may need replacing. Any carryover must be investigated. The piston rod surface should be clean and undamaged. Any damage to the rod will increase oil and gas leakage. Rod damage also may indicate wear on the piston rider bands.	☒	☐	☐



110	Visually inspect cross heads if possible (where applicable). This is generally applicable to horizontally opposed compressors. Look for any obvious signs of wear on the cross head or bearing pad. Listen for any clunking noises which may indicate that something is loose.	☒	☐	☐
120	Check, record, and trend rod drop indication values (if equipped). Rod drop indicators measure the position between the piston rod and the cylinder surface. Any changes in measurement indicate wear in the rings and / or rider bands. Rod drop indicators, if fitted with a trip circuit, may also provide protection against running the piston into the cylinder in the event of a compressor trip.	☒	☐	☐
130	Check for proper distance piece purge flow (if equipped). Distance piece purges are typical with compression of hydrocarbon gases, oxidizers, toxic gases, or others that may pose risk if vented to atmosphere or mixed with oil in the motion works of the compressor.	☒	☐	☐
140	Check cooling water system for leaks. Cooling water volume flow and quality is critical to the efficiency of the machine. Visually check to ensure that all cylinders, coolers etc. receive water. Check sight glasses and ensure that they are clean. Ensure water quality is maintained, controlled and monitored. If cooling water is supplied by the customer it is still required to be monitored. If unsure, review with the Plant Manager, RBU Support Team, or water treatment engineer.	☒	☐	☐
150	Inspect the lube oil system. Check for correct oil levels in the tank and for leaks. Check all oil filter differential pressures (ΔPs). If any leak exists in the lube oil system then first identify the source of the leak. It must be mitigated and then corrected. Ensure the ΔP gauge is functioning correctly. Note that the absence of a ΔP may indicate a bypassing or failed filter which can result in machine failure. Low ΔP situations must be immediately investigated and corrected. If ΔP starts to rise then switch filters immediately because the contamination rate is exponential and they will fail quickly. Change cartridge as necessary. Note that when changing cartridges on either a single system or dual system all air must be purged. Any loss of oil in the system can result in machine damage.	☒	☐	☐
160	Check lube oil return sight glass for oil colour/flow/excessive gas entrapment (if equipped). Degradation of oil can be an indicator of machine wear or contamination from water, thermal breakdown, etc.	☒	☐	☐
170	Check oil flow, pressure, and temperature are within limits. Review process data trending where available.	☒	☐	☐



180	Check operation of lubricator system (if applicable). Cylinders with lubrication rely on drip lubricators to regulate oil flow via drip rate for proper lubrication. Insufficient lubrication will lead to greater ring wear. Over lubrication can lead to valve failures and carry over to downstream equipment.	☒	☐	☐
190	Check water return sight glasses for evidence of gas bubbles. Gas bubbles are an indication of leakage in intercoolers or head gaskets.	☒	☐	☐
200	Check all bearings (motor and compressor) for abnormal temperature (if equipped). Many machines are fitted with bearing temperature indicators. If not and the plant has a thermographic gun the temperatures should be taken and recorded. Compare to historical values and proximity to alarm setpoints. It is difficult to generalize on bearing temperatures for plain bearings but typically if it is not possible to put a hand on a bearing surface for ten seconds then the temperatures are high and should be investigated. A rule of thumb is that 90C (195F) is acceptable, 100C (212F) a cause for concern, and 115C (240F) a potential problem.	☒	☐	☐
210	Check all relief devices are free from obstruction and ice, and are not passing. Check that discharge pipes are securely clamped, drain holes are clear and bird meshes are in place (where required).	☒	☐	☐
220	Check condition of any filters. Change / clean as necessary. On air cooled motors it is essential that air filters are clean. Any restriction in air flow can lead to high internal temperatures adversely impacting the life of the winding insulation. Check manufacturer's specifications manual for filter status. Typically, filters are steel mesh and can be washed and re-inserted as the machine is running.	☒	☐	☐
230	Check motor space heater (anti-condensation) switch is on (if equipped). Motor space heater will typically only come on during motor downtime to prevent moisture accumulation in the motor and the potential for winding failure during restart.	☒	☐	☐
240	Check emergency stops are undamaged and have accidental stopguards fitted. Initiate a corrective maintenance notification as necessary.	☒	☐	☐
250	Check all cabling is securely attached and undamaged, and all terminal boxes, local starter and control panels, are free from damage and corrosion, closed and intact. Any damage or corrosion to terminal boxes, cable glands or conduit can lead to water/moisture ingress that can cause intermittent trips that are difficult to locate. The integrity of terminal boxes and cable glands must be maintained to ensure that the equipment meets the hazardous zone requirements for electrical safety.	☒	☐	☐



260	Check all field instruments (pressure, temperature, flow) are functioning correctly and free from corrosion or vibration, and any housings are secure, closed and watertight. Ensure all trace heating and winterization equipment is functioning correctly. Check all field instruments (pressure, temperature, flow) are functioning correctly and free from corrosion or vibration, and any housings are secure, closed and watertight. Ensure all trace heating and winterization equipment is functioning correctly.	☒	☐	☐

Content source:

Additional Comments:

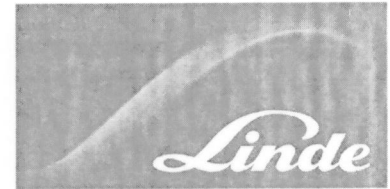
Completed By:	
Name	
Date	
Signature	

Work Order Shop Paper

Order	83936562	Order type	0C20 0C20 Planned Maintenance
Description	RECIPROCATING COMPRESSOR		
Reported By	IP1020260527		
Start date	06.06.2026		
End date	06.06.2026		
Priority	3	0C-Medium Risk	
Status	REL NMAT PRC SETC		
Funct. location	9149-14-40-09	HYCO SYNGAS PROCESSING	
Equipment	TH-HCO1MT-00001187	COMPRESSOR CO2 C1408	
Main work center	OPER 9149	Operation Group	
Maintenance plan	309206		

Operation	Description	Activity Type	Est Hours/ Qty	Act Hours/ Qty
0010	Reciprocating Compressor 1M	ENGR	0.5	

Close



Maintenance Checklist

Reciprocating Compressor 1 monthly

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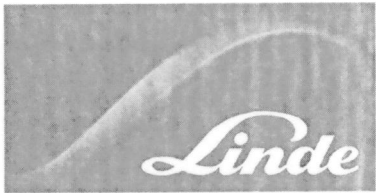
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Content source:

Additional Comments:

Completed By:	
Name	
Date	
Signature	

HyCO Turn Around Oct 2026



Item	Description	Start Date	Finish Date	Time	Oct-26												Nov-26																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			

ภาคผนวก ข-26

การตรวจสอบอุปกรณ์ที่เกี่ยวข้องกับ CO

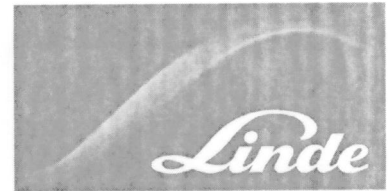
Work Order Shop Paper

Order	83936563	Order type	0C20 0C20 Planned Maintenance
Description	RECIPROCATING COMPRESSOR		
Reported By	IP1020260527		
Start date	06.06.2026		
End date	06.06.2026		
Priority	3	0C-Medium Risk	
Status	REL NMAT PRC SETC		
Funct. location	9149-14-18-10	CO COMPRESSION	
Equipment	TH-HCO1MT-00001777	COMPRESSOR CO C1608	
Main work center	OPER 9149	Operation Group	
Maintenance plan	309208		

Operation	Description	Activity Type	Est Hours/ Qty	Act Hours/ Qty
0010	Reciprocating Compressor 1M	ENGR	0.5	

Dose



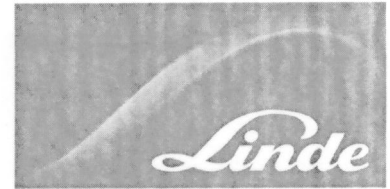


Maintenance Checklist

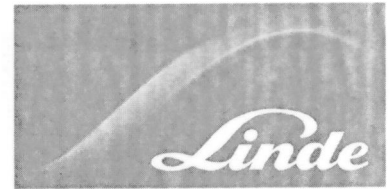
Reciprocating Compressor 1 monthly

PM Category:	Tasklist:	PRT Document:	Standard Text:
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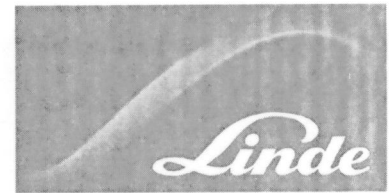
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50	Check all pipework, pulsation vessels and coolers for damage, corrosion, and mechanical integrity. Check for excessive vibration, cracking, and looseness of any component. Tightness of compressor cases and compressor distance pieces, cylinders, and pulsation bottles is important as any looseness can lead to stress on bolting and cracking flanges, pipework and large cast components. In addition, pulsation in bottles or pipework can adversely affect the smooth operation of the valves resulting in machine inefficiencies.	☒	☐	☐



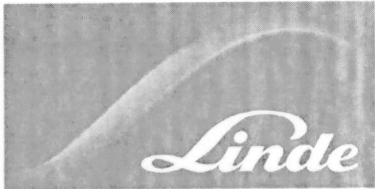
60	If the machine is fitted with valve unloaders or cylinder clearance unloaders then ensure that no leaks exist and that they are functioning correctly. Valve unloaders function by forcing open the valve seat such that compressed gas is passed back into the suction as well as the discharge. As indicated they unload the machine reducing power consumption and production. Cylinder unloaders function by changing the volume clearance in the cylinder. Cylinder unloaders do something similar but have greater volume control. Unloaders can be manually actuated or use actuators. Ensure that the valves move / function and that no leaks exist. Ensure that the loader is in the position required. When the machine is loaded, no air pressure is placed on the unloader and no air should exist in the tubing. If possible, remove a dead-end tubing connection to the unloader and check for gas. If an unloader solenoid valve or diaphragm is leaking, then air, CO2 or ammonia will be detected in the tubing.	☒	☐	☐
70	Check for loose/missing covers and guards. Rectify as required. Guards and covers for personnel protection must remain securely in place. Any deficiencies can result in increased risk to safety.	☒	☐	☐
80	Check for unusual noise or vibrations on the complete machine train. If possible, place hands on machine to detect any unusual vibrations or pulsations. It is possible to have noise and vibration around the compressor that is not detected by the machinery protection system. Investigate any abnormal noises or vibrations for the source. Serious compressor problems have been detected by technicians with a good ear or feel for audible changes in the machine.	☒	☐	☐
90	Listen for any sign of noise / knocking from the cylinder heads. There can be tight clearances between the pistons and the cylinder head, especially if the machine is fitted with unloaders. Listen for any unusual signs of knocking which might indicate a loose piston, a foreign object inside the cylinder (ie damaged valve parts) or the pistons are hitting the cylinder heads	☒	☐	☐
100	Inspect distance piece for evidence of oil leakage past oil scrapers, excessive gas packing leaks, and piston rod surface condition (where possible). The distance piece is a structural member connecting the cylinder to the compressor frame. Any process gas leakage past the seals is typically vented at the distance piece. Gas packing leaks should be small but must be monitored. Any increase in leakage indicates gas wiper seal wear. Oil scrapers are designed to prevent oil migration to the process gas and again, any leak should be negligible. Some compressors have a drain valve located underneath the distance piece. Open and check for presence of any oil. Measure and record any oil drained out. Significant amounts of oil suggest that the oil scrapers may need replacing. Any carryover must be investigated. The piston rod surface should be clean and undamaged. Any damage to the rod will increase oil and gas leakage. Rod damage also may indicate wear on the piston rider bands.	☒	☐	☐



110	Visually inspect cross heads if possible (where applicable). This is generally applicable to horizontally opposed compressors. Look for any obvious signs of wear on the cross head or bearing pad. Listen for any clunking noises which may indicate that something is loose.	☒	☐	☐
120	Check, record, and trend rod drop indication values (if equipped). Rod drop indicators measure the position between the piston rod and the cylinder surface. Any changes in measurement indicate wear in the rings and / or rider bands. Rod drop indicators, if fitted with a trip circuit, may also provide protection against running the piston into the cylinder in the event of a compressor trip.	☒	☐	☐
130	Check for proper distance piece purge flow (if equipped). Distance piece purges are typical with compression of hydrocarbon gases, oxidizers, toxic gases, or others that may pose risk if vented to atmosphere or mixed with oil in the motion works of the compressor.	☒	☐	☐
140	Check cooling water system for leaks. Cooling water volume flow and quality is critical to the efficiency of the machine. Visually check to ensure that all cylinders, coolers etc. receive water. Check sight glasses and ensure that they are clean. Ensure water quality is maintained, controlled and monitored. If cooling water is supplied by the customer it is still required to be monitored. If unsure, review with the Plant Manager, RBU Support Team, or water treatment engineer.	☒	☐	☐
150	Inspect the lube oil system. Check for correct oil levels in the tank and for leaks. Check all oil filter differential pressures (ΔPs). If any leak exists in the lube oil system then first identify the source of the leak. It must be mitigated and then corrected. Ensure the ΔP gauge is functioning correctly. Note that the absence of a ΔP may indicate a bypassing or failed filter which can result in machine failure. Low ΔP situations must be immediately investigated and corrected. If ΔP starts to rise then switch filters immediately because the contamination rate is exponential and they will fail quickly. Change cartridge as necessary. Note that when changing cartridges on either a single system or dual system all air must be purged. Any loss of oil in the system can result in machine damage.	☒	☐	☐
160	Check lube oil return sight glass for oil colour/flow/excessive gas entrapment (if equipped). Degradation of oil can be an indicator of machine wear or contamination from water, thermal breakdown, etc.	☒	☐	☐
170	Check oil flow, pressure, and temperature are within limits. Review process data trending where available.	☒	☐	☐



180	Check operation of lubricator system (if applicable). Cylinders with lubrication rely on drip lubricators to regulate oil flow via drip rate for proper lubrication. Insufficient lubrication will lead to greater ring wear. Over lubrication can lead to valve failures and carry over to downstream equipment.	☒	☐	☐
190	Check water return sight glasses for evidence of gas bubbles. Gas bubbles are an indication of leakage in intercoolers or head gaskets.	☒	☐	☐
200	Check all bearings (motor and compressor) for abnormal temperature (if equipped). Many machines are fitted with bearing temperature indicators. If not and the plant has a thermographic gun the temperatures should be taken and recorded. Compare to historical values and proximity to alarm setpoints. It is difficult to generalize on bearing temperatures for plain bearings but typically if it is not possible to put a hand on a bearing surface for ten seconds then the temperatures are high and should be investigated. A rule of thumb is that 90C (195F) is acceptable, 100C (212F) a cause for concern, and 115C (240F) a potential problem.	☒	☐	☐
210	Check all relief devices are free from obstruction and ice, and are not passing. Check that discharge pipes are securely clamped, drain holes are clear and bird meshes are in place (where required).	☒	☐	☐
220	Check condition of any filters. Change / clean as necessary. On air cooled motors it is essential that air filters are clean. Any restriction in air flow can lead to high internal temperatures adversely impacting the life of the winding insulation. Check manufacturer's specifications manual for filter status. Typically, filters are steel mesh and can be washed and re-inserted as the machine is running.	☒	☐	☐
230	Check motor space heater (anti-condensation) switch is on (if equipped). Motor space heater will typically only come on during motor downtime to prevent moisture accumulation in the motor and the potential for winding failure during restart.	☒	☐	☐
240	Check emergency stops are undamaged and have accidental stopguards fitted. Initiate a corrective maintenance notification as necessary.	☒	☐	☐
250	Check all cabling is securely attached and undamaged, and all terminal boxes, local starter and control panels, are free from damage and corrosion, closed and intact. Any damage or corrosion to terminal boxes, cable glands or conduit can lead to water/moisture ingress that can cause intermittent trips that are difficult to locate. The integrity of terminal boxes and cable glands must be maintained to ensure that the equipment meets the hazardous zone requirements for electrical safety.	☒	☐	☐



260	Check all field instruments (pressure, temperature, flow) are functioning correctly and free from corrosion or vibration, and any housings are secure, closed and watertight. Ensure all trace heating and winterization equipment is functioning correctly. Check all field instruments (pressure, temperature, flow) are functioning correctly and free from corrosion or vibration, and any housings are secure, closed and watertight. Ensure all trace heating and winterization equipment is functioning correctly.	☒	☐	☐

Content source:

Additional Comments:

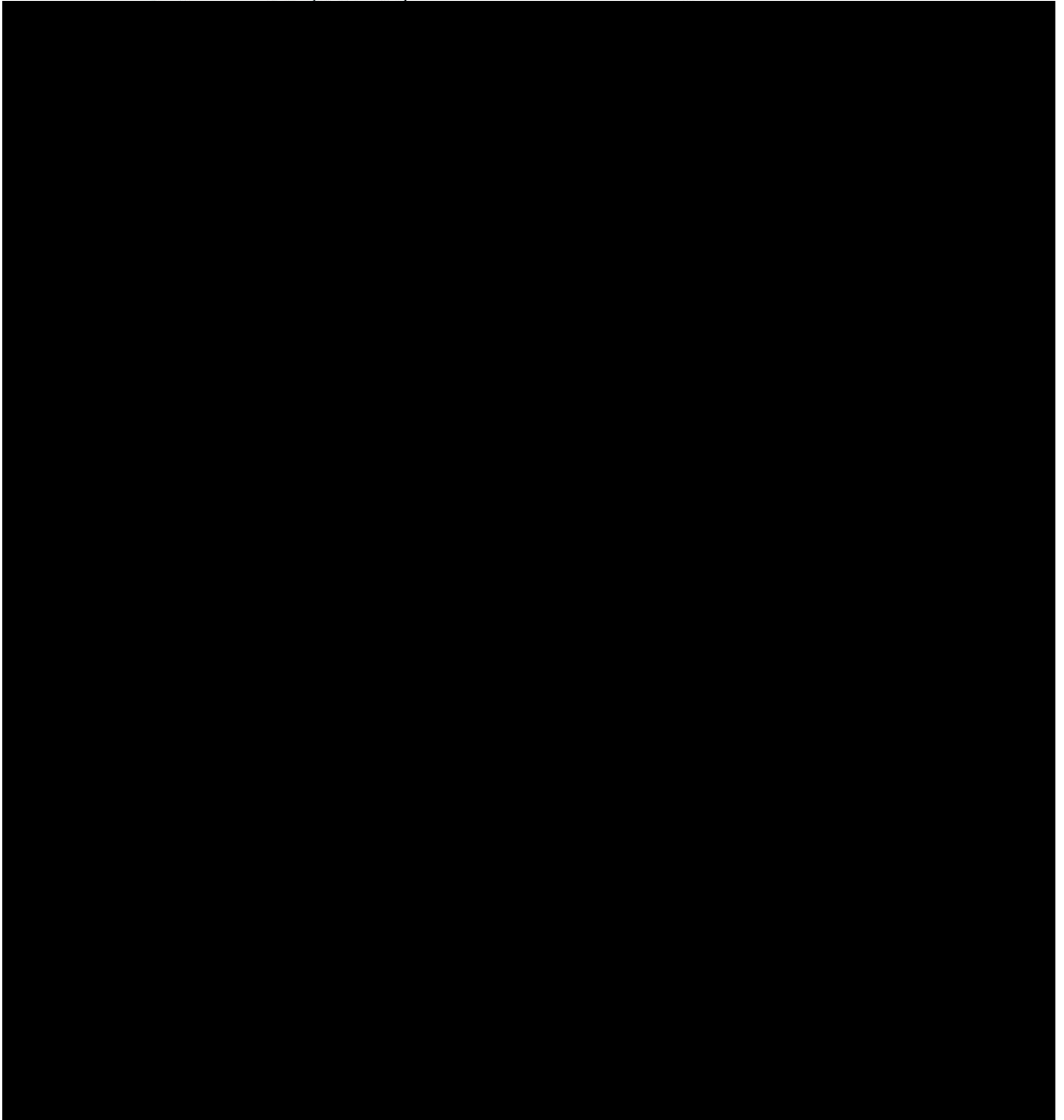
Completed By:	
Name	
Date	
Signature	

ภาคผนวก ข-27

เอกสารรองรับความปลอดภัยของไฟฟ้า

บันทึกผลการตรวจสอบและรับรองระบบไฟฟ้าและบริษัทไฟฟ้า

กรมสวัสดิการและคุ้มครองแรงงาน กระทรวงแรงงาน



หมายเหตุ วิศวกรผู้ตรวจสอบ หมายถึง วิศวกรตามคำนิยาม "วิศวกร" ในกฎกระทรวงกำหนดมาตรฐานในการบริหาร จัดการ และดำเนินการด้านความปลอดภัย อาชีวอนามัย และสภาพแวดล้อมในการทำงานเกี่ยวกับไฟฟ้า พ.ศ. ๒๕๕๘ เป็น ผู้ตรวจสอบและรับรองระบบไฟฟ้าและบริษัทฯไฟฟ้าจนกว่าจะได้มีบุคคลที่ขึ้นทะเบียนตามมาตรา ๙ หรือนิติบุคคล ที่ได้รับใบอนุญาตตามมาตรา ๑๑ แห่งพระราชบัญญัติความปลอดภัย อาชีวอนามัย และสภาพแวดล้อมในการทำงาน พ.ศ. ๒๕๕๔

๑. ข้อมูลทั่วไป

- ระบบไฟฟ้าที่ใช้ในสถานประกอบการ : _____ 6.600/400/230 _____ โวลต์ _____ 3 _____ เฟส _____ 4 _____ สาย
- ขนาดเครื่องวัดหน่วยไฟฟ้า _____ - _____ แอมแปร์ _____ กิโลวัตต์ _____ 3 _____ เฟส _____ 3 _____ สาย
หมายเลขเครื่องวัด _____.
- ปริมาณการใช้พลังงานไฟฟ้าสูงสุดในรอบ ๑๒ เดือน ที่ผ่านมา _____ กิโลวัตต์
- หม้อแปลงกำลัง จำนวน _____ 2 _____ เครื่อง รวม _____ 2,500 _____ กิโลเอ
- เครื่องกำเนิดไฟฟ้า/เครื่องกำเนิดไฟฟ้าสำรอง จำนวน _____ - _____ เครื่อง รวม _____ - _____ กิโลเอ
- ผู้รับผิดชอบระบบไฟฟ้า ๑. _____ ตำแหน่ง _____
๒. _____ ตำแหน่ง _____.
- แบบการติดตั้งระบบไฟฟ้าจริง (As built Drawing)
☒ มี ☐ ไม่มี เหตุผล.....

๒. รายการตรวจสอบ

อุปกรณ์	รายการตรวจสอบ	ใช้ได้	ควรปรับปรุง	ต้องแก้ไข	คำแนะนำ/ความเห็น
๒.๑ แรงสูง	๒.๑.๑ สายอากาศ : - สภาพเสา - การประกอบอุปกรณ์หัวเสา - สายยึดโยง (Guy Wire) - การพาดสาย (สภาพสาย ระยะหย่อน) - ระยะห่างของสายกับอาคาร สิ่งก่อสร้าง หรือต้นไม้ - การติดตั้งล่อฟ้าและสภาพ - สภาพของจุดต่อสาย - การต่อลงดินและสภาพ	N/A N/A N/A N/A N/A N/A N/A N/A			
	๒.๑.๒ การติดตั้ง/เครื่องปลดวงจรต้นทาง (ส่วนของผู้ใช้ไฟ): - ครอบฟิวส์คัทเอ้าท์ - สวิตช์ตัดตอน (Disconnecting Switch) - RMU - MCC - อื่น ๆVCB.....	✓			
	๒.๑.๓ อื่นๆ :	-			

อุปกรณ์	รายการตรวจสอบ	ใช้ได้	ควรปรับปรุง	ต้องแก้ไข	คำแนะนำ/ความเห็น
๒.๒ หม้อแปลง	๒.๒.๑ หม้อแปลงลูกที่ 142 ขนาด 1,250 kVA แรงดัน 6600/400/230 V Impedance Voltage 6% ชนิด ☒ Oil ☐ Dry ☐ อื่น ๆ	✓			
	๒.๒.๒ การติดตั้ง ☐ นักร้าน ☐ แบบแขวน ☒ ลานหม้อแปลง ☐ ในห้องหม้อแปลง ☐ อื่น ๆ	✓			
	๒.๒.๓ เครื่องป้องกันกระแสเกินด้านไฟเข้า แบบ VCB พิกัดกระแส 630 A	✓			
	๒.๒.๔ การต่อสายแรงต่ำและแรงสูงที่หม้อแปลง	✓			
	๒.๒.๕ การติดตั้งล่อฟ้าแรงสูง (Lightning Arrester)	N/A			
	๒.๒.๖ การติดตั้งครอบไฟสัอาท์	N/A			
	๒.๒.๗ การป้องกันการสัมผัสส่วนที่มีไฟฟ้า	✓			
	๒.๒.๘ สายดินกับตัวถังหม้อแปลงและล่อฟ้าแรงสูง	✓			

อุปกรณ์	รายการตรวจสอบ	ใช้ได้	ควรปรับปรุง	ต้องแก้ไข	คำแนะนำ/ความเห็น
	๒.๒.๕ สายดินของหม้อแปลง - สภาพเหล็กและจุดต่อ - สายต่อหลักดิน ชนิด <u>TUV</u> ขนาด <u>120</u> mm ² - สภาพสายดินและจุดต่อ	✓ ✓ ✓			
	๒.๒.๑๐ สภาพภายนอกหม้อแปลง - สารดูดความชื้น - สภาพบุชชิ่ง - ปริมาณและการรั่วซึมของน้ำมันหม้อแปลง - อุณหภูมิหม้อแปลง	✓ ✓ ✓ ✓			
	๒.๒.๑๑ สภาพแวดล้อมหม้อแปลง - การระบายอากาศ - ความชื้น - สภาพรั้วกัน ลานและการต่อลงดิน - สภาพทั่วไป	✓ ✓ ✓ ✓			
	๒.๒.๑๒ อื่น ๆ :	-			

อุปกรณ์	รายการตรวจสอบ	ใช้ได้	ควรปรับปรุง	ต้องแก้ไข	คำแนะนำ/ความเห็น
๒.๑ ตู้เมนสวิตช์	๒.๑.๑ ตู้เมนสวิตช์ที่ 1 (PMCC-B) รับจากหม้อแปลงที่ 142 ☐ ติดตั้งภายนอกอาคาร ☒ ติดตั้งภายในอาคาร ☐ อื่น ๆ - สภาพทั่วไป ✓ - จุดต่อสายและจุดต่อบัสบาร์ ✓ - ที่ว่างเพื่อปฏิบัติงานที่จุดติดตั้งตู้เมนสวิตช์ ✓ - แสงสว่างเหนือที่ว่างเพื่อปฏิบัติงาน ✓ - การต่อฝาก ✓ - การป้องกันส่วนสัมผัสที่มีไฟฟ้า ✓ - ป้ายชื่อและแผนภาพเส้นเดี่ยว (Single Line Diagram) ของเมนสวิตช์ ✓				
	๒.๑.๒ เครื่องป้องกันกระแสเกิน ชนิด _____ ACB IC _____ 75 _____ kA แรงดัน _____ 415 _____ V พิกัดกระแส AT _____ 2,000 _____ A AF _____ - _____ A	✓			
	๒.๑.๓ สายดินของแผงสวิตช์ - สภาพหลักดินและจุดต่อ ✓ - สายต่อหลักดิน ✓ ชนิด _____ THW ขนาด _____ 95,150 _____ mm ² - สภาพสายดินและจุดต่อ ✓				
	๒.๑.๔ ฉนวนหุ้มของอุปกรณ์ ☒ ปกติ ☐ ผิดปกติ	✓			

อุปกรณ์	รายการตรวจสอบ	ใช้ได้	ควรปรับปรุง	ต้องแก้ไข	คำแนะนำ/ความเห็น
	๒.๓.๕ อื่น ๆ :	-			
๒.๔ แรงต่ำภายในอาคาร	๒.๔.๑.๑ วงจรเมน (Main Circuit) 400 kV ๒.๔.๑.๑.๑ สายเข้าเมนสวิตช์ - สายเฟส ชนิด <u>CV</u> ขนาด <u>240</u> mm ² - สายนิวทรัล ชนิด <u>CV</u> ขนาด <u>240</u> mm ² เดินใน ☐ ท่อร้อยสาย (Conduit) ☐ รังเดินสาย (Wire Way) ☒ รังเคเบิล (Cable Tray) แบบ.....Ladder..... ☐ ลูกถ้วยราวยึดสาย (Rack) ☐ อื่น ๆ.....	✓ ✓ ✓			
	๒.๔.๑.๑.๒ รังเดินสายและรังเคเบิล - สภาพการติดตั้งและใช้งาน - ความต่อเนื่องทางไฟฟ้า การต่อฝากและการต่อลงดิน	✓ ✓			
	๒.๔.๑.๑.๓ สภาพฉนวนสายไฟ	✓			
	๒.๔.๑.๑.๔ สภาพจุดต่อของสาย	✓			
	๒.๔.๑.๑.๕ การป้องกันความร้อนจากการเหนี่ยวนำ	✓			

อุปกรณ์	รายการตรวจสอบ	ใช้ได้	ควรปรับปรุง	ต้องแก้ไข	คำแนะนำ/ความเห็น
	๒.๔.๑.๑.๖ อุณหภูมิของอุปกรณ์ ☒ ปกติ ☐ ผิดปกติ	✓			
	๒.๔.๑.๑.๗ อื่น ๆ :	-			
	๒.๔.๒ แผงย่อยที่ LC-01 ตำแหน่งหรือพื้นที่ติดตั้ง Switchgear room รับจากตู้เมนสวิตช์ที่ MDB-T ๒.๔.๒.๑ กาศติดตั้ง ☐ ภายนอกอาคาร ☒ ภายในอาคาร ☐ อื่น ๆ - สภาพทั่วไป - จุดต่อสาย และจุดต่อบัสบาร์ - ที่ว่างเพื่อปฏิบัติงานที่จุดติดตั้งแผงย่อย - แสงสว่างเหนือที่ว่างเพื่อปฏิบัติงาน - การต่อฝาก - การป้องกันส่วนสัมผัสที่มีไฟฟ้า	✓ ✓ ✓ ✓ ✓ ✓ ✓			
	๒.๔.๒.๒ เครื่องป้องกันกระแสเกินของแผงย่อย ชนิด MCCB IC 25 kA แรงดัน 415 V พิกัดกระแส AT 80 A AF 100 A	✓			

อุปกรณ์	รายการตรวจสอบ	ใช้ได้	ควรปรับปรุง	ต้องแก้ไข	คำแนะนำ/ความเห็น
	๒.๔.๒.๓ สายดินของแผงย่อย - สายดิน ชนิด THW ขนาด 16 mm ² - สภาพสายดินและจุดต่อ	✓ ✓			
	๒.๔.๒.๔ อุณหภูมิของอุปกรณ์ ● ปกติ ○ ผิดปกติ	✓			
	๒.๔.๒.๕ อื่น ๆ :	-			
๒.๕ บริษัทจำหน่ายไฟฟ้า ไฟฟ้า	๒.๕.๑ ซื้อมอเตอร์ไฟฟ้า CM1608 (COMPRESSOR)	✓			
	๒.๕.๑ การติดตั้ง				
	๒.๕.๒ สภาพภายนอก	✓			
	๒.๕.๓ อื่น ๆ :	-			

หมายเหตุ หากมีบริษัทจำหน่ายไฟฟ้าอื่นที่จำเป็นต้องตรวจสอบเพิ่มเติม (เช่น มอเตอร์ไฟฟ้า ตู้เย็นหรือเครื่องทำน้ำดื่ม

เครื่องทำความร้อน เครื่องเชื่อมไฟฟ้า เป็น) ให้จัดทำเป็นเอกสารแนบ

๓.สรุปผลการตรวจสอบระบบไฟฟ้าและบริษัทไฟฟ้า

- ☒ ใช้งานได้ ทั้งนี้ ระบบไฟฟ้าและบริษัทไฟฟ้าต้องมีการบำรุงรักษาอย่างถูกต้องวิธีและตามหลักวิชาการด้านวิศวกรรมศาสตร์
- ☐ ใช้งานได้ แต่ต้องแก้ไขตามรายงานการตรวจสอบภายใน.....วัน

ความเห็นและข้อเสนอแนะ

- ทำ Preventive Maintenance ทุกๆ 5 ปี ตามนโยบายของบริษัท
- เก็บตัวอย่างน้ำมันและนำไปตรวจสอบและระดับการปนเปื้อนของน้ำมันหม้อแปลง ทุกๆปี
- ทดสอบค่า Grounding System ทุกๆ 2 ปี

