ELECTRICAL SAFETY INSPECTION REPORT

UNICORN SWEATERS LTD (EXTENSION BUILDING)

Gorat, Navana Village, Ashulia, Dhaka

GPS Coordinates: 23.946031, 90.301828

Factory List: Unicorn Sweaters Ltd, ID: 23549
Unicorn Sweaters Ltd (Extension Building)

Author(s) : Md Khitabul Islam
Reviewed by : Banna Kasemi
Approved by : Banna Kasemi

Inspected on: **October 19, 2021**

RSC RMG SUSTAINABILITY COUNCIL

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Address: Gorat, Navana Village, Ashulia, Dhaka

1. INTRODUCTION

The Factory was surveyed for electrical safety by RMG Sustainability Council. The purpose of the survey was to identify significant electrical safety issues and to provide recommendations for remediation based on applicable standards specified by the RSC.

Electrical Safety Audit is a methodical approach to evaluate potential electrical hazards and to recommend suggestions for improvement. The scope of this initial electrical safety inspection was limited to the review and identification of major electrical safety issues. The inspection did not include identification of minor deficiencies, which would be further dealt with as part of follow-up inspections.

2. LIMITATIONS

The information in this electrical safety inspection report was obtained during a visit to the facility and during discussion with local factory management. Services performed by the auditors are conducted in a manner consistent with that level of care and skill generally exercised by members of the engineering and auditing profession. However, an effort has made to discover all meaningful areas under the stipulated time available.

In evaluating subject site, Inspector relies in good faith on information provided by factory management or employees. The Inspector assumes that the information provided is factual, accurate and accepts no responsibility for any deficiency, misstatement or inaccuracies contained in this report as a result of omission or misrepresentation of any person interviewed or contacted.

The findings and recommendations in this report are not intended to imply, guarantee, ensure or warrant compliance with any government regulations. Additionally, the results do not imply in any way that compliance with the findings or recommendations as stated in this report will eliminate all risks or exposures not referred to in this report do not exist. Compliance with the findings and recommendations stated in this report does not relieve the factory owner from obligation to comply with specific project requirements, industry standards, or the provisions of any local government regulations.

3. DEFINITION

3.1. TIME FRAME

The amount of time being allocated based on the remediation work volume of the electrical issues considering the feasibility and ideal status of materials, capital and working condition. Criticality and priority level of the issue is not taken into consideration. It is bound only for the particular finding unless mentioned ‘typical’, shall include the whole typical findings.

3.2. PRIORITY LEVEL

3.2.1. Electrical issues related to code violation and/or non-conformity with codes possessing immediate fire hazard, direct threat to human safety, shall be considered as **P1** Level of priority. The execution of remediation works shall commence immediately without compromising with any other issues and must strictly complete within the allocated remediation time frame. It shall include only the critical issues

3.2.2. Electrical issues related to code violation and/or non-conformity with codes, protection of electrical switchgears and equipment, spatial arrangement and location of switchgears and equipment, design and drawings, shall be considered as **P2** Level of priority. The execution of remediation work of **P2** shall commence along with or soon after the **P1** level remediation work has commenced. It shall include only the moderately-critical issues.

3.2.3. Electrical issues related to violation of code and/or non-conformity with codes, workmanship of operation and maintenance and obsolete technology of electrical system, shall be considered as **P3** Level of priority. The execution of remediation work of **P3** shall commence along with or soon after the **P2** level remediation work has commenced. It shall include only the non-critical issues.

3.2.4. It doesn't take into consideration the remediation time frame and feasibility of remediation. It doesn't take into consideration the capital, materials and working environment.

4. GENERAL BUILDING INFORMATION

1. Factory Name	**:**	Unicorn Sweaters Ltd (Extension Building)
2. Factory Address	**:**	Gorat, Navana Village, Ashulia, Dhaka
3. ID	**:**	24248
4. Inspection participates	**:**	Md. Sohagh Hosain Deputy Manager (HR, Admin & Compliance) Cell No: +8801729996187 Email: compliance@unicornsweater.com Alfazuddin Ahmed Executive Director Cell No: +8801711610324 Email: alfaz@sterlinggroup.com.bd Engr. Touhidul Islam Manager (Elecgtrical) Cell No: +8801722016325 Email: touhid@sterlinggroup.cpm.bd

5. BUILDING DATA

A. General

Unicorn Sweaters Ltd (Extension Building) is established in its one main production building (Building-1,G+5) with Boiler room, ETP, ETP Control room, Guard room-3. As reported by the Factory Management, Building-1 construction was started at September 2017 and the production began in around July 2019.

The floor wise utilization of the buildings are as detailed below:

Building-1 (71382 sft):

Ground Floor	:	Finishing Section, Finished Goods Store
1st Floor	:	Knitting Section
2nd Floor	:	Knitting Section
3rd Floor	:	Linking Section
4th Floor	:	Knitting Section
5th Floor	:	Sampling Section, Worker Dinning Area, Prayer Room, Office Area

Boiler Room (1056 sft):

Ground Floor	:	Boiler

ETP (1388 sft):

Ground Floor	:	Mixing Tank
1st Floor	:	Filtering

ETP Control Room (487 sft):

Ground Floor	:	ETP Control Room, Lab

Guard Room-3 (274 sft):

Ground Floor	:	Fire Control Room, Security Room

FLOOR LAYOUT INFORMATION

The six storied (G+5) i.e. factory building is 76 feet tall and has a total floor area of approx. 71382sqft. Figure 1 shows the 5th floor layout plan of the factory:

***Figure 1*:** Floor layout plan

ELECTRICAL SYSTEM & UTILITY INSTALLATION INFORMATION

Unicorn Sweater Ltd (Extension Building) premise is connected to grid (REB) supply, the connection is supplied from Substation of Unicorn Sweaters Ltd (ID: 23549) which is already covered by RSC inspection previously.

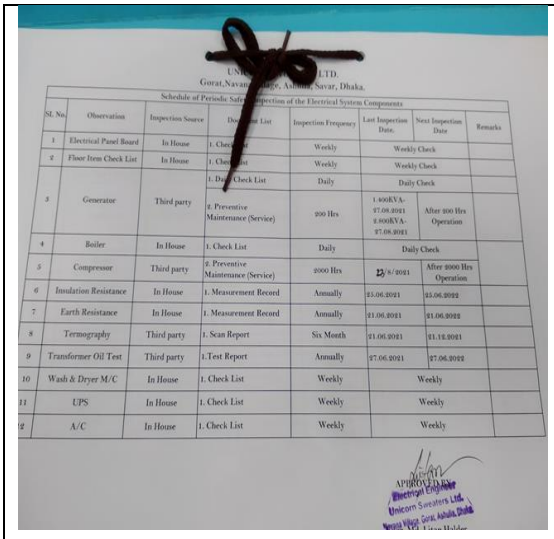
Again, factory has installed a new Generator (1x800kVA, Tempest) and a new Boiler (1500kg/hrs.) which is under the scope of this inspection.

Hence, this inspection has not covered Utility building, LT panel except the above mentioned generator dedicated for this ID.
The whole utility system including Generator, Transformer and Compressor is shared with previously mentioned factory.

B. ELECTRICAL PRACTICES IN OPERATION AND MAINTENANCE

Maintenance and Operations is done by in-house electrical and maintenance team of the factory. However, the maintenance of major equipment like transformer, generator and boilers are sometimes outsourced to the service centers.

Inspecting teams were presented with the maintenance programs, logs and maintenance schedule of the factory's electrical facilities; Some typical practices are shown below.

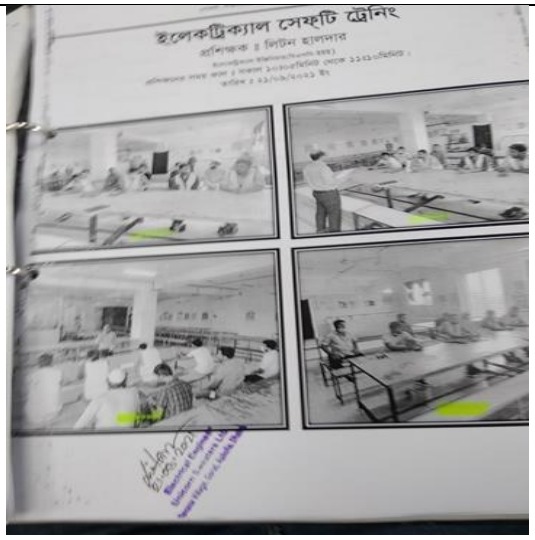


Schedule of Periodic Safety Inspection of the Electrical System Components

Sl. No.	Observation	Inspection Source	Document List	Inspection Frequency	Last Inspection Date	Next Inspection Date	Remarks
1	Electrical Panel Board	In House	1. Check List	Weekly	Weekly Check		
2	Floor Item Check List	In House	1. Check List	Weekly	Weekly Check		
3	Generator	Third party	1. Daily Check List	Daily	Daily Check		
			2. Preventive Maintenance (Service)	200 Hrs	1.400KVA-27.08.2021 2.800KVA-27.08.2021	After 200 Hrs Operation	
4	Boiler	In House	1. Check List	Daily	Daily Check		
5	Compressor	Third party	2. Preventive Maintenance (Service)	2000 Hrs	22/8/2021	After 2000 Hrs Operation	
6	Insulation Resistance	In House	1. Measurement Record	Annually	25.06.2021	25.06.2022	
7	Earth Resistance	In House	1. Measurement Record	Annually	21.06.2021	21.06.2022	
8	Termography	Third party	1. Scan Report	Six Month	21.06.2021	21.12.2021	
9	Transformer Oil Test	Third party	1.Test Report	Annually	27.06.2021	27.06.2022	
10	Wash & Dryer M/C	In House	1. Check List	Weekly	Weekly		
11	UPS	In House	1. Check List	Weekly	Weekly		
12	A/C	In House	1. Check List	Weekly	Weekly		

APPROVED
Electrical Engineer
Unicorn Sweaters Ltd.

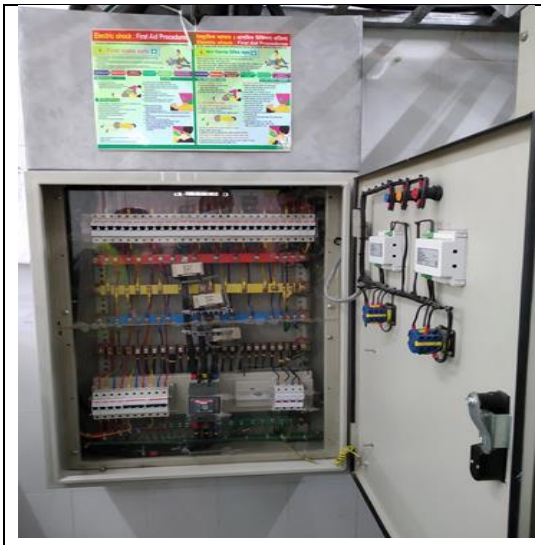
Maintenance schedule program



Electrical Safety Training program

Electrical wiring duct with LED tube light shed.

Typical cable entry system into electrical panel in production floors.

	
Typical electrical distribution panel.	Cable entry is done through cable gland with base plates.
	
Typical electrical distribution panel.	Generator (1x800kVA)

6. LIGHTNING PROTECTION RISK ASSESSMENT

Calculation of Risk Index Factor (BNBC 2006) for Main Building			
Index A	**Use of Structure**	Small and medium size factories, workshops and laboratories	6
Index B	**Type of Construction**	Brick, plain concrete, or masonry with nonmetal roof	4
Index C	**Contents or Consequential Effects**	Industrial and agricultural buildings with specially susceptible contents	5
Index D	**Degree of Isolation**	Structure located in an area with a few other structures or trees of similar height	5
Index E	**Type of Terrain**	Flat terrain at any level	2
Index F	**Height of Structure**	18 – 24 m	8
Index G	**Lightning Prevalence**	Over 21	21
	Total Risk Index of the building		51
Requirement of installing LPS		Yes	

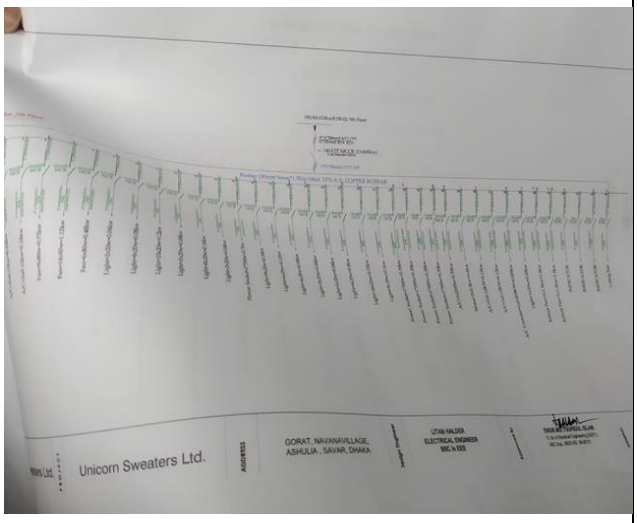
It is required to calculate risk index for all structures, design LPS as per standard and install it properly.

7. FINDINGS AND RECOMMENDATIONS

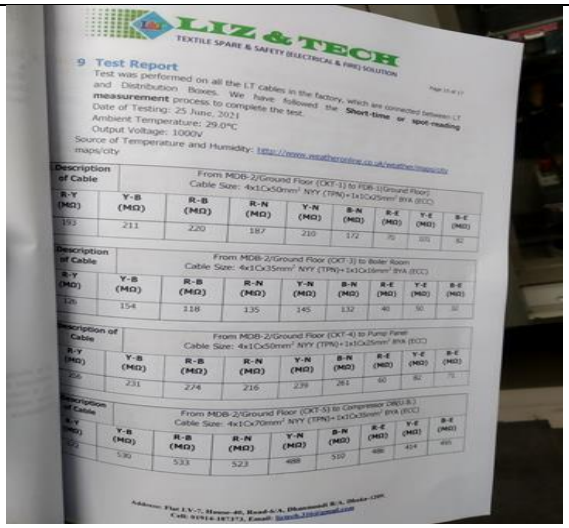
The table below summarizes the major electrical hazards identified during the walk through inspection. Recommendations have been provided to each finding.

The implementation schedule shall be developed by the factory to remediate each of the findings. The specific timing of improvements, including any requested extensions due to design / installation constraints, shall be submitted to the RSC for an approval.

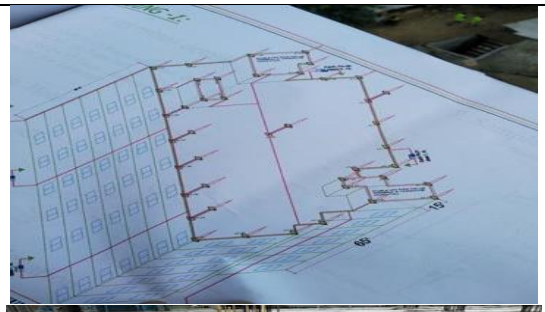
FINDING NO:	**E - 1**
CATEGORY:	**DOCUMENTATION**
FINDING: Field information has no/less reflection in existing SLD	
RECOMMENDATION: Draw as built electrical SLD mentioning all required information by qualified engineer and get it reviewed by Accord. Electrical SLD must be updated properly when electrical system is modified.	
PRIORITY:	**P2**
REMEDIATION TIME FRAME:	**3 MONTHS**



FINDING NO:	**E - 2**
CATEGORY:	**TESTING & PERIODIC MAINTENANCE**
FINDING: Insulation resistance test did not cover all system.	
RECOMMENDATION: Insulation resistance test of all the cables (you can avoid less than 25 sq.mm) must be performed once in every 2 years' cycle and recorded (this must require a complete power shut off).	
PRIORITY:	**P2**
REMEDIATION TIME FRAME:	**1 MONTH**



FINDING NO:	**E - 3**
CATEGORY:	**LIGHTNING PROTECTION SYSTEM**
FINDING: i. LPS drawing and installation needs modification. ii) Bonding not done properly.	
RECOMMENDATION: Factory has to redesign Lightning Protection system (LPS) for the whole premises (where necessary and the Risk index is more than 40) and install the system with appropriate materials according to the acknowledged standard.	
PRIORITY:	**P2**
REMEDIATION TIME FRAME:	**2 MONTHS**



FINDING NO:	**E - 4**
CATEGORY:	**DOCUMENTATION**
FINDING: No policies for PPE & LOTO (Lock-Out-Tag-Out) are introduced for safety of the personnel during any kind of the personnel during any kind of maintenance work.	
RECOMMENDATION: Need to introduce and implement PPE & LOTO policy with LOTO (Lock-Out-Tag-Out) device instead of any other means to ensure safety of the personnel during any maintenance. Need to keep all records of using LOTO.	
PRIORITY:	**P3**
REMEDIATION TIME FRAME:	**2 MONTHS**

FINDING NO:	**E - 5**
CATEGORY:	**CABLE RACEWAY & TRENCH**
FINDING: Combustible material attached with BBT.	
RECOMMENDATION: BBT must be kept neat and clean; these must be free from combustible material.	
PRIORITY:	**P2**
REMEDIATION TIME FRAME:	**1 MONTH**