

INITIAL ELECTRICAL ASSESSMENT REPORT (EAR)

Factory Name: **MHC Apparels (Pvt.) Ltd.**
Address: **Holding-297/1, Block-B Ward# 4, Vangnahati, Sreepur
Gazipur Dhaka Bangladesh**
Assessor: **Uttaron Technologies**
Date: **19 Aug 2018**



Introduction to the Report

The following report contains a site profile and summary of non-conformities identified during an onsite assessment commissioned by the Alliance for Bangladesh Worker Safety (Alliance) and conducted by a third-party Qualified Assessment Firm (QAF). The assessment was conducted against the Alliance for Bangladesh Worker Safety Assessment Protocols (APs) and Fire Safety and Structural Integrity Standard, which is harmonized with the factory assessment guidelines developed by Bangladesh University of Engineering and Technology (BUET) for the Bangladesh National Tripartite Plan of Action (NTPA). The goal of the Alliance process is to provide clear and practical technical requirements by which Bangladeshi Ready Made Garment (RMG) Factories producing for Alliance members may be consistently and fairly evaluated for fire, structural, and electrical safety in a non-duplicative manner. Each assessment will prompt action plans that will be used by RMG factories to systematically and sustainably improve safety conditions for garment workers. Beyond tracking and reporting on action steps taken in a transparent manner, the Alliance organization and its members will seek to further support factory improvements through technical assistance, training, implementation support for functional Worker Committees, and in some cases financial assistance and wage support for workers if factories are closed for remediation.

The contents of the report do not constitute a guarantee of compliance with the applicable laws, the Alliance Standard or the absolute or continued safety against fire, electrical and/or structural integrity issues that may lead to injury or loss of life. The report is designed to provide a non-exhaustive summary of risk issues, based on a limited sampling and duration of time onsite by the named QAF. Neither the QAF nor the Alliance can certify or guarantee the quality, outcome, or effectiveness of actions taken in response to the report.

For more information and report feedback please go to: www.bangladeshworkersafety.org.





GENERAL INFORMATION

General Information	
Factory Name:	MHC Apparels (Pvt.) Ltd.
Address:	Holding-297/1, Block-B Ward# 4, Vangnahati, Sreepur Gazipur Dhaka Bangladesh
Country:	Bangladesh
Province:	Dhaka
City:	Gazipur
Zip Code:	1704
Audit Duration:	1 Days 0 Hours
Re-Audit:	Re-Audit After 0 Months
Draft Report Date :	12 May 2018
Final Report Date :	17 September 2018
Are all action items from previous assessment complete? :	N/A
Buildings in Complex :	There are 3 buildings in the complex, out of them one is main building and two are ancillary structures as per information given by the owner's representative. In this Initial expansion audit, 6 Storied Garments Building (Building_01) and two ancillary structures [4 Storied Dining Building (Building_02) and 2 Storied Energy Building (Building_03)] have been assessed. Main Building: - 1. 6 Storied Garments Building (Building_01) - This Building is in our scope of audit. Ancillary Building: - 1. 4 Storied Dining Building (Building_02)- This Building is in our scope of audit. 2. 2 Storied Energy Building (Building_03)- This Building is in our scope of audit.
Is the building(s) owned or rented by the Factory?:	Owned
Number of Building Levels (Stories) :	1. Garments Building (Building_01)= Six Storied (G+5), RCC.
Approximate Building Area (SF) :	6 Storied Garments Building (Building_01)= Total area is 188,157 sft. =GF 31,359.5 sft. + 1st Floor 31,359.5 sft. + 2nd Floor 31,359.5 sft. + 3rd Floor 31,359.5 sft. + 4th Floor 31,359.5 sft. + 5th Floor 31,359.5 sft.
Date of Building Construction :	1. 6 Storied Garments Building (Building_01)= Year of construction 2015. 2. 4 Storied Dining Building (Building_02)= Year of construction 2016. 3. 2 Storied Energy Building (Building_03)= Year of construction 2016.
Date of Last Building Renovation/Addition :	There is no renovation or additional work has been done after construction of newly built Garments Building (Building_01), Dining Building (Building_02) and Energy Building (Building_03).
Ancillary Structures in Complex :	There are two ancillary structures assessed in this visit. 1. 4 Storied Dining Building (Building_02). 2. 2 Storied Energy Building (Building_03).
Approximate Ancillary Structures Area (SF) :	1. 4 Storied Dining Building(Building_02)- Total Area is 12,306 sft.= GF 3,076.5 sft. + 1st Floor 3,076.5 sft. + 2nd Floor 3,076.5 sft. + 3rd Floor 3,076.5 sft. 2. 2 Storied Energy Building (Building_03)- Total Area is



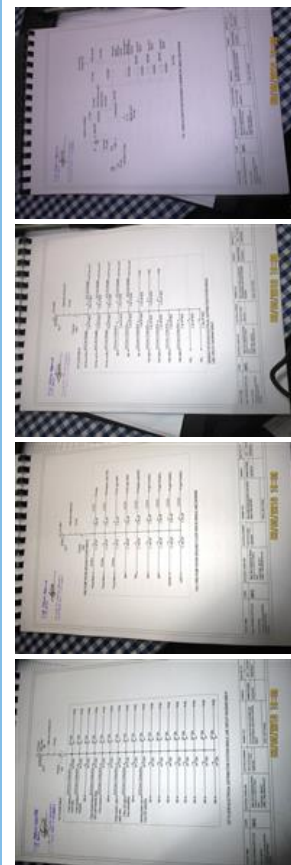
	4,542 sft.= GF 2,271 sft. + 1st Floor 2,271 sft.
Number of Occupants :	As per information received from Factory, number of occupants in 6 Storied Garments Building (Building_01), 4 Storied Dining Building (Building_02) and 2 Storied Energy Building (Building_03) under this audit is total number of occupants approximately $-(1,874+570+3) = 2,447$ Persons 1. 6 Storied Garments Building (Building_01) approximately 1,874 Persons= GF 47 Persons + 1st Floor 160 Persons + 2nd Floor 580 Persons + 3rd Floor 555 Persons + 4th Floor 261 Persons + 5th Floor 271 Persons. 2. 4 Storied Dining Building (Building_02) approximately 570 Persons= GF 5 Persons + 1st Floor 5 Persons + 2nd Floor 280 Persons (Floating) + 3rd Floor 280 Persons (Floating). 3. 2 Storied Energy Building (Building_03) approximately 3 Persons= GF 3 Persons + 1st Floor 0 Person.
Provide brief description of the electrical system for each building.:	Main power source: REB [11kV incoming]; Service Entry: Overhead and Underground; Disconnecting Point: Three Phase Vacuum Circuit Breaker [630 A]; Transformer Rating: 1600 kVA, 11/0.415 kV, Oil Type; Secondary power source: 3 Diesel Generators; Generator rating: Generator 1 [Diesel, 500 kVA, 0.415 kV], Generator 2 [Diesel, 188 kVA, 0.415 kV], Generator 3 [Diesel, 500 kVA, 0.415 kV]; PFI Rating: 960 kVAR; COS Connection: Auto Transfer Switch [Electrical Interlock]; BBT Rating: 2500 A; Emergency Power Source: Generator used for life safety loads.
Physical location of Substation? :	Main service transformer, HT switchgear, LT switchgear, PFI, etc are located inside a separate ancillary structure called Energy Building.
What equipment/loads does the UPS serve? :	There is no UPS connected to life safety equipment in this factory.



ASSESSMENT FINDINGS

Electrical System Information

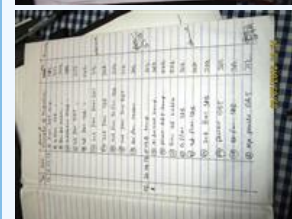
Question:	Are as-built electrical drawings indicating information such as panel and circuit locations throughout the building(s) available for review?
Priority Level:	High
Non-Compliance Level:	2
Description:	As-built single line diagrams (SLD) for electrical safety features throughout the buildings are available on site. The SLD has been checked with the practical installations and some inconsistencies were noted: 1) Rating of the VCB is not mentioned. 2) Three phase HT cable is identified as single phase cable. 3) Intermediary wiring between generator and BBT system is not shown. 4) Copper bus bar has not been shown or identified. Note: As-built SLD indicating electrical safety features of the buildings have not been sent for review yet.
Source of Findings:	Document Review: As-built SLD throughout the buildings have been found.
Suggested Plan of Action:	Have a qualified electrical engineer update and correct the as-built single line diagram by detailing key components and capacity of the electrical system. The updated drawing should be sent for Alliance review.
Suggested Deadline Date:	14 Oct 2018
Standard:	Alliance Standard Part 10 Section 10.3.7



Electrical System Maintenance



Question:	Are thermographic scans of electrical equipment completed at least every three years?
Priority Level:	Medium
Non-Compliance Level:	2
Description:	Thermographic scanning of electrical equipment are completed on a regular basis. However, The thermal scanning has not been done using a proper thermographic camera and the thermographic report has not been prepared in a standard format.
Source of Findings:	Document Review: Thermal scanning records prepared by the factory have been found.
Suggested Plan of Action:	Complete thermographic scans using a thermographic camera and prepare the thermographic scanning report according to the prescribed format. Thermographic scans should be completed in accordance with the Standard for Infrared Inspection of Electrical Systems & Rotating Equipment and NFPA70B or a comparable standard.
Suggested Deadline Date:	14 Oct 2018
Standard:	Alliance Standards Part 10 Section 10.13.8 Electrical Inspections
Question:	Have items identified in previous thermographic inspection reports been addressed?
Priority Level:	Medium
Non-Compliance Level:	2
Description:	Thermographic scanning reports of electrical equipment are not adequate to identify the Category-1, Category-2 and Category-3 hazard items.
Source of Findings:	Document Review: Thermal scanning records prepared by the factory have been found.
Suggested Plan of Action:	Complete thermographic scans using a thermographic camera and prepare the thermographic scanning report according to the prescribed format. Thermographic scans should be completed in accordance with the Standard for Infrared Inspection of Electrical Systems & Rotating Equipment and NFPA70B or a comparable standard.
Suggested Deadline Date:	14 Oct 2018
Standard:	Not Applicable
Question:	Is the electrical switchgear and panel boards inspected on an annual basis to ensure that the equipment is installed in accordance with the listed ratings?
Priority Level:	Medium





Non-Compliance Level:	1	
Description:	Records of initial testing are not maintained onsite to ensure that the electrical equipment is installed according to the listed ratings.	
Source of Findings:	Visual Assessment: Annual equipment rating inspection checklists have not been found.	
Suggested Plan of Action:	Inspect electrical switchgear and panel boards on an annual basis to ensure that the equipment is installed in accordance with the listed ratings. Maintain the inspection results on site.	
Suggested Deadline Date:	14 Oct 2018	
Standard:	Alliance Standards Part 10 Section 10.13.8 Electrical Inspections	
Question:	Transformers do not contain harmful substances such as PCBs.	
Priority Level:	Medium	
Non-Compliance Level:	1	
Description:	Transformer oil analysis report does not include testing for PCB content.	
Source of Findings:	Document Review: PCB content analysis have not been found in the transformer oil analysis documents.	
Suggested Plan of Action:	Conduct PCB testing in the existing oil. Use PCB-free oil with proper PCB content specifications and ratings listed by the oil manufacturer.	
Suggested Deadline Date:	14 Oct 2018	
Standard:	Not Applicable	
Electrical System Conditions		



Question:	Are overhead service connections achieved with covered conductors?
Priority Level:	High
Non-Compliance Level:	3
Description:	Overhead service connections inside the factory premises do not have covered or insulated conductors. HT supports are not secured using gate with locking mechanism or anti-climbing devices. Danger or warning signs are also missing on all HT poles.
Source of Findings:	Photograph: Covered conductors have not been seen for service connections.
Suggested Plan of Action:	Ensure overhead service conductors are covered by replacing the existing conductors or by covering the existing conductors with an approved material. Consult a qualified electrical engineer before completing work.
Suggested Deadline Date:	14 Oct 2018
Standard:	Alliance Standards Part 10 Section 10.3.10 Service Entry





Question:	Are all internal components of switchboards and/or distribution boards properly concealed (No missing circuit breaker or knockout covers)?
Priority Level:	Medium
Non-Compliance Level:	2
Description:	Internal components of some switchboards and/or distribution boards are not properly concealed using dust and vermin-proof enclosures, circuit breaker covers and knockout covers. Location: Garments Building
Source of Findings:	Photograph: Proper concealment of internal components have not been found for some assessed panel boards.
Suggested Plan of Action:	Provide covers or blanks to conceal all live internal components of switchboards and/or distribution boards.
Suggested Deadline Date:	14 Oct 2018
Standard:	Alliance Standard Part 10 Section 10.3.9 Sub-Distribution Boards

Question:	Do switchboards and/or distribution boards have capacity information labels?
Priority Level:	Medium
Non-Compliance Level:	2
Description:	Capacity information labels showing such information as distribution board location, dimensions, cable sizes, circuit breaker ratings and spare circuit breakers are not present in some assessed switchboards and distribution boards. Location: Energy Building and Garments Building
Source of Findings:	Photograph: Capacity information labels have not been found in some assessed panel boards.
Suggested Plan of Action:	Provide adequate capacity information labels containing the distribution board location, board size/dimensions, cable sizes, circuit breaker ratings and spare





	circuit breakers. Capacity information labels should be provided on all switchboards and distribution boards.	
Suggested Deadline Date:	14 Oct 2018	
Standard:	Alliance Standard Part 10 Section 10.7 Main Switch, Switchboards And Metal Clad Switchgear and 10.13.7 Inspection of the Installation	
Question:	Are electrical wiring/cables properly identified?	
Priority Level:	Medium	
Non-Compliance Level:	2	
Description:	All electrical wiring/cables are not properly identified with the required phase markings inside some of the switchboards and/or distribution boards. Location: Garments Building	
Source of Findings:	Photograph: Proper cable phase markings have not been found in some of the assessed panel boards.	
Suggested Plan of Action:	Use proper color code and identification labels for all wiring inside the panel boards. Each phase conductor should be marked using Red, Yellow and Blue color respectively. Neutral conductors should be marked using black color and earth conductors should be marked either using solid green color or green/yellow stripe.	
Suggested Deadline Date:	14 Oct 2018	
Standard:	Bangladesh Electricity Rules 1937 Rule 51 and 56	
		     



Question:	Stranded conductors having a nominal cross-sectional area 6mm ² or greater are provided with cable sockets. Conductors below 6 mm ² without cable sockets, all strands at the exposed ends are soldered together or are crimped using suitable sleeve or ferrules.
Priority Level:	Medium
Non-Compliance Level:	2
Description:	Flexible, fine-stranded cables with a nominal cross-sectional area of 6 mm ² or greater are connected to terminals by soldered or welded lugs. However, conductors with a nominal cross-sectional area below 6 mm ² are not crimped using suitable sleeve or ferrules. Location: Garments Building
Source of Findings:	Photograph: Sleeves and ferrules have not been found for wire termination inside some assessed panel boards.
Suggested Plan of Action:	Use cable sockets for all stranded conductors having a nominal cross-sectional area of 6 mm ² . For conductors below 6 mm ² , solder all strands at the exposed ends or crimp them using suitable sleeve or ferrules.
Suggested Deadline Date:	14 Oct 2018
Standard:	Alliance Standards Part 10 Section 10.3.8.3 Cable Ends





		
Question:	Mechanical guards are provided for electrical equipment and wiring where necessary.	
Priority Level:	Medium	
Non-Compliance Level:	1	
Description:	Adequate mechanical guard is not present for the 11 kV HT incoming cable. Location: Transformer Room inside Energy Building 03	
Source of Findings:	Photograph: Mechanical guards have not been seen for the HT cable.	
Suggested Plan of Action:	Provide adequate mechanical guards, enclosures or cable trenches for the exposed 11kV HT cables on the floor.	
Suggested Deadline Date:	14 Oct 2018	
Standard:	Alliance Standard Part 10 Section 10.3 Electrical Wiring and Cabling, 10.6.5 Cables, and 10.7 Main Switch, Switchboards And Metal Clad Switchgear	
Question:	Phase separators are provided between terminals on circuit breakers.	
Priority Level:	Low	
Non-Compliance Level:	2	
Description:	Phase to phase separation is not provided using suitable insulating separators at high and medium amperage switchgear terminals inside some of the switchboards and/or distribution boards. Location: Utility GF SDB-01, Compressor Room SDB-02, Dining Building GF MDB and Garments Building 01 BBT Riser.	
Source of Findings:	Photograph: Phase separators have been found for some high and medium amperage switchgear.	
Suggested Plan of Action:	Install phase separators between terminal connections. Verify phase separators are installed at all remaining locations.	
Suggested Deadline Date:	31 May 2018	
Standard:	Alliance Standard Part 10 Section 10.3.1 Electrical Connections	 



		
Question:	Signage indicating the prohibition of light fixtures without protective covers is installed at required locations.	
Priority Level:	Low	
Non-Compliance Level:	1	
Description:	Proper Bengali and English signage to indicate the prohibition of light fixtures without protective covers is not provided at the entrances of areas where the Inspector of the Factories Rules (1.6.3.7) Part 53 is applicable. Location: Bonded Ware House Entrance in Garments Building 01.	
Source of Findings:	Photograph: Signage to prohibit light fixtures without protective covers have not been found at the entrances of storage facilities.	
Suggested Plan of Action:	Light fixtures without protective covers (otherwise known as naked lights) shall not be allowed in storage areas or in any area where the Inspector of the Factories Rules (1.6.3.7) Part 53 disallows these fixtures. Install signs posted in Bengali and English, indicating this prohibition at all entrances to these areas.	
Suggested Deadline Date:	14 Oct 2018	
Standard:	Alliance Standards Part 10 Section 10.15 Naked Lights	
Emergency Power System		
Question:	Fuel storage tanks located within the building have a maximum combined capacity of 2500L (660 gal) or less.	
Priority Level:	High	
Non-Compliance Level:	2	
Description:	Fuel storage tank of capacity exceeding 2500L (660 gal) has been found within the Energy Building.	
Source of Findings:	Photograph: Fuel storage tank has been found with capacity greater than 2500L (660 gal).	
Suggested Plan of Action:	Fuel/oil tank for generator sets shall be limited to a maximum 2500 L (660 gal).	
Suggested Deadline Date:	14 Oct 2018	
Standard:	Alliance Standards Part 3 Section 3.4.2.1.3 Generators	



Question:	Are emergency power switchboards, distribution boards, and circuits properly identified?
Priority Level:	High
Non-Compliance Level:	2
Description:	Emergency power switchboards and/or distribution boards and emergency circuit components such as emergency lighting have not been properly identified. Location: Garments Building
Source of Findings:	Photograph: Proper identification markings have not been seen for emergency power switchboards and/or distribution boards and emergency circuit components.
Suggested Plan of Action:	All boxes and enclosures (including transfer switches, generators, and power panels) for emergency circuits shall be permanently marked so they will be readily identified as a component of an emergency circuit or system. The required marking can be by color code, the words "emergency system," or any other method that identifies the box or enclosure as a component of the emergency system.
Suggested Deadline Date:	14 Oct 2018
Standard:	NFPA 70 Chapter 7 Article 700.10 Wiring, Emergency System



Lightning Protection System

Question:	Is a lightning protection system installed on the building?
Priority Level:	High
Non-Compliance Level:	3
Description:	A lightning protection system has been designed for all the required buildings. However, the proposed system has not been installed yet.
Source of Findings:	Document Review: Proposed drawings for the lightning protection system has been found and reviewed., Photograph: The lightning protection system has not been found to be installed yet.
Suggested Plan of Action:	Have a licensed electrician install the lightning protection system according to the BNBC requirements.
Suggested Deadline Date:	14 Oct 2018
Standard:	Alliance Standards Part 10 Section 10.11 Lightning Protection. Calculate Risk Index to determine if required.





		
Question:	The air termination network vertical and horizontal conductors are appropriately spaced.	
Priority Level:	Medium	
Non-Compliance Level:	3	
Description:	The proposed lightning protection system has not been installed yet.	
Source of Findings:	Visual Assessment: Air termination network has not been seen.	
Suggested Plan of Action:	Have a licensed electrician install the lightning protection system according to the BNBC requirements.	
Suggested Deadline Date:	14 Oct 2018	
Standard:	Alliance Standards Part 10 Section 10.11 Lightning Protection	
Question:	The appropriate number of down conductors are installed based on the building size.	
Priority Level:	Medium	
Non-Compliance Level:	3	
Description:	The proposed lightning protection system has not been installed yet.	
Source of Findings:	Visual Assessment: Down conductors have not been seen.	
Suggested Plan of Action:	Have a licensed electrician install the lightning protection system according to the BNBC requirements.	
Suggested Deadline Date:	14 Oct 2018	



Standard:	Alliance Standards Part 10 Section 10.11 Lightning Protection	
Question:	The lightning protection ground terminals are bonded to the building or structure grounding.	
Priority Level:	Medium	
Non-Compliance Level:	3	
Description:	The proposed lightning protection system has not been installed yet.	
Source of Findings:	Visual Assessment: Ground terminals have not been seen.	
Suggested Plan of Action:	Have a licensed electrician install the lightning protection system according to the BNBC requirements.	
Suggested Deadline Date:	14 Oct 2018	
Standard:	Alliance Standards Part 10 Section 10.11 Lightning Protection	