INITIAL ELECTRICAL ASSESSMENT REPORT (EAR)

Factory Name:	**Sun Fashion Wear Ltd.**
Address:	**Allai Ward No: 01 Patiya Chittagong Bangladesh**
Assessor:	**Uttaron Technologies**
Date:	**24 Apr 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.

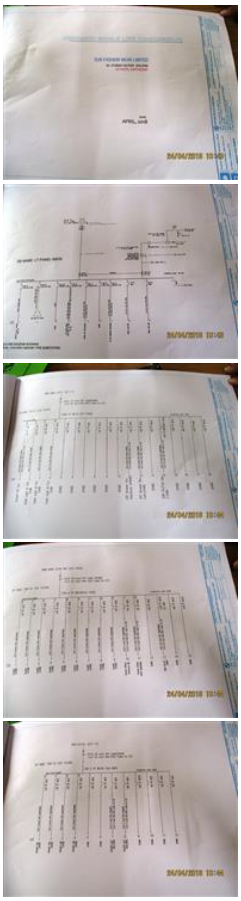
For more information and report feedback please go to: www.bangladeshworkersafety.org.

GENERAL INFORMATION

General Information	
Factory Name:	Sun Fashion Wear Ltd.
Address:	Allai Ward No: 01 Patiya Chittagong Bangladesh
Country:	Bangladesh
Province:	Chittagong
City:	Patiya
Zip Code:	PO 4370
Audit Duration:	1 Days 0 Hours
Re-Audit:	Re-Audit After 0 Months
Draft Report Date :	24/04/2018
Final Report Date :	05/06/2018
Are all action items from previous assessment complete? :	N/A
Buildings in Complex :	There are 7 buildings in the complex, out of them one is 3 storied main building, which is partially build dining facilities at 2nd floor and six are ancillary structures as per information given by the owner's representative. In this initial audit, 3 storied main Production Building, Boiler Building, Substation Building, Fire and Security Building, Pump House have been assessed. Guard Rooms 1 and 2 found incomplete and under construction during this initial inspection. Therefore, these buildings were not assessed. Main Building: - 1. 3 storied main Production Building Ancillary Building: - 1. Boiler Building 2. Substation Building 3. Fire and Security Building 4. Pump House 5. Guard Room-1 (under construction) 6. Guard Room-2 (under construction)
Is the building(s) owned or rented by the Factory?:	Owned
Number of Building Levels (Stories) :	Total five nos. including 3 storied main production building and four are ancillary structures as per information given by the owner's representative. In this initial audit, 3 storied main Production Building, Boiler Building, Substation Building, Fire and Security Building, Pump House have been assessed. Guard Room 1 and 2 found incomplete and under construction during this initial inspection. Therefore, these rooms were not assessed. 1. 3 storied main Production Building- 3 storied, R.C.C. building. 2. Boiler Building- 1 storied, R.C.C. building. 3. Substation Building- 1 storied, R.C.C. building. 4. Fire and Security Building- 1 storied, R.C.C. building. 5. Pump House- 1 storied, R.C.C. building.
Approximate Building Area (SF) :	1. 3 storied main Production Building, R.C.C. building = 42,000 X2 (GF and 1st Floor) + 26,000 (2nd Floor)= 1,10,000 sft.
Date of Building Construction :	Year of construction 2017.
Date of Last Building Renovation/Addition :	There is no renovation work done after construction.
Ancillary Structures in Complex :	There are four ancillary structures assessed during this initial inspection. Ancillary Buildings: - 1. Boiler Building- 1 storied, R.C.C. building. 2. Substation Building- 1 storied, R.C.C. building. 3. Fire and Security Building- 1 storied, R.C.C. building. 4. Pump House- 1 storied, R.C.C. building.
Approximate Ancillary Structures Area (SF) :	Total 4 nos. of Ancillary Structures: - 1. Boiler Building,1 storied, R.C.C. building= 758.50 sft. 2. Substation Building, 1 storied, R.C.C. building= 1,100 sft. 3. Fire and Security Building 1 storied, R.C.C. building= 3,552.50 sft. 4. Pump House, 1 storied, R.C.C. building= 1,158.25 sft.
Number of Occupants :	Total occupants= 1,646 persons: 1. 3 storied main Production Building- GF=400+1st Floor+750+2nd Floor=450. Total= 1,600 persons 2. Boiler Building= 2 persons. 3. Substation Building= 2 persons. 4. Fire and Security Building= 40 persons 5. Pump House= 2 persons
Provide brief description of the electrical system	Main power source: PDB (11kV incoming) Secondary power source: Diesel Generator Quantity of Generators: One of 500 KVA Transformer Rating: 1000 KVA, 11/0.415 kV COS connection: ACB Electrical Interlock

for each building.:	Emergency Power Source: Generator and I.P.S used for life safety loads.
Physical location of Substation? :	Transformer, HT/LT switchgear, PFI, etc are located inside the Substation Room. Substation Room is a separate ancillary structure and is joined with the generator room.
What equipment/loads does the UPS serve? :	UPS serves Computers and IT equipment. IPS for life safety loads such as emergency lights, exit signs and fire alarm control panels has not been commissioned yet.

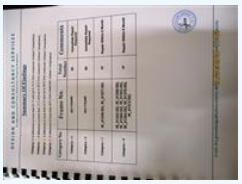
ASSESSMENT FINDINGS

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:	3	
Description:	The proposed electrical single line diagram (SLD) is available on site. As-built SLD has not been prepared yet for the whole factory.	
Source of Findings:	Document Review: Proposed electrical single line diagram (SLD) drawing has been found and reviwed., Visual Assessment: As-built electrical single line diagram (SLD) has not been prepared yet.	
Suggested Plan of Action:	An updated as-built electrical single line diagram should be prepared for the entire building after proper installation of all electrical switchgear and outlets for lamps, fans, fixed and transportable appliances, motors etc. have been completed.	
Suggested Deadline Date:	19 Jun 2018	
Standard:	Alliance Standard Part 10 Section 10.3.7	

Electrical System Maintenance		
Question:	Have workers that operate and maintain the electrical system received electrical safety training? Is training documentation on site?	
Priority Level:	High	
Non-Compliance Level:	1	
Description:	Electrical safety training program is established and documents are maintained. But no questionnaires or quizzes have been conducted to assess the learning outcomes of the safety trainings.	
Source of Findings:	Document Review: Electrical safety training program documents have been found and reviewed., Visual Assessment: Questionnaire pages for the electrical safety training documents have not been found.	
Suggested Plan of Action:	Conduct exams or quizzes at the end of each training session to evaluate the effectiveness of the worker safety training.	
Suggested Deadline Date:	19 Jun 2018	
Standard:	Reference NFPA 70e for example	

Question:	Are thermographic scans of electrical equipment completed at least every three years?
Priority Level:	Medium
Non-Compliance Level:	2
Description:	Thermal scanning is done on a regular basis, but the actual ambient temperature has not been considered for determining the category of hazard. The recorded ambient temperatures have been taken arbitrarily at each location without any physical measurements.
Source of Findings:	Document Review: The same ambient temperature has been seen in the thermographic scan reports for each location.
Suggested Plan of Action:	Perform initial thermographic scans for the electrical equipment with proper ambient temperature recordings. Ambient temperature should be the temperature of the room and surrounding environment of each particular electrical equipment, and should vary in each type of room and location.
Suggested Deadline Date:	19 Jun 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:	The hazard category items have not been correctly identified since the recorded ambient temperatures have been taken arbitrarily at each location without any physical measurements.
Source of Findings:	Document Review: The number of each hazard category item has been found in the thermographic inspection report, but the results are inconsistent due to improper ambient temperature recordings.
Suggested Plan of Action:	Re-calculate the number of each hazard category item after performing initial thermographic scans for the electrical equipment with proper ambient temperature recordings. Ambient temperature should be the temperature of the room and surrounding environment of each particular electrical equipment, and should vary in each type of room and location.
Suggested Deadline Date:	19 Jun 2018
Standard:	Not Applicable



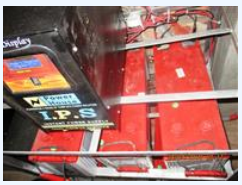
Question:	Is the electrical switchgear and panel boards inspected on an annual basis to ensure that the equipment is installed in accordance with the listed ratings?
Priority Level:	Medium
Non-Compliance Level:	1
Description:	There are no records of initial testing as well as subsequent testing to ensure that the electrical switchgear and panel boards are installed in accordance with the listed ratings.
Source of Findings:	Visual Assessment: No sufficient document regarding this inspection criteria has been found.
Suggested Plan of Action:	Conduct initial and annual inspections to ensure that the electrical switchgear and panel boards are installed in accordance with the listed ratings. Inspection

	records should be maintained on site.	
Suggested Deadline Date:	22 May 2018	
Standard:	Alliance Standards Part 10 Section 10.13.8 Electrical Inspections	
Electrical System Conditions		
Question:	Are overhead service connections achieved with covered conductors?	 
Priority Level:	High	
Non-Compliance Level:	2	
Description:	HT pole is present inside the factory premises. Service cables have been laid underground. But there is no means of security such as fencing and gate with locking mechanism or anti-climbing devices on the HT support. Danger or warning signs is also missing on the HT pole.	
Source of Findings:	Photograph: Fencing and gate with locking mechanism or anti-climbing devices have not been seen for the HT support.	
Suggested Plan of Action:	Provide proper security at the HT support by means of fencing and gate with locking mechanism or anti-climbing devices. Use proper danger/caution sign near HT support pole.	
Suggested Deadline Date:	19 Jun 2018	
Standard:	Alliance Standards Part 10 Section 10.3.10 Service Entry	
Question:	Do switchboards and/or distribution boards have capacity information labels?	  
Priority Level:	Medium	
Non-Compliance Level:	3	
Description:	Capacity information labels are present in all assessed switchboards and/or distribution boards, but there is no information about the number of spare circuit breakers contained inside.	
Source of Findings:	Photograph: Spare circuit breaker number has not been included in the capacity information labels.	
Suggested Plan of Action:	Update the capacity information labels with proper number of installed and spare circuit breakers.	
Suggested Deadline Date:	22 May 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:	The substation room has adequate ventilation.	 
Priority Level:	Medium	
Non-Compliance Level:	2	
Description:	Sufficient air inlets and exhaust fans are not provided inside the substation room for maintaining proper cross ventilation.	
Source of Findings:	Photograph: Air inlet louvers and exhaust fans have not been found for the transformer room.	
Suggested Plan of Action:	Transformer rooms should have proper ventilation by means of louvers at lower level and exhaust fans at higher level so that cross ventilation is maintained. Air conditioning can also be used for controlling the humidity and temperature.	

Suggested Deadline Date:	19 Jun 2018	
Standard:	Alliance Standard Part 10 Section 10.13.7.1 Inspection of Substation Installations.	
Question:	The substation room has adequate means of security.	
Priority Level:	Medium	
Non-Compliance Level:	1	
Description:	The main service transformer is installed inside the substation room with suitable fencing, but gates with lockable arrangements have not been installed for adequate security.	
Source of Findings:	Photograph: Security gates with lockable arrangements have not been found.	
Suggested Plan of Action:	Install secured gates with locking arrangements to properly enclose the service transformer fencing.	
Suggested Deadline Date:	22 May 2018	
Standard:	Alliance Standard Part 10 Section 10.13.7.1 Inspection of Substation Installations.	
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:	1	
Description:	Switchboards do not have proper concealment using circuit breaker covers or knockout covers to conceal all live internal components. Location: Substation Room	
Source of Findings:	Photograph: Switchboards with missing knockout covers have been found.	
Suggested Plan of Action:	Provide covers or blanks to conceal all live internal components of switchboards and/or distribution boards.	
Suggested Deadline Date:	22 May 2018	
Standard:	Alliance Standard Part 10 Section 10.3.9 Sub-Distribution Boards	
Question:	Is all electrical wiring/cable properly terminated at its point of termination (No un-terminated wires, lugs are provided at terminals, etc)?	
Priority Level:	Medium	
Non-Compliance Level:	1	
Description:	Cables in the PFI panel have not been properly terminated using terminals, lugs, connectors, etc. or securely clamped. Location: Substation Room	
Source of Findings:	Photograph: Missing cable lugs and partial termination of cables have been found inside the PFI panel	
Suggested Plan of Action:	Cables should be properly terminated using terminals, lugs, connectors, etc. Devices such as cable sockets, connectors and lugs should be suitable for the material of the conductor and the structure to which the devices are connected.	
Suggested Deadline Date:	22 May 2018	
Standard:	Alliance Standards Part 10 Section 10.3.9.2 Wiring of Sub-distribution Boards	

Question:	Are there additional areas of non-compliance to report?	
Priority Level:	Medium	
Non-Compliance Level:	1	
Description:	Adequate illumination is not provided in front of FDB GF and SDB-1 GF for maintenance or emergency tasks. Location: Ground Floor of main building.	
Source of Findings:	Photograph: Insufficient illumination has been seen in front of FDB GF and SDB-1 GF.	
Suggested Plan of Action:	Provide additional light fixtures to increase illumination levels as per the rules in the BNBC.	
Suggested Deadline Date:	22 May 2018	
Standard:	Not Applicable	
Question:	Are meters and other electrical devices (Ammeter, Voltmeter, PFI Auto Controller, etc) installed on the main electrical equipment operational?	 
Priority Level:	Low	
Non-Compliance Level:	1	
Description:	One Phase indicator in the Generator incoming Panel is not fully functional in order to show the current status of the system. Location: Substation Room	
Source of Findings:	Photograph: One phase indicator has been found to be non-operational.	
Suggested Plan of Action:	Replace the faulty status indicator. If the problem still persists, consult with a qualified electrician for troubleshooting any connection issues.	
Suggested Deadline Date:	22 May 2018	
Standard:	Alliance Standard 10.13.7 Inspection of the Installation	
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.	
Source of Findings:	Photograph: Signage to prohibit light fixtures without protective covers has not been found at the entrances of factory storage areas.	
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:	19 Jun 2018	
Standard:	Alliance Standards Part 10 Section 10.15 Naked Lights	
Emergency Power System		

Question:	Are emergency power switchboards, distribution boards, and circuits properly identified?	 
Priority Level:	High	
Non-Compliance Level:	3	
Description:	Installation and electrical wiring works for emergency circuits such as IPS units, fog lights, emergency lighting, exits signage etc. is still in progress. Hence, the emergency power switchboards, distribution boards and circuits have not been properly identified yet.	
Source of Findings:	Photograph: Installation and electrical wiring works for emergency circuits has been found to be in progress.	
Suggested Plan of Action:	All emergency circuits such as IPS units, fog lights, emergency lighting, exits signage etc. should be permanently marked after the initial wiring and installation process is completed. 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:	19 Jun 2018	
Standard:	NFPA 70 Chapter 7 Article 700.10 Wiring, Emergency System	
Question:	Is an uninterruptable power supply (UPS) provided?	 
Priority Level:	High	
Non-Compliance Level:	3	
Description:	Installation and commissioning works for the Instant Power Supply (IPS) units are still in progress. Hence, the IPS units are not fully operational yet.	
Source of Findings:	Photograph: Installation and commissioning works for the IPS units have been found to be in progress.	
Suggested Plan of Action:	Complete installation and commissioning of the instant power supply (IPS) units.	
Suggested Deadline Date:	19 Jun 2018	
Standard:	Not Applicable	
Question:	Are life safety loads (fire alarm, fire pump, elevators, emergency lighting, exit signage, etc) connecting to the emergency power system?	
Priority Level:	High	
Non-Compliance Level:	3	
Description:	Installation and electrical wiring works for emergency circuits such as IPS units, fog lights, emergency lighting, exits signage etc. is still in progress. Hence, the emergency power system is not connected to the life safety loads (fire alarm, fire pump, elevators, emergency lighting, exit signage, etc) yet.	
Source of Findings:	Photograph: Installation and electrical wiring works for emergency circuits has been found to be in progress.	
Suggested Plan of Action:	Complete IPS installation and commissioning and provide backup power connections to all life safety loads such as fog lights, emergency lighting, exit signage, fire alarm, fire pump, etc.	
Suggested Deadline Date:	19 Jun 2018	
Standard:	Alliance Standard Part 10 Section 10.8 Standby Power	

Question:	Are cable trenches properly covered?	 
Priority Level:	High	
Non-Compliance Level:	1	
Description:	Cover for the HT cable trench has been constructed from inappropriate thin sheet metal. The trench cover has also been fixed to the structure so that regular maintenance and cleaning activities is not possible.	
Source of Findings:	Photograph: HT cable trench cover has been found to be constructed from thin sheet metal. The cover has been seen to be fixed to the structure.	
Suggested Plan of Action:	Cable trenches for HT cables should have durable metal grille/angle covers having adequate mechanical strength. The trench covers should be easily removable for cleaning and maintenance activities.	
Suggested Deadline Date:	19 Jun 2018	
Standard:	Alliance Standard Part 10 Section 10.13.7 Inspection of the Installation	
Question:	An instruction board for first aid and artificial respiration is located in the generator room and substation room.	 
Priority Level:	Low	
Non-Compliance Level:	2	
Description:	Instruction boards indicating first aid and artificial respiration procedures are present within unobstructed visibility inside the generator room and substation room. However, there are no first aid kits available in the generator room or the substation room. Also, there are no hot surface warning signs on the reachable portion of the generator exhaust piping.	
Source of Findings:	Photograph: First aid and artificial respiration boards have been seen inside the generator room and substation room. However, hot surface warning signs have not been found on the generator exhaust piping that are within reachable heights., Visual Assessment: First aid kit have not been found in the generator room and substation room.	
Suggested Plan of Action:	Provide a first aid kit in the generator and substation room. Generator exhaust piping that are within human reach should have warnings to indicate hot surfaces so that accidental contact is avoided during maintenance tasks.	
Suggested Deadline Date:	22 May 2018	
Standard:	Not Applicable	
Question:	Are inspection, maintenance, and testing procedures of the UPS being completed and documented?	 
Priority Level:	Low	
Non-Compliance Level:	2	
Description:	Installation and commissioning works for the Instant Power Supply (IPS) units are still in progress. Hence, the inspection, maintenance, and testing procedures of the IPS are not being completed and documented yet.	
Source of Findings:	Photograph: Installation and commissioning works for the IPS units have been found to be in progress.	
Suggested Plan of Action:	Complete installation and commissioning of the instant power supply (IPS) units and maintain relevant inspection, maintenance, and testing procedures on site.	
Suggested Deadline Date:	19 Jun 2018	
Standard:	Alliance Standard Part 13 Section 13.11 NFPA 111 Chapter 8 NFPA 70B Chapter 28	

Lightning Protection System		
Question:	Is a lightning protection system installed on the building?	    
Priority Level:	High	
Non-Compliance Level:	3	
Description:	The lightning protection system has been designed for all the assessed buildings and the proposed drawings are available. However, the lightning protection system has not been installed yet.	
Source of Findings:	Document Review: Proposed drawings for the lightning protection system has been seen and reviewed., Photograph: The lightning protection system has not been found to be installed.	
Suggested Plan of Action:	Have a licensed electrician install the designed lightning protection system and have a qualified electrical engineer prepare an as-built drawing accordingly.	
Suggested Deadline Date:	19 Jun 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 lightning protection system has been designed for all the assessed buildings and the proposed drawings are available. However, the air termination network vertical and horizontal conductors have not been installed yet.	
Source of Findings:	Visual Assessment: The air termination network vertical and horizontal conductors have not been found to be installed.	
Suggested Plan of Action:	Have a licensed electrician install the designed lightning protection system and ensure that the air termination network vertical and horizontal conductors are appropriately spaced.	
Suggested Deadline Date:	19 Jun 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 lightning protection system has been designed for all the assessed buildings and the proposed drawings are available. However, the down conductors have not been installed yet.	
Source of Findings:	Visual Assessment: The down conductors have not been found to be installed.	
Suggested Plan of Action:	Have a licensed electrician install the designed lightning protection system and ensure that the appropriate number of down conductors are installed based on the building size.	
Suggested Deadline Date:	19 Jun 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 lightning protection system has been designed for all the assessed buildings and the proposed drawings are available. However, the lightning protection system has not been installed yet.	
Source of Findings:	Visual Assessment: The lightning protection system has not been found to be installed.	
Suggested Plan of Action:	Have a licensed electrician install the designed lightning protection system and ensure that the lightning protection ground terminals are bonded to the building or structure grounding	
Suggested Deadline Date:	19 Jun 2018	
Standard:	Alliance Standards Part 10 Section 10.11 Lightning Protection	