

## **Detailed Technical Specification of the Repairing and Servicing Work in Existing 03 Greenhouse Chambers**

**Scope of work:** The scope of the proposed work includes all necessary activities to ensure the proper functioning, safety, and efficiency of the three existing greenhouse chambers. The proposed work involves structural repairs, component replacements, system servicing, and testing to restore the chambers to optimal operating conditions. **The servicing work should be carried out on turn-key basis by a single company to ensure integration and seamless and efficient working of all the systems.**

**The facility should have the following minimum requirements:**

**Scope of work in Chamber No: 01-**

**Local Control System:**

Repair & Replacement of existing control panel with latest CCM-G to control the climate condition of Climate Controlled Greenhouse using a 7-inch touch HMI display on the control panel version of proprietary Saveer control system will be capable of Real time clock programming of temperature, relative humidity, and lighting status. It is a critical component of greenhouse operations, ensuring precise environmental regulation for optimal plant growth.

**Exhaust Fan:**

Servicing & Replacement of Exhaust Fan motor with flap (Size 48"). The exhaust fan system is a vital component for maintaining proper ventilation, temperature control, and air circulation within the greenhouse.

**Misting Unit:**

Repair & Replacement of Misting Unit plays a crucial role in regulating humidity, temperature, and ensuring proper microclimatic conditions for Greenhouse. 1HP 10-D Misting Pump 01 No. with PVC Pipe and accessories with 50 four-way foggers, 200 feet LLDP Pipe, screen filter.

**Normal LED Tube light:**

Replace non-functional or damaged LED tubes with energy-efficient, compatible LED tubes. Repair or replace damaged holders or mounting brackets. It faulty LED drivers or electronic components. Upgrade older LED lights, if necessary, for better energy efficiency and photosynthesis.

**Shade Net:**

Replace or repair damaged fasteners, cables, or hooks. Ensure that the supporting frame (pipes, trusses, or wires) is stable and free from corrosion or damage. The 75% shade net for roof is essential for reducing excess sunlight, maintaining optimal temperature, and protecting plants from heat stress.

### **Electric Wiring:**

Replace with high-quality, weather-resistant cables suitable for greenhouse environments, ensuring compliance with safety standards. Electric wiring is a fundamental component of greenhouse operations, ensuring the reliable supply of power to internal electric wiring switch, socket & MCB with accessories essential systems such as lighting, fans, cooling systems, and control units.

### **Scope of work in Chamber No: 02-**

**Repair & Replacement of Control Panel:** Repair and replace the existing control panel with the latest CCM-G to control the climate condition of Climate Controlled Greenhouse using a 7-inch touch HMI display on the control panel from Saveer proprietary make & sensors for accurate monitoring of: Temperature. Relative humidity. Control system should be capable of Real time clock programming of temperature for 7 AC, relative humidity, and lighting status. Lighting levels. Repair or replace damaged components, such as Controllers or relays. Wiring or communication cables. Real-time clock modules for programming schedules. Update or repair firmware/software in the control system, if necessary.

### **Cooling Unit:**

The 2-ton split AC units (Voltas/Blue Star) are crucial for maintaining the desired temperature within the greenhouse chambers. The repair and servicing work for these AC units involves comprehensive checks and repairs to ensure efficient cooling and optimal performance, Such as Refrigerant Leak Repair, Compressor and Motor Repair, Control Systems and Thermostat Calibration.

### **Misting Unit:**

Repair & Replacement of Misting Unit is crucial for maintaining the required humidity levels within the Greenhouse. This system includes a 1HP 10-D Misting Pump 01 No. with PVC Pipe and accessories with 50 four-way fogger, 200 feet LLDP Pipe, screen filter, Pump, Fittings Repair.

### **Normal LED Tube light:**

The LED tube lights ensure adequate lighting for greenhouse operations, especially during early mornings, evenings, or periods of low natural light. Replace non-functional or damaged LED tubes with energy-efficient, compatible LED tubes. Repair or replace damaged holders or mounting brackets. It faulty LED drivers or electronic components. Upgrade older LED lights, if necessary, for better energy efficiency.

### **PAR Spectrum Research Grow Light:**

Provide additional research grow light model XS-100, with Light Output 1000  $\mu\text{mole/s-m}^2$ , Efficacy 3.0  $\mu\text{mole/J}$ , PPF 650  $\mu\text{mole/s}$ , Wattage 250w (max.), Operating Voltage 220v ac 1\_, Amp Rating 1.05A, Power Factor >0.9, Frequency 50Hz  
Dimension 300 x 228 x 187 mm, Weight 10 kg

### **Shade Net:**

Replace or repair damaged fasteners, cables, or hooks. Ensure that the supporting frame (pipes, trusses, or wires) is stable and free from corrosion or damage. The 75% shade net for roof is essential for reducing excess sunlight, maintaining optimal temperature, and protecting plants from heat stress.

### **Electric Wiring:**

Internal electric wiring switch, socket & MCB with accessories for 7 AC all internal instrument. Proper internal electrical wiring is critical for safely powering and controlling various electrical equipment, including air conditioners, lighting, and other greenhouse instruments. The repair and servicing work for electrical wiring, switches, sockets, MCBs (Miniature Circuit Breakers), and related accessories involves ensuring safe, efficient, and reliable operation.

### **Scope of work in Chamber No: 03-**

#### **Control System:**

Repair and replacement of existing control panel with the latest CCM-G to control the climate condition of Climate Controlled Greenhouse using a 7-inch touch HMI display on the control panel from proprietary Saveer make should be capable of Real time clock programming of temperature, relative humidity, and lighting status. It is a critical component of greenhouse operations, ensuring precise environmental regulation for optimal plant growth.

#### **Exhaust Fan:**

The Replacing & servicing of Exhaust Fan motor with flap (Size 48"). The exhaust fan system is a vital component for maintaining proper ventilation, temperature control, and air circulation within the greenhouse.

#### **Misting Unit:**

The Misting Unit is crucial for maintaining the required humidity levels within the Greenhouse. This system includes a 1HP 10-D Misting Pump 01 No. with PVC Pipe and accessories with 50 four-way foggers, 200 feet of LLDP Pipe, and screen filter.

#### **Normal LED Tube light:**

Replace non-functional or damaged LED tubes with energy-efficient, compatible LED tubes. Repair or replace damaged holders or mounting brackets. It faulty LED drivers or electronic components. Upgrade older LED lights, if necessary, for better energy efficiency.

**Shade Net:**

Replace or repair damaged fasteners, cables, or hooks. Ensure that the supporting frame (pipes, trusses, or wires) is stable and free from corrosion or damage. The 75% Shade net for roof is essential for reducing excess sunlight, maintaining optimal temperature, and protecting plants from heat stress.

**Electric Wiring:**

Replace with high-quality, weather-resistant cables suitable for greenhouse environments, ensuring compliance with safety standards. Electric wiring is a fundamental component of greenhouse operations, ensuring the reliable supply of power to internal electric wiring switch, socket & MCB with accessories essential systems such as lighting, fans, cooling systems, and control units.

**Wall Painting:**

Wall painting with whitewash in all 3 chamber enhances the appearance, hygiene, and reflective properties of the greenhouse chambers, which aids in maintaining a clean and efficient environment for plant growth.