SECTION 44 44 13.15 03

AIR SUPPLY BLOWERS
04/08

PART 1 GENERAL

1.1 WORK INCLUDED

This Section covers the work necessary to furnish air supply blowers (one installed, one spare) for the decarbonator tower systems as specified, and shown on the Drawings. Each system shall consist of a centrifugal blower, interconnecting ductwork, inlet filter and appurtenances as required to provide a complete air delivery system.

1.2 OTHER REQUIREMENTS

a. See Section 44 44 13.15, DECARBONATOR TOWER SYSTEM - GENERAL, for additional requirements.

b. See Section 26 60 13, LOW VOLTAGE MOTORS, for additional requirements.

1.3 COORDINATION

The supplier of the equipment shall coordinate the design, fabrication, and erection with other suppliers of the overall system components as required to provide a complete operational system.

1.4 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

installation

Fabrication drawings and descriptive literature for the ductwork, duct supports, and appurtenances for the duct system as specified herein.

SD-03 Product Data

material requirement

Catalog information on performance, dimensional requirements, drive system components and other information for the blowers specified herein.

Catalog information on the performance, ratings, dimensional requirements, filters and other components for the inlet air filter housing.

SD-07 Certificates

CERTIFICATE AND WARRANTY

Written manufacturer's warranty.

SD-08 Manufacturer's Instructions

instructions

Instructions for shipment, storage, handling and installation.

Operational and Maintenance Manual and Certificate of Proper Installation.

1.5 SERVICE CONDITIONS

See Section 44 44 13.15, DECARBONATOR TOWER SYSTEM - GENERAL, for service conditions.

PART 2 PRODUCTS

2.1 GENERAL

The use of a manufacturer's name and product identification number is for the purpose of establishing the standard of quality and general configuration desired. Products of other manufacturers will be considered in accordance with the General Conditions. All components shall meet the material requirement specified herein.

2.2 MANUFACTURERS

a. The centrifugal fans shall be as manufactured by:

1. PACE.

2. Cincinnatti Fan.

3. Hartzell.

4. Or approved equal.

b. The inlet filter shall be as manufactured by:

1. Camfil Farr.

2. Or approved equal.

2.3 CENTRIFUGAL FAN

a. Blowers shall be statically and dynamically balanced, Class I, belt-driven, centrifugal type, single-width, single-inlet, Arrangement 10, housing with lock seam or welded joints, spun steel or die-formed inlet cone, welded steel supports, airfoil wheel attached to spun steel rim and hub plate, solid shaft with center punched ends to accept tachometer, self-aligning grease-packed pillow block bearings with L-10 life of 40,000 hours, multiple belt cast iron motor and fan sheaves, weatherproof motor cover and belt guard, and a 3/4 inch threaded drain connection on the bottom of the fan scroll. Bearing shall have a

200,000 hours rating life as defined by ABMA standards (L 50). Bearing lubrication shall be manufacturer's standard. The coupling shall be non-reverse. Painting shall be as specified in Section 09 90 00.00 40, PAINTING AND COATING, Service Condition B. The fans shall be provided with the following:

1. Open spring vibration isolators selected for the weight and natural frequency of blower.

b. Blowers shall be rated as follows:

1. Rated Air Flowrate: 14,000 scfm.

2. Maximum TDH: 6-inch water column (to be coordinated and confirmed with loss through media, and inlet filter).

3. Quantity: (One operating and one uninstalled skid mounted spare.)

4. Static Pressure: As required for operation at maximum conditions. Coordinate with tower internals, packing suppliers.

5. Maximum Speed at Rated Flow: 1,700 rpm.

c. AC Induction Drive Motor:

1. Type: AC induction motor.

2. Provide motors in accordance with what is specified herein and in Section 26 60 13, LOW VOLTAGE MOTORS. Requirements specified herein supersede any conflicting requirements in Section 26 60 13, LOW VOLTAGE MOTORS.

3. Motors to be provided with this equipment:

Maximum Hp	Constant Speed	Unit
25	X	Installed
25	X	Spare

4. Speed: Constant Speed: 1,800 rpm, synchronous.

5. Enclosure: Chemical industry severe-duty totally-enclosed fan-cooled.

6. Mounting: Horizontal. Provide detailed layout Drawings for installation.

d. Inlet filter shall be Riga-Flo filter with 3P Glide Pack, manufactured by Camfil FARR, with Pre-filter. It shall consist of 4 by 4 24 inch by 24 inch Riga-Flo 100 Filters and Pre-filters. Filter housing and arrangement shall be as shown on Contract Drawings.

e. Provide Type 316 stainless steel anchor bolts and nuts for mounting the fans to the equipment pad.

2.4 DECARBONATOR AIR BLOWER CONTROL PANEL, LCP-40020

a. General: All package controls shall be in accordance with general

control requirements and component qualities specified in Section 40 99 90, Package Control Systems, and as follows: The process and instrumentation diagrams and these Specifications depict the minimum functional requirements of the control system provided under this section. The system supplier shall provide all additional instrumentation and controls necessary to provide a safe and operable system in accordance with standards listed under this section. The specific controls proposed shall be subject to the approval by the Engineer and shall be submitted as specified under Article Submittals herein.

b. Identification: Panel LCP-40020, Decarbonator Air Blower Control Panel.

c. NEMA 4X 316SS enclosure. Refer to Section 40 95 00, PROCESS CONTROL, for additional requirements. Provide all components and functions as shown on Drawings and specified herein.

1. Power Supply: 480 volts, three-phase, 60 Hz.

d. All PLC functions will be hard-wired from LCP-40020 to the PLC in RIO 200.

e. Lights, Pushbuttons and Switches: Shall comply with requirements in Specification Section 40 99 90, PACKAGE CONTROL SYSTEMS.

f. Decarbonator Blower cabinet shall include the following operator controls and indicators as a minimum:

1. Common failure alarm light, amber.

2. Blower running light, red

3. Power on light, white.

4. HAND/OFF/REMOTE selector switch.

5. START/LOCK-OUT-STOP push buttons.

g. System Operation and Control Requirements:

1. The decarbonator blower shall start/stop by the plant PLC I/O interface when the selector switch is in REMOTE.

2. In HAND the blower shall operate from START/LOCK-OUT-STOP push buttons.

3. In OFF the blower shall stop.

h. Control Panel Electrical Requirements:

1. Power: 480 volts, three-phase, 60 Hz.

2. Main Disconnect: Fused switch or circuit breaker.

3. Provide branch circuit breakers for feeding all ancillary equipment requiring power.

4. Motor Starter: Motor Circuit Protector (MCP) circuit breaker

and full voltage starter with overload for each motor.

i. Control power transformer with fuses on primary and secondary wiring. Size the transformer for all process equipment requiring 120V ac power.

2.5 INSTRUMENTS

a. All instrumentation shall comply with requirements in Specification Section 40 99 90, PACKAGE CONTROL SYSTEMS.

b. Differential pressure, indicating transmitter for the inlet filter.

c. Pressure indicator on blower discharge line.

d. Level indicating transmitter for the decarbonator.

2.6 DUCTWORK

The ductwork shall be constructed of Type 316 stainless steel in accordance with SMANCA Standards, in the sizes and shapes required for connection to the equipment as determined to provide uniform distribution of air in the decarbonators. Blowers will be located at grade on housekeeping pads as shown on the Drawings with outlet duct routed to the tower inlet. Ducting shall slope toward the tower at the point of entry to minimize water entering fan. The duct from each blower shall be equipped with a stainless steel damper located in the riser section to block backflow during periods of non-operation. Coordinate support of duct with tower manufacturer and/or decarbonator system suppler. Provide duct supports of like materials (as required) and all gaskets, Type 316 stainless steel fasteners, and appurtenances required for a complete installation.

2.7 DUCTWORK ACCESSORIES

The connection between the fan casing and the ductwork shall be made with a neoprene coated, fire resistant glass fabric, with 2 inch minimum clearance between casing and ductwork. Coat with Hypalon for UV protection. Supply taps for instrumentation as shown on Drawings, 1/2 inch NPT outlet.

2.8 CERTIFICATE AND WARRANTY

In addition to the warranty provisions stated in the General Conditions, the manufacturer of the item(s) specified herein shall provide a written warranty against defects in materials and workmanship for a period of 5 years. Certificate of proper installation shall be provided based on manufacturer's instructions.

PART 3 EXECUTION

3.1 GENERAL

The manufacturing, shipment, storage, handling and installation shall in strict accordance with the applicable standards and the manufacturer's printed instructions.

3.2 MANUFACTURERS' REPRESENTATIVE

The decarbonator system supplier shall provide the services of a qualified field representative to inspect the completed installation of the blowers

and to make adjustments in fan speed required to adjust the fan performance for the rated flow and to verify that fan vibration does not exceed AMCA standards. The field representative shall provide all required air flow measurement equipment and provide sheaves and belts as required to make the adjustments. A final test report for each blower shall be prepared and submitted to the Engineer.

3.3 INSTALLATION

Install in accordance with manufacturer's printed instructions.

-- End of Section --