APPENDIX A

30 WELDING BOOTHs AND Fume EXHAUST SYSTEM

The Technology Center of DuPage is seeking bids for thirty (30) welding booths with fume exhaust system as described below. Companies or individuals submitting bids must include the name of the manufacturer and the model of the welding booth and exhaust system proposed in their bid. Those submitting bids must include the technical specifications of the welding booth and exhaust system proposed and the technical specifications provided by the bidder shall be used for comparison to the specifications required in the bid request. Bids submitted must include any costs for shipping and uploading at to the Technology Center of DuPage and onsite testing of the welding booths and fume exhaust system to be provided. This bid request does not include installation and any electrical, mechanical and duct work.

PART 1  GENERAL

The following specifications are based on The Lincoln Electric Company Fume Extraction System. Equivalent products and systems that materially and substantially meet or exceed the performance standards permitted by these specifications may be submitted by bidders.

1.01 QUALITY ASSURANCE

A. SINGLE SOURCE RESPONSIBILITY

Welding Fume Exhaust System equipment and accessories shall be manufactured and furnished by a single manufacturer.

PART 2  PRODUCTS

2.01 MANUFACTURER

A. Design, materials, construction, and finish of welding extraction system specified, is the minimum acceptable standard of quality.

B. Manufacturers, subject to comply with requirements for the welding extraction system, are approved for bidding, provided they meet the contract document specifications, include the following:

1. Lincoln Electric or equivalent

C. Products:

Product Number listed is for Lincoln Electric use only. Proposed equivalents shall provide the product numbers as required to identify product and product specifications.

FUME EXTRACTION SYSTEM

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Product Number</th>
<th>Product Description</th>
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<tr>
<td>30</td>
<td>K1655-14</td>
<td>LTA 2.0-CW</td>
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Wall mounted telescopic articulating fume extraction arm with 360 deg. rotating hood. The working radius ranges from 3’ to 7’. The nominal diameter of the arm is 8 inches. Spring balance and counterweight allow arm to maintain position. Adjustable throttling valve is in hood. The arm is designed to be positioned 6-12” away from the welding process.

30  K1657-5  CONNECTOR, 8” DUCT - EXTRACTION ARM
The polypropylene Connector bolts to the top of the extraction arm and allows for easy connection of the duct drop when used in a central system.

30  S28367-16  MANUAL DAMPER 8”, MD8
The manual damper is used to balance the air flow at each fume extraction arm. It is located between the arm and the duct main. The damper is made from galvanized steel, and is 8 inches in diameter with EPDM rubber seal.

1  AD1389-2  FILTER, PRESSURE DIFFERENTIAL KIT
Monitors the saturation level of the filter cartridges and adjusts the air volume rate based upon a predetermined setpoint. As filter cartridges become saturated, the controller adjusts the fan speed to maintain the required air volume determined by the air volume setpoint.

Kit shall include
(1) S23385-48 Pressure Gauge
Gauge enclosure NEMA 4X

1  M18464-20  EXT. FAN, 50HP, 19800CFM, 230/460V, 12 IN. WG.
Mechanical Specifications:
Fan housing Steel
Dimensions WxLxH 52.5x54.31x59 in
Weight 1662 lbs
Construction class Class III
Inlet 33.56” dia
Fan model SQBI-300
Fan speed 1750 rpm
Wheel description HD backward Inclined
Wheel width 100%
Wheel dia. 32.38 in
Outlet Velocity 3646 fpm
Performance 19,800 cfm @ 12” w.c.
(@ 70 deg, 0.075 lb/ft3)

Electrical Specifications:
Motor design IEC 132 (WEG)
Voltage 230,460V/3ph/60Hz
BHP 47.4
Power 50 HP
The variable frequency drive (VFD) regulates the fan input voltage based on either a differential pressure signal or a signal from the IF-15 control box. UL listed to UL508C, NEMA ICS 3.1, IEC 146.

**Electrical Specifications:**
- Voltage Tolerance: 200-240V +or- 10%
  380-480V +or- 10%
- Frequency Tolerance: 48-63 Hz
- Input phases: 3 phase = full rating. Derate for single phase.
- Displacement pf: 0.98 across entire speed range
- Efficiency: 97.5% @ rated amps, nominal line voltage

**Environment:**
- Altitude: 3300ft without derating
- Air Temp: IP30, NEMA/UL type open = -10 to 50 deg C.
- Humidity: 0-95% non-condensing

**Dual walled, inline, straight duct silencer, acoustic media with fiberglass media protection.**

- Inlet dimensions: 40.25”x22.25”
- Outlet dimensions: 40.25”x30.25”
- Net Weight (approx..): 438 lb. (199 kg)
- Pressure drop: 0.54 in wg
- Construction: HRS 14 Ga Casing
- Internals: GALV
- Fan Connection: 2 in. HRS Flange
- System Connection: 2 in. HRS Flange

**Interior/Exterior coating:**
Interlac 789 DTM Industrial Enamel (2-4 mils)

**Noise Criterion:**
- Required: 75 dBA
- Position No.: 3 (90deg from Silencer opening)
- Distance: 5 ft
- Location: Inside – Large Space

**ON/OFF PUSH BUTTON CONTROLLER**
Kit includes the following:

1. (1) – S21118-91 Enclosure
2. (1) – S21130-21 Green Push Button, AB
(1) – S21130-46 Red Push Button, AB
(1) – S22628-5 Push Button, contact block, 2 N.C.

S21118-91 ENCLOSURE, 2 ELEMENT, STEEL
30.5mm, Heavy-Duty, Pilot Device Enclosure, Gray, Steel, Surface Mount, 2 Element, 1 Contact Block Depth, NEMA 12, 13.

S21130-21 PUSH BUTTON, 30mm
Push button, 30.5mm, Green, Type 4x, IP65 wateright/oiltight panel, Double nickel plated terminal screws, Contact material: Silver

S21130-46 FLUSH PUSHBUTTON, 30mm
Flush pushbutton, 30.5mm, Non-Illuminated, Red, 800T, NEMA Rating: 4/13, 1 NO

S22628-5 30mm CONTACT BLOCK, 1 N.C.
1 N.C. Contact Block, 30.5 mm, Base Mount, Non-Metallic, 800T Series

30 AD1221 LAMP/ARC SENSOR KIT
This kit incorporates a lamp, sensor, and on/off switch; such that an operator may turn the fan on/off manually or automatically right at the end of the arm. The sensor will turn the fan on when it detects the arc, and off when it no longer detects the arc. The following items are included in the kit: Work lamp, arc sensor, 36'- 3 wire - 20 AWG, control box, and thermal relay.
Specs.
Voltage 24 VAC
Bulb Halogen, 35W
Weight 7.7 lbs

30 S28367-2 AUTOMATIC DAMPERS 8", AD8
Motor operated damper, 8 inches in diameter with galvanized steel structure and EPDM rubber seal. Damper is equipped with Kenlock seals for easy duct mounting. The working range is 0 to 90 degrees.
Electrical Data:
Drive Torque 8 Nm
Running time 8 sec
Input Power 24V AC
Frequency 50-60 Hz
Power consumption 7 W (13VA/3.4A@2ms)

2 S23385-37 IF-15 INTERFACE CONTRL, STATIFLEX 6000
The IF-15 works in conjunction with the VFD to regulate the fan speed based on the number of arms that are demanding air flow. The IF-15 receives a signal from the fume extraction arm to
turn the fan on/off, and/or to change its frequency (speed). The signal output to the VFD is 4-20mA. The input power required to the IF-15 is 24V AC. The IF-15 can serve up to 15 arms. More than one IF-15 can be wired to the VFD as necessary.

1  G3207-303  PLC, 2-4 IF 15 Connections
Used to combine the output from up to four IF-15 interface devices into one 4-20ma signal, which is fed into the variable frequency drive.

1  L16480-172  STATIFLEX FB-36-STD/CPC
The Statiflex filter bank is a modular dust bank that is designed to accommodate nearly any welding/cutting application. It is equipped with an automatic cleaning mechanism and dust bin below the filter to collect the particulate. The cleaning mechanism is designed to eliminate filter clogging. Inside every filter cartridge, is a patented pulsed air amplifier that disperses compressed air for cleaning. This pulsed air releases the dust collected on the surface of the filter. The frame is constructed of heavy gauge steel tubes and channels and heavy gauge steel sheeting. The entire structure is sealed weather tight with a polyester coating. Neoprene gaskets are used to seal the filter air and weather tight. Install outdoors or indoors.

Technical Data:
Airflow/cartridge 580 cfm
Arrangement (36) cartridges 6 x 6
Inlet Dim. 32” I.D.
Outlet Dim. 2-19 1/2” O.D., 2-16” O.D.
Compressed Air 65 psi
Compressed Air conn. 12 mm push-in fitting
CA quality ISO 8573-1 Class 6
Input power 115, 208, 230, 400, 460, or 575 V
Working temperature 14 to 122 deg. F
Frequency 50/60 Hz
Output voltage 24 V AC
Power consumption 75 W
Safety classification IP 54 / NEMA 12

Applications:
MIG-MAG/GMAW welding
TIG welding
FCAW welding
Stick/SMAW welding

36  KP3369-1  FILTER-MERV 16 STATIFLEX FILTER BANK
The Cart-MB filter media is an 80/20 blend (Cellulose/Spun Bond Polyester) with a Nano fiber
overlay. Each cartridge is created using a pleat stabilizing technique that ensures correct distances between cartridge pleats. This allows for more “effective” filter area resulting in better cleaning efficiency. The result is a lower cartridge replacement rate. This filter has a MERV-16 rating based on the ASHRAE 52.2 test.

1 S23273-8 ENV, CTRL BOX FB, PRESSURE, UP TO 64 CART
The Cont-C64 monitors filter pressure and ensures cleaning is done only when necessary reducing the compressed air usage.

WELDING BOOTH

1 L15788-XX (30) WELD BOOTH 5’ X 5’ (3) WALL W/CURTAINS & ARM MOUNTS/BRACKETS
Welding booths shall adhere to the AWS (American Welding society) “Guide for the Training of Welding Personnel” (AWS EG2.0:2006). The booths allow for flexibility and modularity. They allow for flexibility by permitting the instructor to modify the booth configuration in conjunction with possible curriculum changes. Expandability is accomplished by adding more walls to the booth system. All four sides shall provide complete protection of the welding personnel and others in the area from harmful UV rays and hot sparks
Construction – the panels shall be constructed of fire-resistant material. The panels shall be constructed such that they have a minimum 12” space below the bottom of each panel to allow for airflow. Each panel shall have a support structure of 2” x 2” x 1/8”(wall thickness) steel tubing (or equivalent strength support) and shall be sheeted with a minimum 16 gauge sheet steel.
Finish – each panel shall be coated with rust inhibiting flat enamel paint. The ‘inside’ portion of the panels shall be painted black (or equivalent low reflective color) to reduce the propagation of arc flash to adjacent welding personnel.
Assembly – each booth shall be constructed in such a manner that when the panels are bolted to each other, a self standing, three sided booth shall be the result. Each booth shall be made to be anchored to the floor. With the proper anchors the booth system shall have the ability to be approved for a seismic design category IV.
Protection – each booth shall be equipped with an arc flash protection curtain. These curtains shall be constructed of approved material such that they
block harmful UV rays emanating from the welding arc.

Booth Size (inside dims) – (W x D x H) 5’ x 5’ x 7.5’

(Note: for out of position and overhead welding, it is almost always necessary to provide an articulating fume extraction arm to prevent the welding fumes from escaping the booth) (AWS EG2.0:2006).

Includes the following:

(3) L15788-116 Weld Booth, Lt Panel, 5’x7.5’H
(3) L15788-117 Weld Booth, Rt Panel, 5’x7.5’H
(46) L15788-118 Weld Booth, Back/Cntr Panel, 5’x7.5’H
(19) L15788-119 Weld Booth, Header Tube
(54) L15788-114 Weld Booth Post, 4 & 5 FT
(30) L15788-8 Weld Booth, Curtain Asbly, 62”W x 66”H
(30) S21164-368 Brkt.Mt LTA 2.0-CW to Booth Wall
(30) AD1319-5 ENV, Arm Mtg Brkt Fastener Kit

ENGINEERING SUPPORT

Provide engineering and installation phone support for the electrical and mechanical contractors

The successful bidder must provide one system installation manual. This manual must be included with the purchase of the quoted system and shipped with the equipment.

COMMISSIONING

Provide system start-up, commissioning, and technician support to test and tune the system at initial system operation. Commissioning includes manual damper adjustment, airflow set point, extraction system operation and maintenance. Post installation commissioning includes a point-to-point checklist and sign-off procedure.

A minimum of one factory technician will be provided to assist with start-up and commissioning.

END OF SECTION