



## SKYPLUME G1-ELHV (HIGH PLUME SWSI EXHAUST FAN SYSTEMS IN RUST PROOF CONSTRUCTION)

### SPECIFICATIONS

## 1 GENERAL

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- a) Fans and stacks shall be designed and constructed so that the gas stream only contacts solid FRP surfaces.
- b) All FRP will be 0-25 Flame spread as per ASTM-E84.
- c) The complete system shall be designed to a wind load rating of 125 MPH.
- d) All steel fasteners shall be 316 stainless steel.
- e) Motor shafts will be fully protected from exposure to the gas stream by FRP shaft sleeves.
- f) The fan shall be constructed per AMCA Standards 99.
- g) The fan arrangement will be based on AMCA 99 and will be AMCA arrangement #4, 8 or 9 as indicated on the schedules.

Acceptable Manufacturers: Plasticair Inc.

## 2 AIR PERFORMANCE

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- a) The performance ratings are to be in accordance with AMCA 260. No other performance standard or test will be accepted.
- b) Fan Manufactures Catalog will be published and accessible from the AMCA web site certified ratings program.
- c) Sound levels, Horse Power Levels are not to exceed scheduled values.
- d) Plume Heights are to be calculated using the wind band volume by using the ASHREA Briggs Effective plume height calculation and are not to be less than scheduled values.
- e) Wind band volumes and velocities are not to be less than scheduled values and are derived from AMCA 260 testing.

## 3 FAN OUTLET NOZZLE AND WIND-BAND

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- a) The fan discharge will be fitted with a UV stabilized FRP exit nozzle and attached conical FRP wind-band.
- b) The nozzle assembly will be designed to dilute outside air with the primary exhaust gas stream.
- c) Dilution rates are to be achieved within the nozzle assembly and shall not be less than the scheduled rate.
- d) The nozzle assembly will be supported by the fan housing without the need for guy wires or additional supports and the manufacturer will warranty the stack against failure due to rust for 25 years.



- e) The outer surface of the nozzle and wind-band will be UV stabilized gel coat.
- f) Manufacturer will provide and honor a 25 year full replacement warranty against failure due to rust.

## 4 HOUSING CONSTRUCTION

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- a) The Centrifugal fan housing is to be solid FRP throughout.
- b) The outlet and inlet flanges are to be of heavy industrial quality.
- c) All flanges are to have factory flat finishes.
- d) The materials of construction will be premium quality vinyl ester resin and reinforcing glass throughout.
- e) The entire surface exposed to the gas stream will be complete with a resin-rich corrosion barrier consisting of C-veil and a smooth finish.
- f) The outer surface of the housing will be of a heavy UV stabilized gel coat.
- g) The housing shall include a machined Teflon shaft seal to limit gas leakage.

## 5 STEEL FAN BASE

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- a) The fan base is to be of a heavy-duty industrial quality design to minimize vibration and to ensure long life. The bearing shaft pedestal is to be constructed of heavy gauge steel.
- b) The fabrication method is to be all welded.
- c) After welding is complete, prior to the fan assembly, the fan base is to be sandblasted white and clad with FRP to a total of 3/16" thickness.
- d) The base is to be rust proof. Painted bases are not acceptable.

## 6 IMPELLER

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- a) The impeller is to be of a high efficiency backward inclined design.
- a) The materials of construction will be premium quality vinyl ester resin and reinforcing glass throughout.
- b) The method of construction is to be hand lay-up only.
- c) The entire surface of the impeller exposed to the gas stream will be complete with a resin-rich corrosion barrier consisting of C-veil and a smooth finish.
- d) The shaft is to be attached to the back plate of the impeller by way of a taper lock bushing and a one piece cast sprocket hub.
- e) The entire shaft attachment assembly is to be completely covered with a minimum 0.25"(6 mm) of FRP lay-up.

## 7 BEARINGS

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- a) Bearings are to be solid pillow block, self-aligning type or split pillow block.
- b) The bearings are to be rated and designed for a minimum L-10 life of 200,000 hours.



- c) The bearings are to be located out of the air stream.
- d) The method of lubrication will be grease per the motor manufacturer's recommendations

## 8 PLENUM

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- a) The materials of construction will be as per the attached schedule.
- b) Dampers, controls and other options will be as detailed in the schedule

## 9 SHAFT

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- a) Fan shaft will be 1045 carbon steel complete with the correct keyways to accept V-belt drive selections.
- a) The diameter of the shaft shall be sized to ensure that the critical speed of the fan is at least 25% above the fan operating speed.
- b) The impeller side of the shaft shall be complete with an FRP shaft sleeve, which is bonded to the back-plate of the impeller and protrudes through the housing.
- c) The outside diameter of the sleeve is machined to provide a minimum clearance gap with the Teflon shaft seal.

## 10 MOTOR

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- a) Motor will be a foot mounted totally enclosed fan cooled motor with a 1.15 service factor. Motor will be VFD ready.

## 11 BELT DRIVE

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- a) V-belt drive shall be sized with a safety factor of 1.5 times the motor horsepower.
- b) An adjustable base will be provided under the motor to permit setting the belt tension.

## 12 GUARDS

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- a) Weatherproof FRP guards complying with the OSHA standard will protect the shaft and v-belt drive.
- b) Guards will be vented for proper motor ventilation.

## 13 BALANCING AND TESTING

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- a) All fans shall be completely assembled and test run as a unit at the specified operating speed prior to shipment.
- b) Balancing of the impeller shall be achieved only with the use of the identical material used to fabricate the impeller.



- c) Balancing shall be in accordance with ASTM D-4167.
- d) The fan shall be test run at operating speed and not shipped until vibration readings are within acceptable limits. Acceptable limits are as per G2.5.
- e) Records shall be maintained and a written copy shall be available upon request

## 14 WARRANTY

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- a) The supplier shall warrant that all system components shall be free from defects in materials and workmanship for a period of 15 months from date shipped or 12 months from equipment start up, whichever occurs first.
- b) Extended warranty on induction stack shall be honored to 25 years from date of purchase.