

# HOTFOIL-EHS

**BAGHOUSE AND PRECIPITATOR HEATING SYSTEMS**



*FM Approvals*

Ordinary Areas



## **INTRODUCTION:**

*Baghouse and precipitator hoppers experience pluggage problems due to flue gas condensation. This is an expensive and an unnecessary problem.*

*The “HB” Heating modules are designed to eliminate the maintenance nightmare of hopper pluggage.*

*Each system is custom built to address the exact needs of the application. The HB Module has been used successfully on thousands of individual precipitator and fabric filter hoppers.*

## **THE “HB” HEATING MODULE**

*The HB Heating module has numerous outstanding design features, proven by 30+ years of operation in the field.*

- Robust, flexible, cushion like heater face that provides maximum heat transfer to the hopper surface. (Even when the hopper surface is irregular.*
- Low watt density design with flat foil heating elements for efficient heat transfer, low operating temperatures and increased heater life.*
- Multiple parallel path circuitry design for increased heater reliability and increased design flexibility.*
- Custom designing allows for heating systems to be used on voltages up to 600 volts. With minimal series connections.*
- Lightweight, easily handled unit that simplifies installation and minimizes installation costs.*

*The HB heating modules are manufactured from the highest quality materials and subject to 100 percent inspection throughout the manufacturing cycle.*

*The Hotfoil Type “HB” Heating Module is FM Approved for ordinary areas.*

## **ENGINEERING AND DESIGN:**

*Interested in getting an idea of a cost on an HB MODULE Heating System?*

**WE OFFER: Complete system design FREE OF CHARGE without a Purchase Order.**

- We are capable of designing the systems from drawings or site sketches, once the system has been designed it will be sent to you with a formal quote, should you choose to purchase we will re-issue the Drawings for Approval.*
- If drawings are not available will drive/fly to your site for a visit, once there we will measure and design the heating system directly on the Hopper, Chute, Flopgate, Etc... We will return to the office design the system on CAD and offer you a formal quote. If we design the system from the field we will take 100% responsibility if for some reason the Heater / Heaters don't fit.*
- As with all of our Heating Systems we offer a wide range of controls, from your basic thermostat to Electronic Controllers. We try to keep everything simple so that you pay for only what you need and nothing more.*
- And last but not least we are available 24 hours a day 7 days a week, no exceptions.*

The drawing you see below is the design that was originally put together for the picture you see on the front.

HEATING SYSTEM SPECIFICATIONS					
HEATER TYPE.....	HB MODULES				
MODULE LOAD.....	26,100 WATTS				
MODULE AREA.....	115.7 SQ. FT.				
MODULE WATT DENSITY.....	226 WATTS/SQ.FT.				
FLEXIBLE HEATER LOAD.....	386 WATTS				
TOTAL ELECTRICAL LOAD.....26,486 WATTS					
VOLTAGE SUPPLY.....480V, 3PH, 60HZ, 3-WIRE.					

HEATING SYSTEM DETAILS					
REF.	QTY.	SIZE	WATTS	VOLTS	OHMS
A	12	12 x 10	179	160	143
B	4	10 x 6	76	65	56
C	1	36 x 10	506	480	455
D	2	30 x 8	385	274	194
E	2	18 x 10	271	240	213
F	10	60 x 6	506	480	455
G	2	24 x 10	405	349	301
H	16	72 x 6	700	480	329
J	1	24 x 6	240	217	195
K	2	12 x 10	162	115	82
L	2	10 x 6	82	74	67
M	8	48 x 6	504	480	457
FLEXIBLE HEATERS					
TH	1	40 x 1	128	115	104
PT	2	40 x 1	129	92	65

BILL OF MATERIALS		
ITEM	QTY.	DESCRIPTION
1	40	SETS OF HB MODULE HOPPER HEATING SYSTEMS: 62 HB MODULES & 3 FLEXIBLE HEATER PER SET, 26,486 WATTS ON 480 VOLTS.
2A	40	JUNCTION BOXES: NEMA 4X, STAINLESS STEEL, 20x20x6 WITH 90 WELDMULLER ST-SS TERMINAL BLOCKS, 65A, 600 VOLT RATED.
2B	40	JUNCTION BOXES: NEMA 4X, STAINLESS STEEL, 20x16x6 WITH 72 WELDMULLER ST-SS TERMINAL BLOCKS 65A, 600 VOLT RATED.
3	40	SETS OF ALUMINUM MOUNTING CHANNEL, 2"x1"x1/8".
4	2	SETS OF MOUNTING TEMPLATES.
5	11000	STUDS: 3/8"-16x3", STEEL WITH CERAMICS.
6	11000	WASHERS: 1" DIA. STEEL.
7	22000	NUTS: 3/8"-16, STEEL, HEX, PLATED.
8	160	CAUTION LABELS.
9	40	THERMOSTAT BULB MOUNTING BRACKET.
10	5000	7" INSULATION PINS/ LEAD WIRE GUIDES

**NOTES:**

1. Heater resistance tolerance is +/- 10%
2. All heater cold leads are #16 awg stranded nickel-plated copper, double glass insulated and silicone rubber sheathed.
3. All heater cold leads are of sufficient length to exit the insulation and are to be terminated inside each junction box. Junction box to be mounted within two feet of the heater lead exit points.
4. HB heating modules are supplied with mounting channels, studs, nuts and washers. Flexible heaters are supplied with glass tying tape.
5. Heater Wiring-By HotFoil, On-site & Power wiring-By others.
6. For installation instructions refer to HotFoil Inc. Installation & Maintenance Manual.
7. It is the responsibility of the client/user to ensure that the heater installation is in compliance with all applicable Federal, state and local electrical codes and regulations.
8. CAUTION: Do not weld, flame cut, or grind near the installed heaters - Remove the heater first.
9. All series connections are as shown on the schematic diagram and are to be made inside the junction box. Jumpers inside junction box provided by HotFoil Inc.

**Hopper Junction Box Tag No(s):**  
 1-209-HTR-121A through 1-209-HTR-121K  
 2-209-HTR-121A through 2-209-HTR-121K  
 1-209-HTR-221A through 1-209-HTR-221K  
 2-209-HTR-221A through 2-209-HTR-221K

REV.	DESCRIPTION	DR.	DATE

SCALE: 1/2" = 1'	<p><b>hotfoil</b> Electric Heat Tracing</p> <p>"HB" MODULE HOPPER HEATING SYSTEM LAYOUT &amp; DETAILS</p>	HOTFOIL, INC. HOTFOIL, INC. 2001
DRAWN: [blank]		SHEET: 1 OF 2
CHECKED: [blank]		HOTFOIL NO. D-6251 B
DATE: [blank]		

## SYSTEM DESIGN:

When the problem of Hopper Condensation was originally investigated, it was found that the simple application of strip and rod type electrical heaters was not the answer, High temperatures in localized areas causes warped hoppers.

Hotfoil engineering staff has designed many such systems both large and small. Our package will involve heater layout, installation equipment and instructions, electrical schematics and temperature control equipment. All applications are handled on a project management basis to ensure customer and end user satisfaction.

## IEEE 1069 - 1991

In 1991 there was published the "IEEE 1069 Recommended Practice for Precipitator and Baghouse Hopper Heating Systems".

These guidelines were put together by engineers involved with the air pollution control industry. The members of the chosen committee involved utility engineers, designers of APC systems, architect engineers and the leading heating manufacturers of the day. The group laid out basic guidelines for the industry with desired parameters. The publication covered design, layout, calculations, temperature control, etc. to give the industry a standard on which to base.

Today these guidelines are used throughout the world as the most comprehensive basis for fly ash hopper heating projects. Hotfoil was an active member of the committee establishing the guidelines and we uphold and adhere to the proven recommendations.

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## **PRODUCT/SYSTEM FEATURES**

### ***Custom Designed System***

Each client gets the assurance that the specific problem in question is being addressed with a product designed for the job. We pride ourselves on understanding, processing and then supplying the product with the knowledge that it will stand up and prove itself year after year.

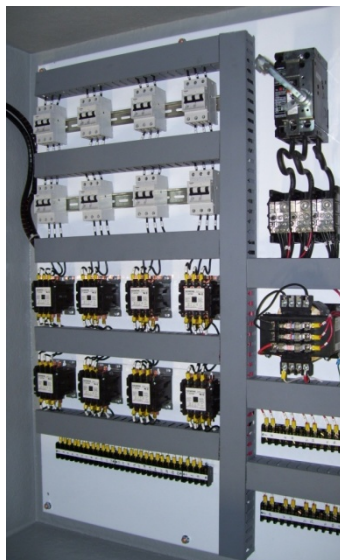
### ***Factory Mutual Approved***

The product and system are approved for use in non-hazardous areas, In most cases the heaters can be installed in Hazardous areas as the heaters are insulated over and protected, Controls are then supplied in Nema 7,9 Boxes to protect against ARCS and Sparks. Safety and reliability is unquestionable.

### **CONTROL SYSTEMS AND HOPPERS:**

We also supply custom Control Systems for all of our Hopper Heaters.

We also offer replacement Hoppers for your existing Baghouse or Precipitator ask about our WARRANTY.



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