



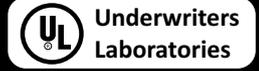
TEMPSENS

Thermal and Cable Solutions

ISO 9001-2008



CCOE



*Applied For

PANEL HOPPER HEATER



TEMPSENS INSTRUMENTS (L) PVT. LTD.

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PH HOPPER HEATING MODULE

The PH Hopper Heating Module is a rugged design, high performance heating surface of hopper. The Marathon hopper heater are self contained heaters whose designed provide heat outputs up to 3 watt/squire inch, with a maximum circuit size of 4500watts depending on the application, the design of the hopper heater is such that it distributes heat over its entire surface. The PH module according to customer requirement of surface heating area and application.

The heater is offered in multiple design, each one includes a heater element made of Inconel/Nichrom/SS. The heater element which provides the multiple flow paths for electrical current to pass. This design eliminates the burn out chances common with series wire based design.

Ratings

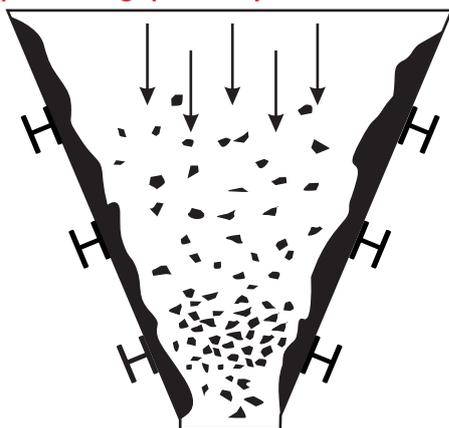
- Maximum watt density : 3 w/in²
- Maximum supply voltages : 415 V
- Max. operating temperature : 200°C

Note : Hopper heating voltage and watt density are base on application specific availability and requirements.

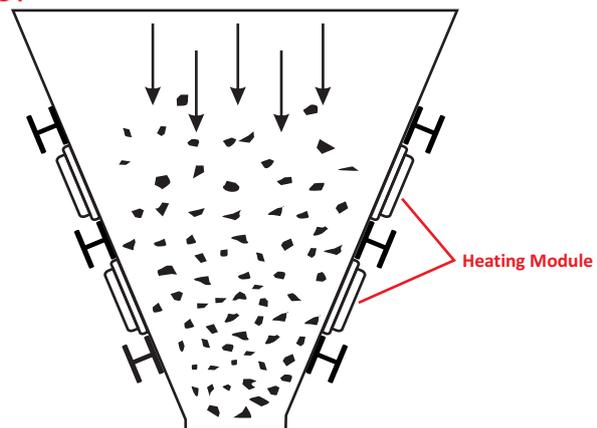
Hopper Heating Modules for Power Plants

Conveying coal/oil (other material) from stockpile to boiler during winter months is a well-documented nightmare for plant operators. Identical conveying problems exist within the mining industry as coal is moved around the mine site. Coal stored outdoors on the stockpile or delivered by unit train or barges picks up moisture from rain and snow. When this wet or frozen coal is conveyed, it inevitably comes into contact with the plate steel of the various hoppers and chutes within the coal handling system. During winter, this plate steel is below freezing for extended periods. When wet or frozen coal encounters steel at sub freezing temperatures an instantaneous bond is formed. This bond causes immediate and often catastrophic blockage of the hopper and chutes. The bond and resultant blockage are so severe that often pneumatic drilling equipment and explosives are required to free up the system. This problem, known as Flash Freezing, is extremely inconvenient and very costly. Several cases are documented where utility and industrial boilers have been shut down due to blocked conveying systems.

The Hopper Heating specifically addresses the flash freezing problem.



Cross Section of Unheated Hopper



Cross Section of Heated Hopper



Construction

- Parallel circuit high temperature alloy heating element.
- Temperature rated insulation- Mica and glass wool.
- Aluminium/Aluminized steel protective enclosure and its cover with mounting channel attachment.
- High temperature insulated lead wire for connection.

Certifications



Canadian Standards Associations
Ordinary Location (Non-Classified)

AVAILABLE PH HOPPER HEATING MODULE SIZES

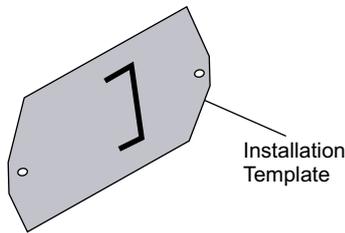
| Catalog Number | Heater size in inches (cm) | Stud Spacing in inches (cm) |
|----------------|----------------------------|-----------------------------|
| PH-790-121 | 35.43X21.65 (90X55) | 33.85(86) |
| PH-342-52 | 19.68X17.71 (50X45) | 18.11(46) |
| PH-292-48 | 9.64X17.32 (24.5X44) | 15.74 (40) |
| PH-1580-242 | 55.11X17.71 (140X45) | 16.14 (41) |
| PH-128-21 | 9.05X10.82 (23X27.5) | 9.25 (23.5) |
| PH-1157-192 | 43.30X13.77 (110X35) | 12.20 (31) |
| PH-738-122 | 9.84X35.43 (25X90) | 33.85 (86) |
| PH-191-32 | 13.77X13.77 (35X35) | 12.20 (31) |
| PH-437-72 | 9.84X27.16 (25X69) | 25.59 (65) |
| PH-118-19 | 5.70X13.77 (14.5X35) | 12.20 (31) |

Note : Catalog numbers shown are partial numbers. Delivered product will have prefix and suffix designations to identify complete design parameters; contact Marathon for design assistance.

STANDARD MOUNTING ACCESSORIES

Each heater module is supplied with standard accessories mounting channel, mounting stud 5/16 inch throughout threaded, plain washer, spring washer, nuts and installation template.

Marathon will supply accessories against order for facilitate on new site installation. Installation template is supplied for marking of mounting stud location so that heater module can easy install.



Installation Template



Mounting Channel



Mounting Stud, Nut & Washer

Marathon Hopper Heating Module

They are exclusively developed to address the unique and specific requirements for the prevention of condensation in fly ash hoppers and are also custom designed to provide low watt density, uniform heating over the lower areas of the hopper also.

