



*Season's Greetings  
and  
Best Wishes for a  
Happy and Prosperous  
New Year*



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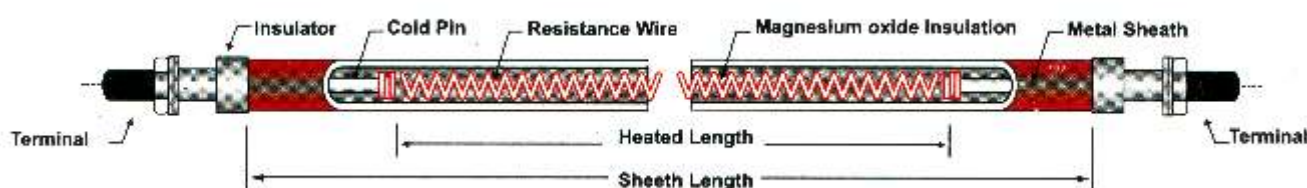
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# TECHNICAL

Tubular Heater are the most versatile of all electric heating elements. Tubular Heaters are capable of being framed into virtually any configuration. They can be designed for variety of applications and can be framed in different diameters, lengths terminals and sheathing materials depending upon the application and customer's requirement.

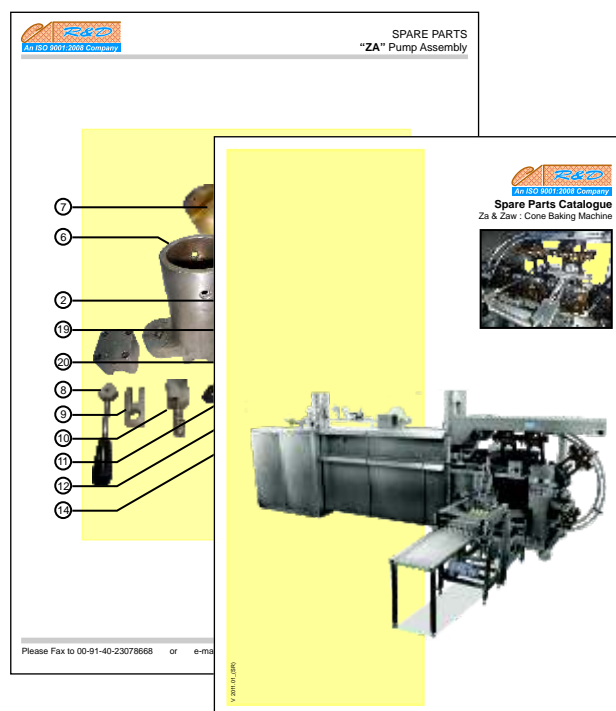
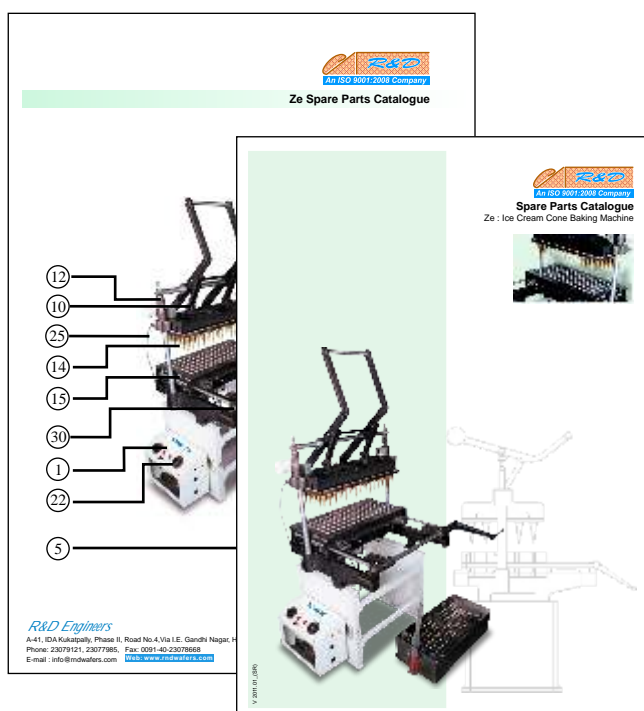
## What exactly is a Tubular Heater?



The basic design consists of a helical coil of nickel-chromium resistance wire precisely in a metal sheath. This coil is surrounded by magnesium oxide powder which is vibration loaded to insure even density throughout the length of the heater. This entire assembly is then reduced to the finished diameter, compacting the MgO and "freezing" the coil in the center of the heater which provides excellent heat transfer and electric strength between the coil and the sheath. The range of rating, sizes, materials and terminations available makes the tubular heater adaptable to many industrial, commercial and scientific applications.

## Spare Parts Catalogues

We have updated our illustrated spare parts catalogue  
Have you received your copy by now?



A few samples illustrated here



# PRODUCT IDEAS

## INNOVATIVE PRODUCTS



## PHOTO FEATURE

Sharing experiences.



## FORTHCOMING EXHIBITIONS



**Germany**

Date: 29th Jan-1st Feb, 2012  
Stall No.:B-042,  
Venue: Cologne International Expocentre,  
Cologne, Germany



**Dubai**

Date: 19 - 22nd Feb, 2012  
Stall No.:S1-B72 in Sheikh Saeed  
Venue: Dubai International Convention  
and Exhibition Centre. Dubai



**Singapore**

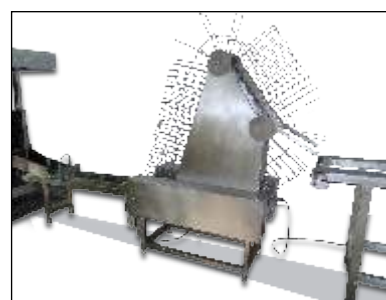
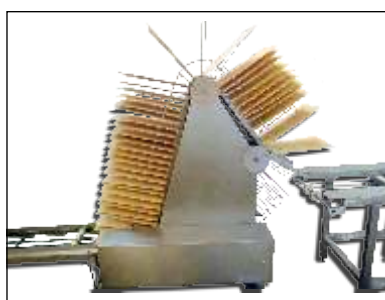
Date: 17th April - 20th April, 2012  
Stall No.:1G4-02,  
Venue: Singapore Expo,  
Singapore

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The moisture content of baked wafer is in the region of 1-3% and baking is usually completed in 1.5-3 min. The actual temperature of the wafer plates during baking under commercial conditions is difficult to measure. However measurement made using thermocouples embedded in static electrically-heated wafer plates indicate actual plate temperatures to be in the region of 180-200°C.

Attempts to increase the throughput of a wafer oven by shortening the baking time and increasing the temperature, if pressed too far, result in splitting of the baked sheet into two thin skins of material

### COOLING AND CONDITIONING OF WAFER SHEETS



Freshly-baked wafer sheets frequently exhibit variations in moisture content between different parts of the same sheet. Average measurements made on wafer sheets from six different commercial wafer ovens showed variations of up to 2%.

These variations are associated with corresponding variations in weight or thickness caused by badly set or distorted plates, or by excessive wear in the hinges or latches on an old machine.

Whatever the cause, such variations in moisture content tend to even out during storage of the wafer and the resultant transfer of moisture causes differential expansion and contraction to occur in the wafer sheet. Absorption of moisture from the atmosphere also causes the wafer sheet to expand.

It is measured that the linear expansion of wafer sheet with increasing absorption of water vapour from a controlled atmosphere. It is found that wafer increases in length by 0.5% for each 1 % increase in moisture content.

Differential expansion and contraction does not produce spontaneous breakage, or checking, in wafers. However if such migration and changes in dimensions occur after the wafer sheet has been formed into a wafer sandwich, the change in dimensions can weaken the adhesion between the wafer and the filling, in some cases causing the sandwich to separate into two or more pieces. Similar problems can occur when moisture is differentially absorbed from the atmosphere. When wafers are enrobed in chocolate or other rigid coating, wafer expansion can lead to cracking of this coating.

(...to be continued)

#### DISCLAIMER

We are unable to accept responsibility for any errors contained in this document, and we reserve the right to make changes.