



I SQUARED R ELEMENT CO., INC.

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CHECKLIST OF INFORMATION REQUIRED TO TROUBLESHOOT SILICON CARBIDE HEATING ELEMENT PROBLEMS

Date: _____

Customer data

Customer Name: _____

I2R Contact: _____

Contact Name: _____

Contact email: _____

Address: _____

Contact phone: _____

Product manufactured/Industry: _____

Furnace data

Furnace builder: _____

Furnace type: _____

Production capacity, lb/h: _____

Production Process: _____

Furnace Power Rating, kW: _____

Furnace Temperature, °C or °F _____

Firing Cycle: _____

Number of Zones _____

Time to temperature: _____

Refractory/Insulation thickness _____

Refractory Insulation Composition: _____

Diameters of holes in refractory: _____

Ceramic Terminal Tube used, size: _____

Width

Height

Length

Chamber/Zone dimension: _____

Furnace atmosphere: _____

Is atmosphere _____

What is the atmosphere dew point? _____

contained in muffle: _____

What volatiles are given off from the load during heating? _____

Is there any steam? _____

Electrical data:

Electrical orientation (Wye/Delta/Single-Phase): _____

SCR Rating: _____

Transformer Voltage taps: _____

SCR Manufacturer: _____

Transformer Rating: _____

Method of Control (SCR, _____

Transformer Manufacturer: _____

SSR or Contactor): _____

If SCR, what firing method is employed?(phase-angle, zero-switching and type i.e single cycle, slow cycle and time base, if known): _____

Volt (AC)

Phase

Hz

Main Line Power _____

Element data

Type of element & part number: _____ Number of elements _____
Element loading: _____ Power per element, kW: _____
Element temperature: _____ Hot Zone Length _____
Element dimension: _____ Cold End Length: _____
Element Spacing (Centerline to Centerline) _____ Element spacing from chamber walls: _____

Connections and Installation

What orientation are the elements installed in?
(Horizontal, Vertical, at an Angle, etc.) _____

How are the elements supported? _____

Are terminal tubes/lead-in sleeves being used? _____

Are the terminal holes in line with each other from one side of the furnace to the other? (where applicable) _____

Are the terminal holes free of debris? (any signs of condensates in the holes?) _____

Are the elements being packed around with fiber at the ends where they pass through the refractories? _____

Are the elements still able to move freely in both linear and radial directions? (important for thermal expansion/contraction) _____

Is there sufficient slack in the length of the aluminum straps so as to not transfer stress to the elements? _____

Are there any signs of residues on the element hot zones? _____

Are there any signs of residues on the element cold ends? _____

Do you know/what do you think the residues are? _____

Are the elements being installed in well matched groups? (if unclear, we can explain and help) _____

Are new and old elements being installed in the same connection group? _____

Have the transformer tapings and/or SCR outputs been adjusted when replacing spent elements with new ones? _____

Are the aluminum braids showing signs or oxidaton, arcing or heating up? _____

Are the connection clamps loose on the ends of the elements? _____

How are the elements connected in each control group?
(Please describe and/or send a sketch or connection schematic) _____

Element Radiant Protection Tube Data (where applicable)

Tube material _____ Tube dimensions (mm): _____

Type(Straight,U, W, Inner) _____ Tube length (mm): _____

Tube orientation (Hor./Vert.) _____ Tube loading, W/cm²: _____

Number of tubes: _____ Net power per tube, kW: _____

NOTE: PLEASE DESCRIBE THE ISSUE BEING EXPERIENCED AS THOROUGHLY AS POSSIBLE. USE SEPARATE SHEETS TO PROVIDE ADDITIONAL INFO/ WHEN THERE IS INSUFFICIENT SPACE ON THIS FORM. PLEASE SEND PHOTOS AND PROVIDE AS MUCH INFORMATION AS POSSIBLE ABOUT THE PROCESS. WHEN COMPLETE, PLEASE EMAIL THIS FORM, PHOTOS, AND ADDITIONAL INFO TO: SALES@ISQUAREDRELEMENT.COM