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# CHECKLIST OF INFORMATION REQUIRED TO TROUBLESHOOT STARBAR HEATING ELEMENT PROBLEMS

Date: _____

**Customer data**

Customer Name: _____ I2R Contact: _____
Contact Name: _____ Contact email: _____
Address: _____ Contact phone: _____
Products 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 tappings 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**