

Testing Procedure for Deployment Method of Heater Element Through Mark Pauline's Pitching Machine (10/25/05)

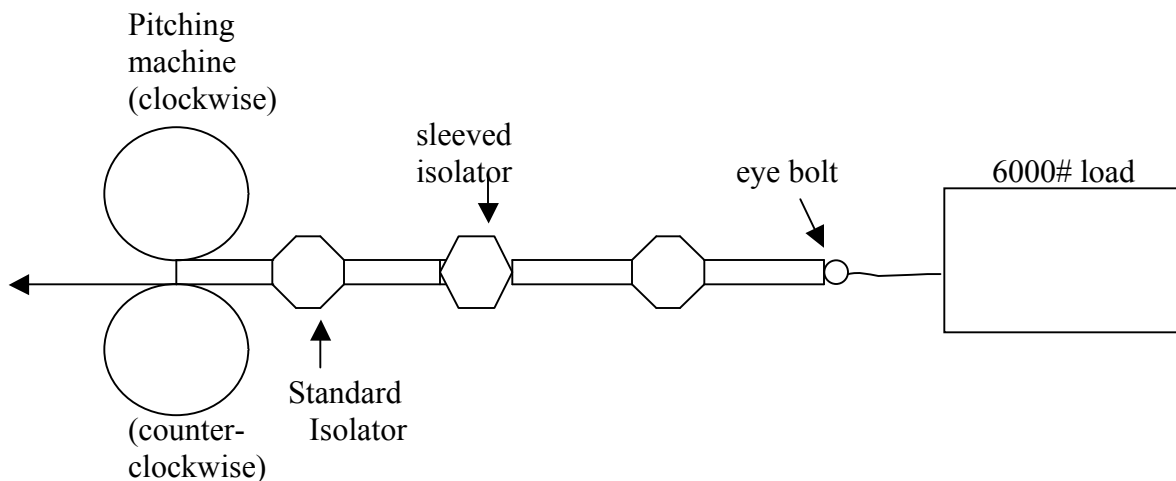
Scope

To determine the feasibility of the pitching machine deployment method for the heater element with the silicon nitride isolators attached to it but without a protective casting. The test should be conducted to simulate the actual deployment process as close as possible. This will include running at a rate of at least 30 ft/min with a load of at least 6000 lbs. We will also run the tests with the two different isolator revisions, standard one and the thin wall with metal sleeve. Along with the feasibility of this deployment method, we would also like to see what straightening effects the pitching machine may have on the element.

Procedure

- 1) Cut four 14' sections of 1.2" O.D., 347H stainless steel rods and add a chamfer on each end.
- 2) For all four rods, weld 3 standard silicon nitride isolators and 3 sleeved silicon nitride isolators at 2' intervals starting from 2' up on the rod. These isolators will be positioned where they are alternating down the rod from one isolator to the other. The standard isolators will be welded in place by two 3/16" 304 stainless steel retaining rings on each end of the isolator. The sleeved isolators will be welded in place by positioning the isolator onto the sleeve and welding the sleeve to the rod at both ends.
- 3) Take two of the rod assemblies and put a slight bow in them until it has about a 180" radius in it.
- 4) Weld an eye bolt on one end of each rod assembly
- 5) File down any sharp points on the welds
- 6) Observe rod and isolators for any cracks, scrapes or any other defect that may exist. Spin each isolator after welding to ensure it is not jammed or caught on the retaining ring, sleeve or weld bead.
- 7) Calibrate pitching machine (distance between wheels, wheel pressure and controls) with a bare 1.2" rod
- 8) After the pitching machine is set up, start the end of the rod assembly w/o the eye bolt into the pitching machine wheels by hand and attached the 6000 lb. load to the eye bolt on the opposite end making sure the line attaching load to rod is in tension.
- 9) Slowly start the machine and record observations.
- 10) Run rod thru the pitching machine just pass the last isolator end and stop the machine. Examine the rod assembly and record observations.
- 11) Reverse the pitching machine to run rod in opposite direction until rod comes all the way out of the pitching machine. Examine the rod assembly and record observations.

- 12) Re-calibrate the pitching machine to where it will run the bare rod at about 30 ft/min.
- 13) After the pitching machine is set up again, start the end of the same rod assembly into the machine and attach the load as before. Secure the rod assembly carefully and start the pitching machine. Record observations.
- 14) Once rod has passed thru the pitching machine, turn off, remove rod assembly, examine and record observations.
- 15) Repeat test for the other three rod assemblies.



After the initial tests, we will run additional tests if necessary based upon the initial test results. The variables that can be adjusted are the pitching machine wheel pressures, distance between wheels, and the wheel rpm and torque.