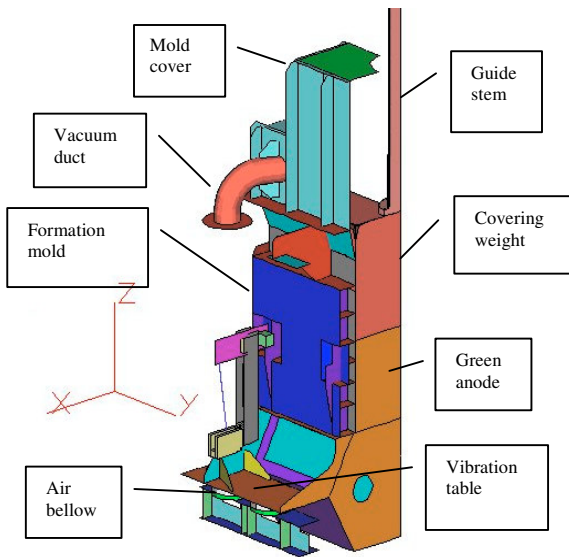


ANODE VIBROCOMPACTOR MACHINE

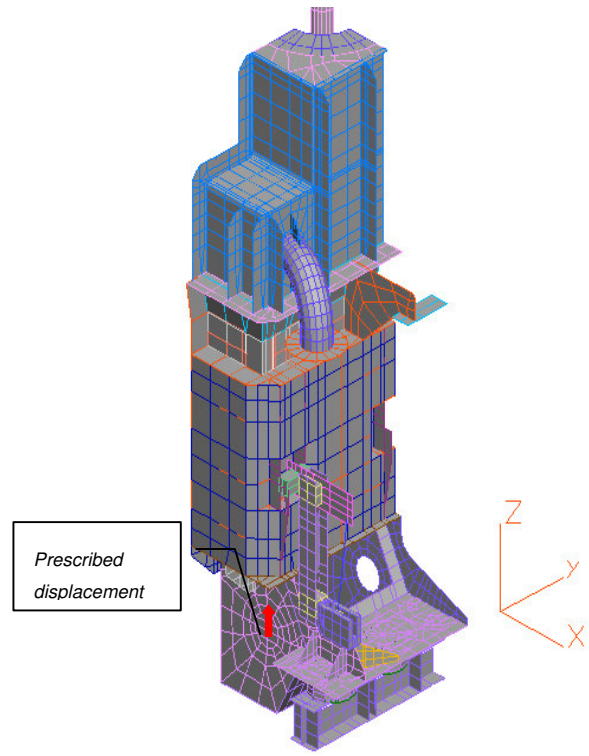
PCE made the structural analysis of an anode compactor machine. A dynamic analysis was made with the objective to obtain the stresses and strains occurred during the machine operation.

This kind of equipment makes the compaction of powder until its final form, called green anode. The vibration of this machine is made by the action of engines that rotates eccentric masses, resulting a cyclical loading. The figure below shows the analyzed machine with its principal parts.



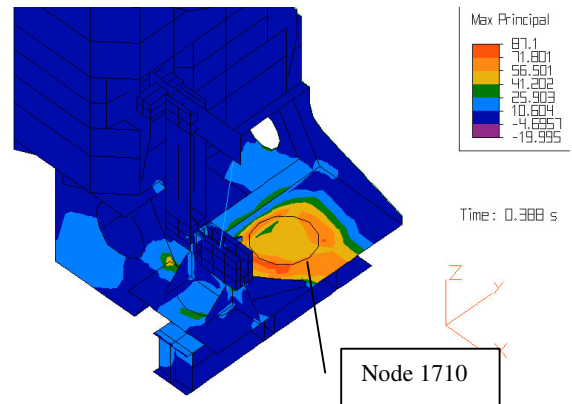
A quarter of the anode vibrocompactor machine.

A dynamic analysis was made, with a senoidal displacement as loading, applied at the center of the eccentrics so that we could obtain the expected displacement on the vibrating table, and obtaining the compaction of the anodes as result. The figure below shows the model with the application point of the cyclical loading. Also, is shown the mesh used with the FEA model.

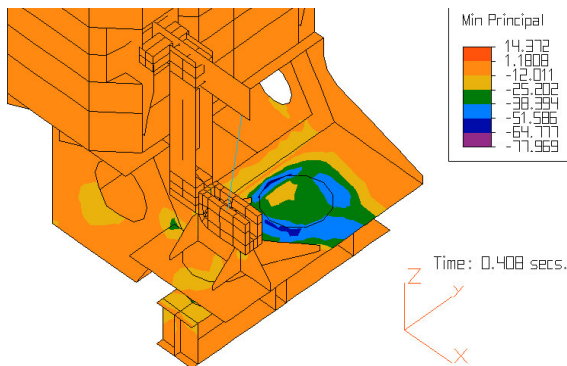
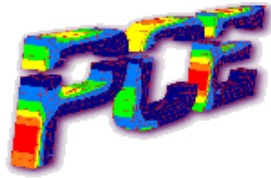


FEA mesh of the linear dynamic model

Next are shown the results of the FEA model. A map of maximum and minimum principal stresses are shown at specific instants during the machine operation and these values are verified at the Haigh fatigue life diagram.



Maximum Principal Stress



Minimum Principal Stress

After the verification of the vibration table displacements and seen that these are correct for the compaction of the anodes, the behavior of the structure in relation to the stresses and, consequently, the fatigue life could be verified. Using Algor Inc. software for the stress and displacement analysis and using these results to make the fatigue life diagram it was possible to verify the critical points of the structure and suggest changes to solve the problems found.

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