

## عنوان مقاله:

Relationship between steel shell temperature and nano MgCr<sub>2</sub>O<sub>4</sub> addition on steel snorkel life time in Ruhrstahl-Heraeus vacuum steel refining units

## محل انتشار:

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## خلاصه مقاله:

An investigation of the corrosion problems of the mag-chrome refractories used in the cylindrical component (snorkel) of Ruhrstahl-Heraeus (RH) vacuum degassing units is reported. The snorkel consists of a steel shell surrounded by a monolithic refractory and enclosing mag-chrome refractory bricks. Operational factors (degassing duration, time between heating cycles, number of heating cycles in a degassing sequence and the snorkel temperature) can overheat the steel shell and decrease the life of the snorkel. In the present study, the average temperature between the top and bottom of the steel shell was estimated by FDM (Finite Difference Method), indicating that thermal degradation due to creep will occur in the steel shell. In addition, the increasing number of hydrogen removal process during the degassing operation from the steel, the consumption of Fe-Si increased, producing more FeO and resulting in greater chemical corrosion of the refractory bricks. An investigation of these two mechanisms (thermal degradation and chemical corrosion) suggests that snorkel degradation could be mitigated by adjusting the number of daily heat sequences and cooling the steel shell, whereas the addition of MgCr<sub>2</sub>O<sub>4</sub> nano additives to encourage spinel formation .can be used to increase the hot modulus of rupture and increase the corrosion resistance

## کلمات کلیدی:

snorkel, mag-chrome, Refractories, Corrosion, Thermal shock

## لینک ثابت مقاله در پایگاه سیویلیکا:

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