specific scientific subjects

Solar energy under high temperature with the assistance of an apparatus of focuses

By J. G. Sakas*

Summary

Many installations for the concentration of considerable amounts of solar energy and its use, under very high temperature are in operation to day.

Concave mirrors are used for the concentration of the solar radiation in these installations.

We here discribe the composition and the operation of an experimental apparatus where focuses, instead if concave mirrors, are used for the concentration of solar energy.

Six ordinary dyble convex focuses of an diameter 102 m.m. each, are placed circularly around a seventh similar one, so that the *conic* lots of the collected sun rays, diverged by *flat* mirrors, form the sun image in the same position, the position of the biggest concentration of solar energy. In this position is possible the melting of hard to melt materials (tiles, small pieces of the metals) and if measures are taken for the reduction of the losses of heat from these materials of (of conduction, transmission and radiation) by a simultaneous increase of the absorption by the materials of the solar radiation and the improvement of the quality of the apparatus, the temperature in the concentration position can reach and exceed the 4000° C.

The concentration of radiation by the focuses on the focus or its adjacent level gives such densities of energy that, with a fair proximity for application, we are allowed to consider the distribution of energy to come from focuses with surface defects distributed according to the normal deffects distributed according to the normal deffects curve. This discovery facilitates the study and description of the function of the apparatus, and especially the way in which the higher temperatures are attained, and the estimation of the used fractions of solar energy available each time.

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The poisoning effect of Rh^{105} compared to Xe^{135} in thermal reactors

By E. G. Mavroyannakis

Summary

This paper treats the poisoning effect of Rh^{105} compared to Xe^{135}. Rh^{105} and Xe^{135} are considered as fission products of U^{235} and Pu^{239}.

It is shown that Rh^{105} has an important poisoning effect, especially in natural uranium and Pu^{239}. In the later fuel the poisoning effect of Rh^{105} is higher than in U^{235}.

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44 It has been found that the macroscopic neutron absorption cross sections of Rh^{105} and Xe^{135}, as functions of neutron flux, show a maximum value in U^{235} while in Pu^{239} these are increasing functions. On the other hand the same macroscopic neutron absorption cross sections are increasing functions of time for Pu^{239}, between $o—t_1$, but decreasing functions for U^{235}.

The total macroscopic neutron absorption cross section, as a function of time, shows a maximum value for Rh^{105} while for Xe^{135} it is a monotonically decreasing fnuction.

It is shown that Rh^{105} can be considered as a poison of special importance for fluxes higher than 5.10^{12} n/cm²sec in natural uranium and plutonium reactors.