CHOICE OF CHOPPING FREQUENCY AND PARALLEL OPERATION OF CHOPPERS

The report discusses laboratory experiments on small-scale choppers carried out to check for possible problems with multi-phasing of choppers.

The choice of chopping frequency presented to the input filter is a critical design parameter affecting chopper equipment. In order to reduce the weight and the size of the input filter, chopping frequency should be as high as possible. Inherent limitations with the chopper configuration and thyristor devices impose a limiting upper frequency.

In order to alleviate the chopper/thyristor limitations and still maintain a high enough frequency at the filter, multi-phase operation of choppers is desirable.

The report concludes that:

- Although chopper operation at 1kHz is possible at low power levels, operation at high power levels is not economical. This is due to the scarcity of high power, fast turn-off thyristors and because of the increasing effects of switch losses in the thyristors. Thus, the maximum chopping frequency of about 600Hz is feasible for full sized equipment.
- In order to obtain a high filter frequency, multiphase operation of choppers in necessary.
- Studies indicate that parallel operation thyristors can be avoided by using a suitable number of multi-phase choppers.
- Tests on multiphase operation of choppers were found to be satisfactory.

BR Research Report Ref: TM-ETR-2
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Date of Publication: March 1973

AEAT Abstract Date:
11/07/2002