

Technical Note

Excitation type: PMG - Permanent Magnet Generator

Introduction

The Permanent Magnet Generator (PMG) is normally used as a secondary exciter to supply constant voltage for an Automatic Voltage Regulator (AVR). Because the PMG is separately mounted on the generator shaft, the terminal voltage will not affect the input voltage of the AVR, and it can get stable energy without regard to the synchronous generator.

- Improved transient performance

When the terminal voltage of a generator is reduced by applying a significant load, the AVR input voltage is reduced as well if a SHUNT excitation system is used. Therefore sometimes the input energy is not enough for the AVR to increase field current. However the PMG will provide constant voltage for the AVR so that the field current can be increased quickly to ensure the voltage dip is minimal and remain within an acceptable range.

- Provide >300% sustaining short-circuit current

Under short-circuit conditions, it is necessary to sustain a minimum value of current in a sufficient time to ensure operation of the system's protective devices. Sustained short-circuit current is achieved by the PMG excitation system.

- Increased non-linear loading ability

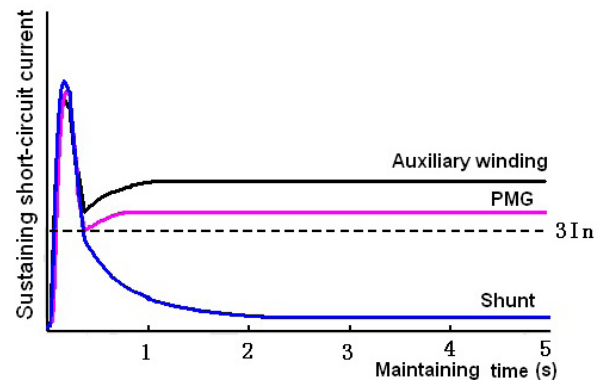
The non-linear load may produce harmonics for the generator terminal voltage. These harmonics will affect AVR firing if the AVR is supplied by terminal voltage. PMG is a separate generator, electrically isolated from terminal voltage, thus it can improve AVR operation condition.

- Ensure remanence voltage to black starting

The permanent magnet mounted inside the PMG rotor can keep a strong magnetic field for a long time. In generator black starting conditions, voltage can be built up by the PMG without remanence in the field core or backup battery.



Curves



For more information please contact:
www.abb.com/motors&generators

© Copyright 2010 ABB. All rights reserved

We reserve the right to make technical changes or modify the contents of this document without prior notice. No part of this publication may be reproduced or transmitted in any form or by means, electronic, mechanical, photocopying, recording or otherwise without prior written permission of ABB.

TM027 EN Rev A 2010 Machines