

# Power Electronics and its Industrial Applications



W. Wymeersch

Manager of the U.T.S. division for electrical drives and automation  
Member of the International Steering Committee of EPE  
(N.V. Sidmar, J. F. Kennedylaan 51, B-9042 Gent)

The steel industry is still one of the most important fields of application for electrical drives and control systems, especially, but not only in the hot mill and cold mill area. The steel process technology evolves very quickly; and many entirely new techniques such as continuous steel casting, continuous rolling and continuous annealing have been introduced for reasons of economy and quality over the last decade.

As remarkable as the stormy evolution in the process field is the revolution in the Power Electronics area. The steel works I work for is still relatively young, about 30 years old, but from a Power Electronics point of view it looks a bit like a mosaic work of different drive types. Most of the giant mercury arc rectifiers that were installed in the beginning are now replaced by powerful thyristors, leaving a lot of empty space behind; but some of them are still on duty. Speaking about thyristors, I remember the heroic stories my friends told me about the first thyristorized drives and the nights they spent on replacing dozens of blown out fuses and repairing control circuits...

Many different electrical drive configurations were installed here and a few of these, perhaps the most exotic ones, are still alive. Later on, the analogue control circuits became more and more accurate and reliable, and at that moment these approached very nearly to perfection..., suddenly the microprocessors appeared on the stage. Very complex control structures such as vector controlled synchronous and asynchronous motors can be implemented nowadays with a few microprocessors, solving a lot of former problems (and creating also a lot of new ones).

As you can see, the job of an electrical engineer in the process industry is certainly not a boring one. Neither is it an easy one. Which are the performances required by his new application and what are the right solutions? Which decisions will he make, will he take the risk of choosing new technology instead of the more conventional ones he is familiar with, knowing also their limitations? And if he does, what kind of problems will he have to deal with?

Well, for all my colleagues who are responsible for industrial applications of Power Electronics equipment, here is my personal advise to find the answers to your questions and to exchange ideas and experiences with other people: let us meet at the next EPE Conference in Brighton!