



## INTRODUCTION

Technological development in the electronic field has transformed power electronics from static conversion technology to its essential element in the electrical and electronic area. Its aim is the power flow control through the voltage conversion from mains by power semiconductors capable to perform switching, control and convert electrical energy functions efficiently and reliably.

On the last years there have been significant improvements on this technology sector.

Results achieved on the microelectronics field have allowed the use of linear circuits with integrated components such as controllers on power electronics systems.

The new production techniques have improved components voltage and current characteristics and increased their switching speed.

Furthermore, computers development, communication systems and commercial electronics products, on the need for a better use of the available energy, have led to an increase stable power supply requirement. As a particular interest is the use of power electronics on a DC and three-phase motors at constant and variable speed control.

All of this fits into a wide and reliable applications on many sectors, from residential (cooling systems, air conditioning, kitchen lighting), to commercial (similar to residential, but with additional office equipment and a computer, continuity group, elevators), from industrial (pumps, compressors, fans, robots, welding systems, industrial laser) to an absolutely important area, transportation (electric train, battery loaders, tram, metro, car); from telecommunications (power supply and battery loaders) to space technology (power supply systems on satellites and aircrafts).

De Lorenzo has designed a laboratory on power electronics study, which allows students a practical learning based on a practical implementation of guided exercises. All components that make up the laboratory are industrial used, mounted on didactic panels for a proper handling; all of this enables the laboratory to be used for educational purposes, as well as, design, development and research, thanks to its modular qualities.

Starting from basic principles, with the aid of high-training manuals, the student follows a didactic path into a gradual study of complex circuits.

