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Starting and running a spin-off company. CINERGIA

The activity of Tuesday 01 December during the MEDOW conference week in Barcelona took place at CINERGIA.

"CINERGIA is the result of more than ten years of experience in the conception, design, manufacture and commissioning of customized power electronics solutions. Our core competencies are the development of power electronics converters, DSP-based digital control, industrial communications and process automation. Our know-how is the result of continuous R+D in the fields of electrical conversion, electromobility, renewable resources and smart grids" [1].

The presentation was focused on the research in CINERGIA about the MMC (Modular Multilevel Converter).

This project is in collaboration with others two companies: L2EP and RTE. The research is focused on a three phase MMC converter with a rated power P = 5kW (Q = 1.5kVAr). The converter is composed by 120 submodules (SMs). Each lag of MMC converter contains of an arm inductor (L_{arm} = 5mH).

The prototype is realized with:

- 6 motherboard;
- 6 slave control;
- 1 master control

Each SM of the MMC converter is slip in two parts:

- electronic board for the signal system;
- Power board for the power components (IGBT module)

In order to control the full system a F2837X control card R1.1 is used. The control is realized with a DSP TMS320F28377DZWT.

In order to realize the control of the MMC prototype it is possible to split in two different sections:

- Master control: it realizes the global control of the full electrical parameters (Voltage, current and Power regulation);
- Slave control: this strategy control is realized in terms of each cell. Whit this strategy it is possible to control the instantaneous voltage (voltage balancing) on each cell.

[1] http://www.cinergia.coop