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EPE 2007 - 12th European Conference on Power Electronics and Applications 2 - 5 September 2007, Aalborg, Denmark

Two Examples of Pedagogical Applications of Electrical Go-Karts T. Lequeu (a) (b), B. Bidoggia (b), Y. Derrien (a), N. Godefroy (a)

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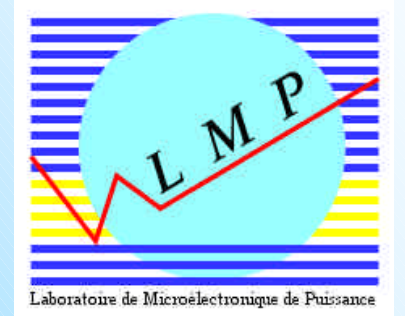
<http://www.univ-tours.fr>



<http://www.iut.univ-tours.fr>



<http://www.e-kart.fr>



<http://www.lmp.univ-tours.fr>

Authors introduce two different pedagogical applications concerning electrical go-karts "e-Kart" of the IUT GEII (Institut Universitaire de Technologie, Génie Électrique et Informatique Industrielle) of Tours. Since 2003, this project didn't stop growing with, in 2007, a first challenge with asynchronous low-voltage motor go-karts too. Two main projects are here introduced: the first concerns acquisition of physical data aboard go-karts and their transmission to a personal computer; the second one is about the field-oriented control (FOC) of an asynchronous 28 V motor.

Throttle 0-10k : Interface board and Power supply (from 48V) :



4 x 12V Batteries :

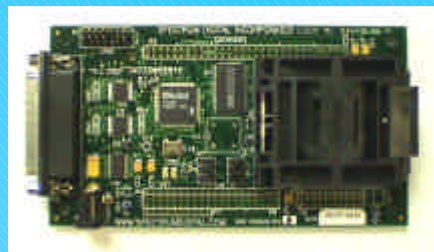


3 phases drivers and Power supply (from 48V) :



Pb Gel Cell Battery :
OPTIMA 12V 48 AH
8-10 min used
10-15 min charged)

Evaluation board for DSP TMS320F2812 :

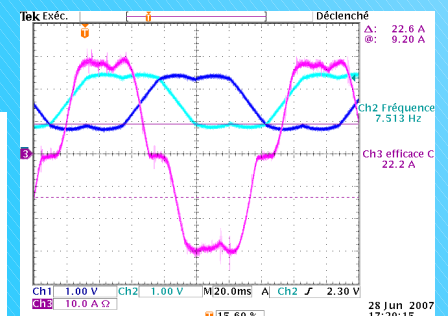


3 phases power inverter MOSFET module 200V 372A :

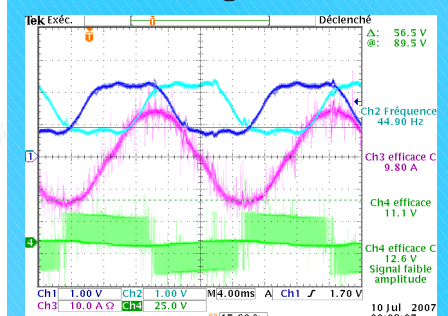


Asynchronous motor:
28V - 150A (240A max)
4.6 kW (10 kW max)

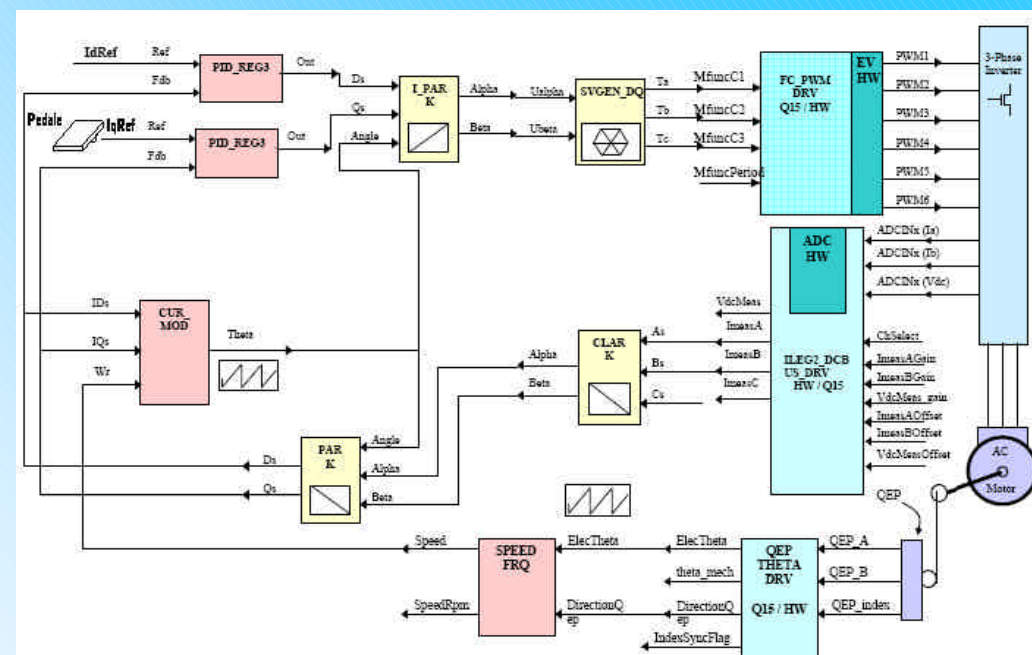
Open loop phase current and PWM average voltage

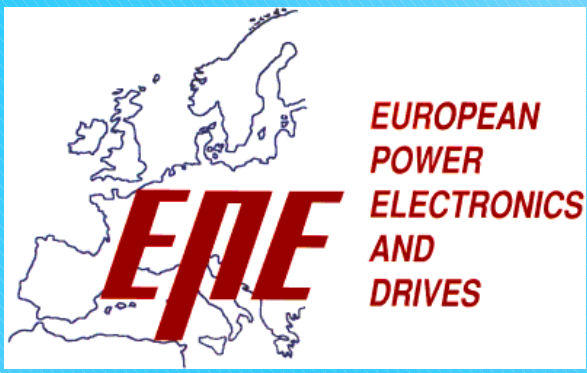


**- Close loop phase current
- PWM average voltage
- Motor voltage**



Field-Oriented Control block diagram representation





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**Two Examples of Pedagogical Applications of Electrical Go-Karts
T. Lequeu (a) (b), B. Bidoggia (b), Y. Derrien (a), N. Godefroy (a) :**

E-mail : thierry.lequeu@univ-tours.fr - Web site : http://tours37geii.e-kart.fr/

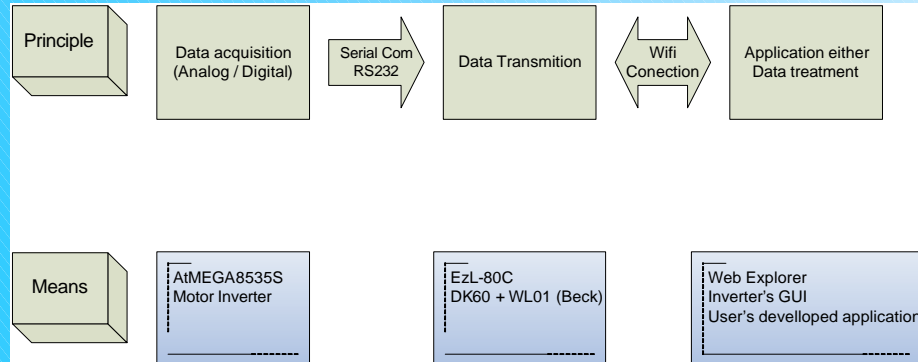
Embedded instrumentation: transmission between an electrical go-kart and a laptop computer

RS232 communication:

ATmega8535 micro controller



RS232 to WiFi ezL80C module



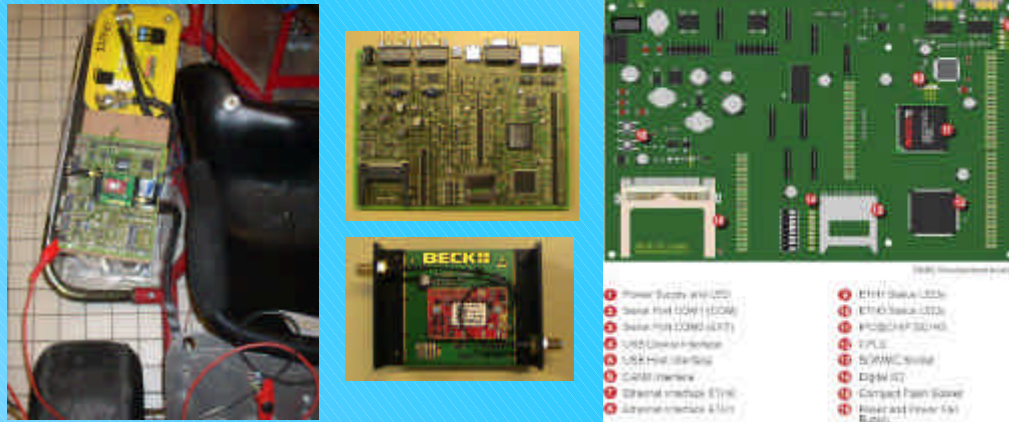
WiFi Web Cam communication:

IP camera from the FESTO Wifibot

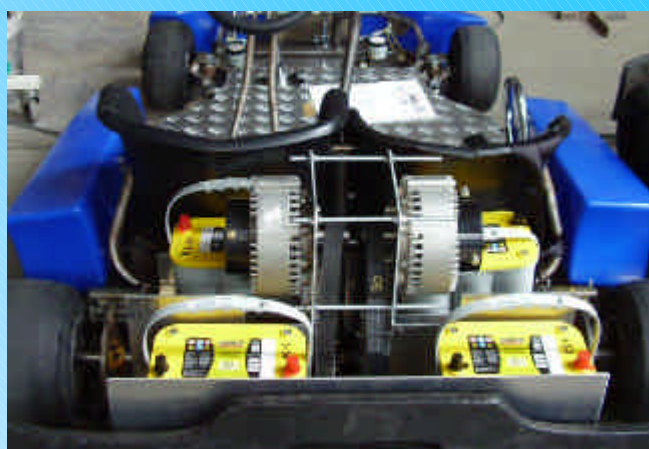


BECK Development kit DK61:

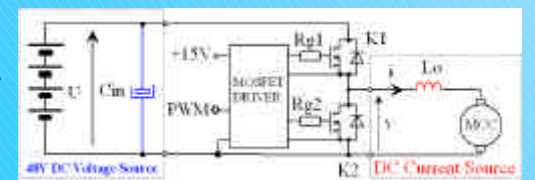
embedded controller SC143 + WL01 Wireless module + Real Time Operating System



**Perspective: two-seats go-karts to integrated handicapped in mechanical sports.
Could be helpful for new-driver lessons and a also be used to allow blind to drive.**



Buck Chopper 48V – 200A



MOSFET module 100V 495A 2.25mW



French scholar time line:

Age	10-18	18-19	19-20	20-21	21-22	22-23
School	Lycée	University	University	University	University	University
Diploma	Baccalaureate	IUT GEII 1	IUT GEII 2	Licence	Engineer school	Engineer school
		Licence Year 1	Licence Year 2	Licence Year 3	Master Year 1	Master Year 2