

Curriculum Giorgio Demurtas

1 - General informations

Name: Giorgio
Surname: Demurtas
Birth date: 14 March 1986, Cagliari
City:
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Phone:

2 - Qualifications

- **Electric engineering degree** at Cagliari University, on 27th April 2009.

Grade **109/110**, with thesis titled “*Interfacing and controll circuits for stepper motors on Computer Numeric Controll machines*”. All electronics parts was build and tested with a digital scope on a real CNC mill machine.

I have done a personal study plan, with this cont: Electrotechics, low frequency analog and digital electronics, automation and process control, electrical measures and electrical measures on power systems, electric plant and energy distribution, electrical machinery and power electronic, fluid machines (hidraulics, gas and steam, eolic), energethic systems, renewable energy technologies, oleodinamic and pneumatic, work's safety, economy.

- **Electrotechnics and Automation diploma** at industrial school I.T.I.S. G. Marconi - Cagliari, on July **2005. Grade 100/100.**
- **CISCO Academy diploma (CCNA1).** Networking basics. Grade **83/100.** (2005, 19 years old).

3 - Automation subject experience

- **Project and realization** of printed circuit boards for electronics cards, wired logic and PLC automation, on scolic and personal field. (from 2002, 16 years old)
- **Project and realization** of electric circuits for photovoltaic (and alike) solar tracker. This circuits products are receiving an high degree of appreciation by my website-visitors, for whom I received a large number of orders and info's request. (from 2007, 21 years old)
- **Oleodinamics circuits experience** on the “oleodimnamics and pneumatiscs” subject, made at university, with project and realization of hydraulic and electric circuits to solve required functions. Good understanding of component's function (pump, relief valve, direction control valve, flow regulation valve, flow regulation valve compensated by pressure, piston).
- **Knowledge** of Siemens PLC programming software: Step7, MicroWin, Protool. (for process logic and supervisory controll).
- **Knowledge** of programming languages: general for PLC (deeply for Siemens), C language and Assembler for microcontrollers, html php and css for websites.
- **Practise** with Siemens S7-300 PLC and profibus-DP field network (distributed peripheral) (2007, 21 years old).

- 120 hours **Training course** about PLC Siemens S7-200 programming, organized by “ITIS G. Marconi” school as extra lesson time. (2003, 17 years old)
- Self-taught **Training course** “Pic By example” about Microchip PIC micorcontrollers (November 2003, 17 years old)

4 - Renewable energy experience

- **Summer University in Wind Energy**: general understanding of wind energy, and insight and knowledge in technologies related to the design, development and operating of wind energy systems. The focus is on electrical and mechanical aspects of wind power and power system integration, and give you knowledge on a wide range of technologies of wind power. Wind turbine technology, grid integration, wind resources (Technical University of Denmark, Copenhagen, August 7–23, 2009)
- Middelgrunden **offshore wind farm tour** and visit at **Vestas** Technology R&D. (August 2009)
- **Consultancy** to solve power factor problems on a **wind farm** (AXU srl, September 2009)
- **14 kW photovoltaic plant** grid-connected in depth project study and buildup. (2009)
- **“Renewable energy technology” university course** (from the mechanical MSc degree) where various project exercises have been executed, to evaluate energy availability and Return on investment for different kind of powerplant; e.g: 20 MW eolic plant; solar thermal and solar photovoltaic plant to satisfy the daily energy requirement; geothermic plant to produce electricity; heating plant powered by wood instead of gasoline; flowing water hydroelectric plant; thermoelectric power plant energized by hi speed growth biomass. (2009)
- **Training course** for designers and installers titled “Photovoltaic solar plants, executive projection on *conto-energia*” last in 20 hours, 3-4-5 April 2008. (22 years old)
- **Readership** of two hours in the same course, dedicated to give more depth about solar tracking technology, and my sperimental plant “Su Sobi”.
- **Training course** of two days on May 2007, organized by Rotary Club Iglesias titled “renewable energy souces and energy saving”. Guided tour to Sarlux thermoelectric plant (551 MW IGCC) and Rockwool isulation panels factory.
- **Joint work on study and buildup** of a 2 kWp photovoltaic plant grid connected by “conto energia” with solar tracking (“Su Sobi”). (2007, 21 years old)
- **Design and realization** of solar tracker electronics systems (from 2007 to today)
- **Training course** “Helianthus” about technology to use renewable energy sources. (eolic and photovoltaic), last in 50 hours, c/o ITIS G. Marconi - Cagliari. (2005)

5 - Network and ICT experience

- Ethernet **Network configuration** and realization: file sharing, printer and scanner sharing, internet access sharing, firewall, port redirection in the router. (18 years old)
- Personal **website realization** (www.webgiorgio.it, about 4000 unique visitors a year, now change in www.ingdemurtas.it) at 17 years old, and star-up of other websites.
- **Winner** of an annual **scholarship** (project collaboration) C/o Astronomic observatory of Cagliari to developpe a system to monitor Radio frequency interference for Sardinia radio telescope. Choice and usage of RF components up to 40 GHz (directive antennas, cavity filter, amplifier, spectrum analyzer). (May 2008, 22 years old)

- **Radio ham licence** (November 2006, 20 years old)
- **Training course** thelegraphy and radio technique c/o Selargius radio ham association “Sardinia QRP Club”. (2004, 18 years old)

6 - Informatic ability

- Computer knowledge, both hardware and software.
- Operating systems: Microsoft Windows and Linux Debian based;
- Application software: AutoCAD, Microsoft Excel, Word, Frontpage, Powerpoint, Photoshop, Gimp, Inkscape, Impress, Circad, Windows movie maker, Openoffice.
- Server service software: Apache, EasyPHP, VNC, Xampp.
- Specific electric projecting Software: Bticino Tisystem e Disano Dlux.

7 - Relationships with professionist, automation and electric subject's fun

- From his 17 years took active part at the forum www.plcforum.it (not-for-profit association, born to spread and disseminate technical information about industrial automation and related didactics).
- From his 20 years took active part at the forum www.energeticambiente.it (meeting point for experts and renewable energy fans) and now is Moderator in the “solar” section.
- Collaborate with radio ham association “Sardinia QRP Club” www.sardiniaqrp.com for radio communication and electronics training and experiments.
- Since many years took part in popularization scientific meetings held by Prof. Guido Pegna (www.pegna.com), electronic teacher and director of Cagliari university Phisics Museum.
- Subscriber to different magazine of electronics, (Elettronica in, Fare elettronica), engineering and renewable energy (Power Engineering International, Renewable Energy World), automation (Automazione Industriale, Connessioni e Cablaggi).

8 - Stages and apprenticeship

- **Training** from 01/09/04 to 30/09/04 to Vitrociset and national calibration centre SIT61. Use of high precision test and measuring equipments to calibrate other instruments.
Notions about high frequency radio waves and radar. Organized through school “ITIS G. Marconi”. (2004, 18 years old).
- **Training course** about use and maintenance of the Simbirizzi potabilization plant (Settimo S. Pietro, Italy). Equipped with six Siemens S7-300 PLCs and supervision control. (2004, one week, 18 years old).
- **Training** from 15/06/03 to 30/07/03 to "Air Dharma" Selargius (Italy), compressed air, oleodinamics, medical systems, supplier and installer. (2003, 17 years old).

- **Training** with Caccavale company (Italy), about assembling power electric systems and automation, on the Simbirizzi potabilization plant (2002, one month, 16 years old).
- **Training** on various EAF potabilization plants on the occasion of installation of automatic sand filter wash by PLC and remote read of flow measuring instruments. (2001, one week, 15 years old).

9 - School field realizations

- Electric plant projects for industrial buildings and campings (dimensioning conductors, protections, medium to low voltage station, grounding system). (2005)
- PLC based christmas crib. Colored lamps are regulated to reproduce the day/night sequence. (2005)
- Christmas crib controlled by a PIC microcontroller, for the same function explained before. (2005)
- Design and realization of an automatic centralized power factor compensator and appliances management, included PLC's software. (2004)
- Washmachine controlled by PLC (2004)
- Laboratory tests over electric motors: scrolling measure, transformation ratio measure, statoric and rotoric resistance measure, free welling test, and blocked rotor test. (2004)
- Electronic circuit based on operation amplifier and thermoresistance for electric oven temperature regulation with feedback control. (2003)
- Small wired logic automation circuits like: Y-D starter, three-phase motor control with reverse rotation, gate automatic control. (2003)

10 - Personal field realizations

In addition of school field realization, owing to an home small laboratory and workshop, from 1998 to today I have projected and realized over 150 electronic circuits, among the most significant are:

- Motor driver and optocoupled interface connected to PC, to control a CNC mill (April 2009)
- Stepper motor control by Microchip PIC microcontroller, automatic car park gate control by Siemens S7-200 PLCs, microcontroller based board with two digital I/O and three 7-segments multiplexed display, christmas crib with PIC controlled lights.
For each of those circuits I have written the software in different languages: C for PIC and IL or Ladder for the PLC.
- Control element circuits with partialized phase or PWM control for motors or generic loads, electromagnetic gun, sunset switch, psychedelic disco lights, stroboscopic disco light, solar tracker for photovoltaic plants, differential temperature thermostat for solar panels.
- Various power supply and audio amplifiers.
- AM radio receivers and small continuous wave RTX for telegraphy.
- Electric plant for a centralized home heating system based on biomass boiler and solar panels.
- Manual grape mill upgrade with washmachine electric motor.
- Small axial-flux eolic generator (produce energy needed to light four hi-intensity LED during the night).

- Grid-connected 2 kW photovoltaic plant with all home made solar tracker. (2005)
- Small transversal-flux eolic generator (vertical axis wind turbine, like Savonius).
Are available all pictures and some schematic/explain of these realizations into my website www.ingdemurtas.it.

11 - Publications

- Some pages on the book “Sistemi fotovoltaici: progettazione e valutazione economica in conto energia – Autori: Alessandro Caffarelli e Giulio de Simone – Ed. Maggioli.” (2008) (translate: Photovoltaic Systems: project and economic evaluation over Conto Energia – Authors: Alessandro Caffarelli and Giulio de Simone – Publisher: Maggioli”).
- Tutorial: eolic turbine regulation and opti-speed system (2007). (vedi www.ingdemurtas.it)
- Tutorial: how to chose the right flow regulation valve (2007).
- Newspaper article titled “l’eolico in Sardegna, quale futuro?” on the newspaper “L’Ortobene Nuoro”. (Tr: “Wind energy in Sardinia, witch future?”) (2006)
- Quite a lot of articles about energy and enviroment on the personal website, among which “The carbon cycle”, “Eolo, compressed air supply car, true or fake?”, “Four tally about eolic”, “ecologic heating plant”.
- Tutorial: CirCAD (prited circuit board design software) (2006)
- Tutorial: how to make PCB (2005)
- Build of a thelegrafic key (look at www.sardiniaqrp.com) (2005)
- Tutorial: washmachine motor electrical wiring (two speed and two direction way asincronus single phase motor. Operatin procedure to recognise wires coming out from the motor for the right link purpose. (2004)
- Tutorial: two times motor carburettor set-up. (2004)

12 - Foreing languages

- **Italian:** native speaker.
- **English:** good proficiency. Good understanding of thecnical documents and email corrispondence.
Summer course in Wind energy, taught in English (Copenhagen, 15 days, 2009)
Certification issue by “Anglo American Centre - Cagliari” equivalent to A2 level (KET, ESOL Examination, University of Cambridge). (2009)
I have attended english courses in UK and Ireland for two times of 15 days each. (2001 and 2003, 15 and 17 years old)

13 - Other interests

- Association “Ciclofucina” (promote urban cycling, do-it-yourself to maintain the bicycle in opposition with disposable).

- Scout Group “AGESCI Selargius 1°”.
- Music: bariton horn and drums on the music band “Città di Selargius” (Tr. City of Selargius), guitar.
- Sport: swim, windsurf, sail, parkour, bodybuilding. Not agonistic.

14 - Privacy declaration

You are authorized to hold and use give information, for personal research and selection purpose. (675/96 and 196/03 italian's law).

Date:

1 September 2009

Giorgio Demurtas