

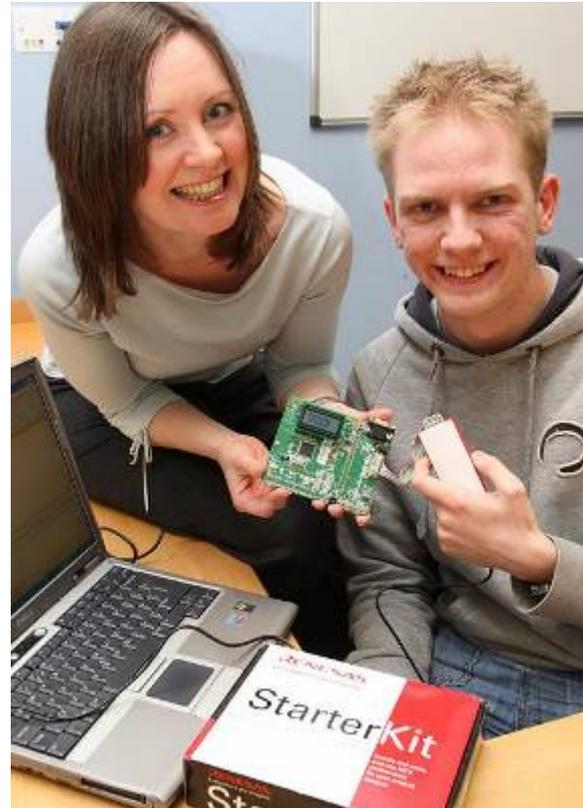
RENESAS UNIVERSITY PROGRAM

Renesas Technology Europe

Promotion Programs

Andrea Nuyken / Francesco Anwander

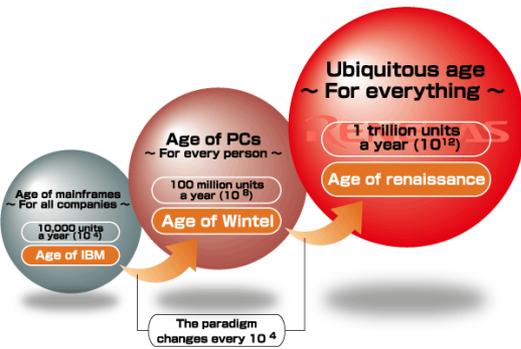
02/09/2008





Facts about Renesas

‘Everywhere you imagine’



- support the world of ubiquitous networking and make life easier for people - everywhere
- Established 2003 as joint venture of Hitachi and Mitsubishi Electric
- 26.000 employees worldwide
- Renesas is the *No 1* MCU and *No 1* Flash MCU Supplier W/W.
- Renesas has more than *23* % MCU market share W/W.
- Renesas has more than *12 Years* Flash MCU Production experience.
- Renesas manufacture over *20* Million Flash MCU's per month.
- Total shipment reaches *2 Billion* by 2008 devices worldwide.
- Highly reliable Flash MCU proven into major Automotive makers.



Goals of Renesas University Program

- Support university professors and teachers to setup labs & teach courses with Renesas microcontrollers across Europe.
- Enable students' education close to the industrial environment by providing free of charge development tools - Renesas Starter Kits - and the benefits from a worldwide Renesas support infrastructure
- Focus on universities with best in class engineering reputation teaching microcontroller architectures and programming.
- Provide universities contacts to global companies, design houses and of course other European universities working with Renesas products.
- Renesas' target is to increase its share-of-mind amongst the European engineering community and to be a positive member of this community.

Renesas' Partner Universities in EMEA

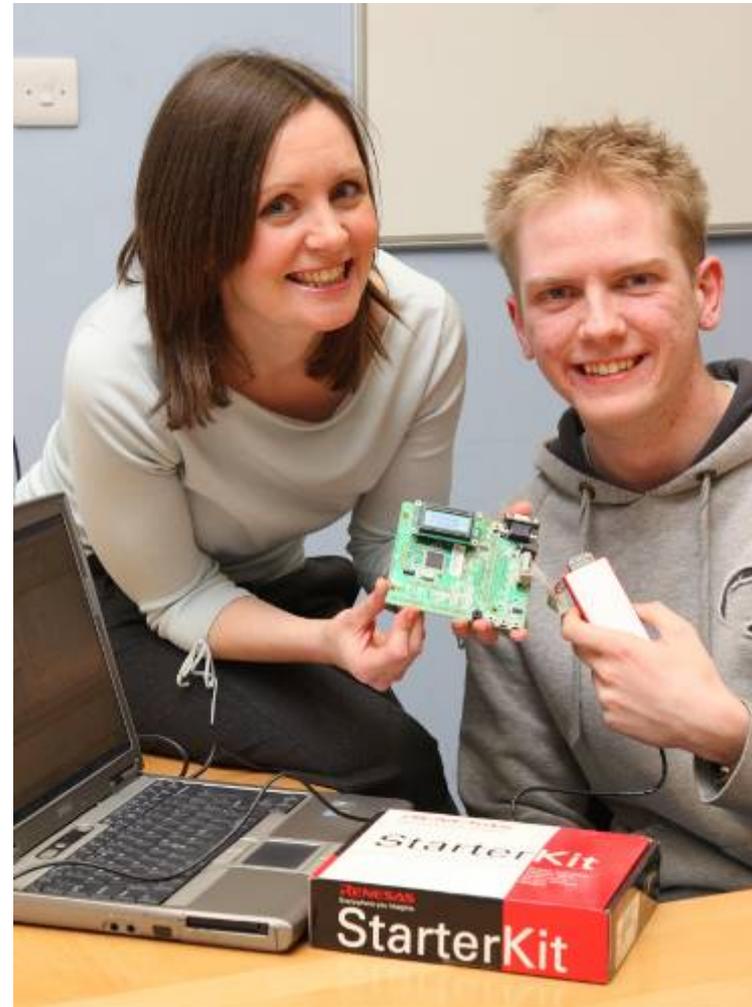


The Renesas Europe (RTE) University Program

- The RTE University Program was launched in February 2007
- It has achieved its target of partnerships with 30 universities across Europe within only 16 months.
- More than 3000 students have been familiarised with Renesas MCU.
- All Renesas product families like SuperH, H8S(X) and M16C are engaged in lecturing, labs and students' work
- University projects show a wide application portfolio: Robotics, motor control, Zigbee, environmental care, instrumentation, medical tools

Enhanced education

- Renesas sponsors starter kits for students thesis, final year projects and university labs.
- This investments directly enhances the quality of the students education as they use state-of-the-art tools and MCU.
- The students will be better prepared for their professional career due to the hands-on experience.



Renesas FAE Claire Steed introduces an M16C Starter kit to a student at Strathclyde University, UK.

The screenshot shows a Microsoft Internet Explorer browser window displaying the Renesas University website. The browser title is "University Program - Microsoft Internet Explorer provided by RTE IS 1.0 Browser". The address bar shows "http://www.renesasuniversity.com". The website header includes navigation links: GLOBAL, MY RENESAS, COMPANY INFO, NEWS & EVENTS, CONTACT US, and SITEMAP. The Renesas logo is prominently displayed with the tagline "Everywhere you imagine." Below the logo, there are links for PRODUCTS, APPLICATIONS, and SUPPORT. A login section titled "University Program" is visible, with fields for Email and Password, and buttons for "Login" and "Register". A "Provide feedback" link and a "Print this page" link are also present. The main content area features a sidebar with a list of links: Register For Program, Software Downloads, Academic Discounts, University Dev Kits, Professors Corner, Featured Articles, Students Section, Online Training, MyRenesas, 3rd Parties, Forums, and Books. The main text area contains a welcome message and information about the program's purpose, which is to support students and professors in teaching courses and labs. A red box highlights the text "for Renesas Technology Devices" in the main content area. Below this, there is a section titled "Free" with a list of resources: Courses, Online Labs, Webcasts, Feature Articles, and Technical Papers. The footer of the browser window shows "Internet".

University Program - Microsoft Internet Explorer provided by RTE IS 1.0 Browser

File Edit View Favorites Tools Help

Address <http://www.renesasuniversity.com> Go Links

GLOBAL MY RENESAS COMPANY INFO NEWS & EVENTS CONTACT US SITEMAP

RENESAS
Everywhere you imagine.

PRODUCTS APPLICATIONS SUPPORT

Home/Support

University Program
Welcome, guest

Email

Password

[Login](#) [Register](#)

[Provide feedback](#)

[Print this page](#)

Updated: 05-10-2007

Can't remember your password?

Register For Program

Welcome to the Renesas University Program. This program is designed to support the Students and Professors of universities around the world to teach courses and labs containing Renesas products and architectures.

Software Downloads

It is our desire to become the pre-eminent microcontroller architecture taught in college and high school level courses. To that end, this program and this University web site provides an eco-system for professors and students to work together to develop best in class programs.

Academic Discounts

Students: once registered (and logged in), users are given access to download software, application notes, sample code, course material, Students are also allowed to request Free Chip Samples from Renesas. (Register today)

University Dev Kits

Professors: once your registration is validated, Professors are given additional access to course material, presentations, tests, etc... Renesas also provides educators discounts on products and development equipment. Additionally, Renesas would like to help professors to publish articles and books concerning Renesas products. (Register today)

Professors Corner

Students: once registered (and logged in), users are given access to download software, application notes, sample code, course material, Students are also allowed to request Free Chip Samples from Renesas. (Register today)

Featured Articles

Professors: once your registration is validated, Professors are given additional access to course material, presentations, tests, etc... Renesas also provides educators discounts on products and development equipment. Additionally, Renesas would like to help professors to publish articles and books concerning Renesas products. (Register today)

Students Section

Professors: once your registration is validated, Professors are given additional access to course material, presentations, tests, etc... Renesas also provides educators discounts on products and development equipment. Additionally, Renesas would like to help professors to publish articles and books concerning Renesas products. (Register today)

Online Training

Professors: once your registration is validated, Professors are given additional access to course material, presentations, tests, etc... Renesas also provides educators discounts on products and development equipment. Additionally, Renesas would like to help professors to publish articles and books concerning Renesas products. (Register today)

MyRenesas

Professors: once your registration is validated, Professors are given additional access to course material, presentations, tests, etc... Renesas also provides educators discounts on products and development equipment. Additionally, Renesas would like to help professors to publish articles and books concerning Renesas products. (Register today)

3rd Parties

Professors: once your registration is validated, Professors are given additional access to course material, presentations, tests, etc... Renesas also provides educators discounts on products and development equipment. Additionally, Renesas would like to help professors to publish articles and books concerning Renesas products. (Register today)

Forums

Professors: once your registration is validated, Professors are given additional access to course material, presentations, tests, etc... Renesas also provides educators discounts on products and development equipment. Additionally, Renesas would like to help professors to publish articles and books concerning Renesas products. (Register today)

Books

Professors: once your registration is validated, Professors are given additional access to course material, presentations, tests, etc... Renesas also provides educators discounts on products and development equipment. Additionally, Renesas would like to help professors to publish articles and books concerning Renesas products. (Register today)

Look around you, chances are there are more embedded controllers in your environment than every before. What a great time to be an engineer! Whether you are an Engineer (Hardware, System, Computer, Test, Firmware, etc...) or a Software Developer, Renesas has what you are looking for. And if you are blessed enough to develop Software, you will fall in love with the best in class software development tools used by Renesas.

for Renesas Technology Devices

Free

- Courses
- Online Labs
- Webcasts
- Feature Articles
- Technical Papers

Internet

Renesas Interactive – the training website for Renesas products

The screenshot shows the Renesas Interactive website homepage. At the top left is the Renesas Interactive logo. A large white box in the top center contains the URL <http://www.renesasinteractive.com>. Below the logo and URL is a navigation menu with buttons for Home, Courses, VirtuaLabs, More Renesas, Certification, Document Center, and Contest. The main content area is divided into several sections. On the left, there is a section titled "MAKE THE RENESAS SITE WORK FOR YOU" with an "Overview" section and a "Learn more" link. In the center, there is a photograph of a man in a white shirt and tie sitting at a desk. On the right, there is a login form with fields for "User ID (email address)" and "Password (case sensitive)", a "Log In" button, and links for "Can't remember your password?", "New User?", and "Registration is FREE". Below the login form is a "Send Feedback" button. At the bottom left, there is a "Welcome to RenesasInteractive!" section with "Learn." and "Work." sub-sections. At the bottom right, there is a promotional banner for "DEVCON RENESAS | 2008" with the text "Register Today!" and "Oct. 13-15 San Diego".

Renesas INTERACTIVE

<http://www.renesasinteractive.com>

Home Courses VirtuaLabs More Renesas Certification Document Center Contest

MAKE THE RENESAS SITE WORK FOR YOU

Overview
Renesas is committed to providing the advantage you need for bringing your products to market ahead of the competition. We continuously strive to improve the development cycle by providing convenient access to product search, Virtual Labs, online training, development tools, and more.

[Learn more](#)

User ID (email address):

Password (case sensitive):

Log In

[Can't remember your password?](#)
[New User?](#)
[Registration is FREE](#)

Send Feedback

Welcome to RenesasInteractive!

Learn.
RenesasInteractive is the premier online training website for Renesas products. Always free and online 24/7 you can gain in depth technical knowledge on a wide range of Renesas microcontrollers through our Flash based and self paced learning courses. In addition to product knowledge, you can develop a vast understanding of the Renesas toolchain HEW, and enrich yourself with any of our non product technology courses such as CAN and EMI.

Work.
Renesas VirtuaLabs allow you to experience Renesas development tools as if they were sitting on the desk next to you. When you enter a VirtuaLab, you gain control of REAL hardware and software. During your session, no one else can access the same setup. VirtuaLabs differ in their setup not only for different MCUs, but from basic dev kits to high end emulators allowing you to experience a range of tool options. VirtuaLabs let you "try before you buy" or use tools in place of purchasing them. With VirtuaLabs, you can truly Work Smarter, Work Anywhere.

Oct. 13-15
San Diego

Register Today!
DEVCON
RENESAS | 2008

Renesas Interactive - Virtual Lab

- Free Access to Registered Users
- Available Online 24/7
- Easily accessed from your PC using only a Web Browser
- A full suite of Audio Visual Training Courses covering all Renesas MCU Families and application related information
- A “Virtual Lab” Development Environment which allows as User to run actual Renesas Hardware & Software over the Web and is not a simulation
- Global Certification Program for Distributor FAEs

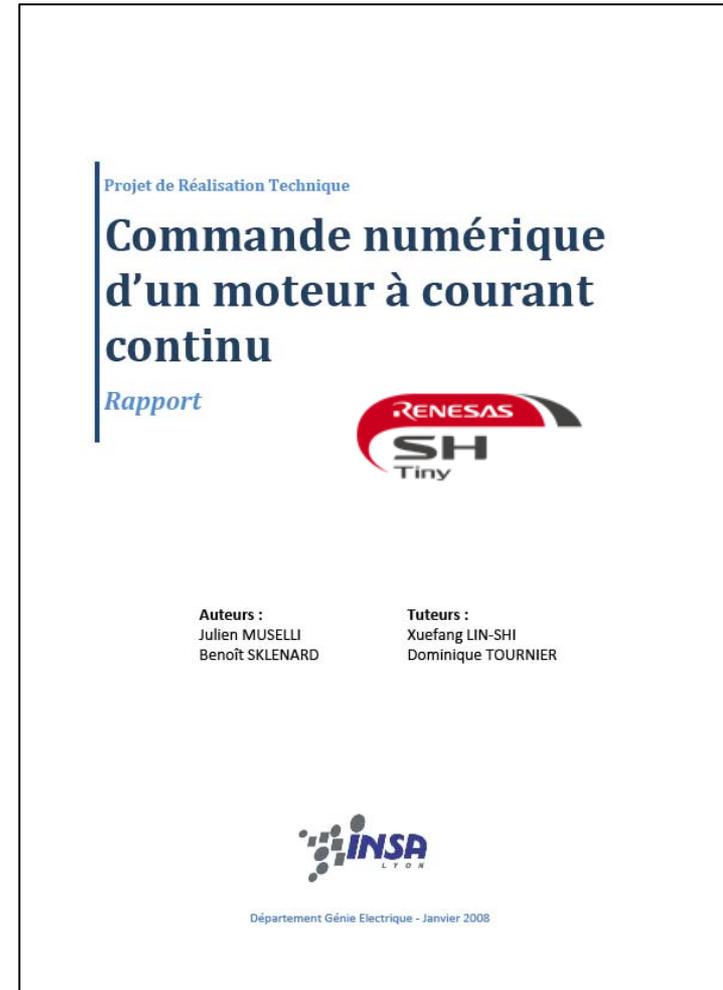
Renesas' expectations on Partner Universities

- Universities within the RTE University Program are expected to provide yearly reports to review the outcome reached with the provided tools.
- Universities are continuously informing Renesas about the ongoing projects
- Those are recorded and implemented into the daily business and PR.
- Under this worldwide initiative, students and teaching staff of leading engineering schools receive access to products, application notes, course material and software.
- Additionally, Renesas offers academic staff support in publishing articles and writing books that cover Renesas products.

APPENDIX: Renesas University Program and Project examples

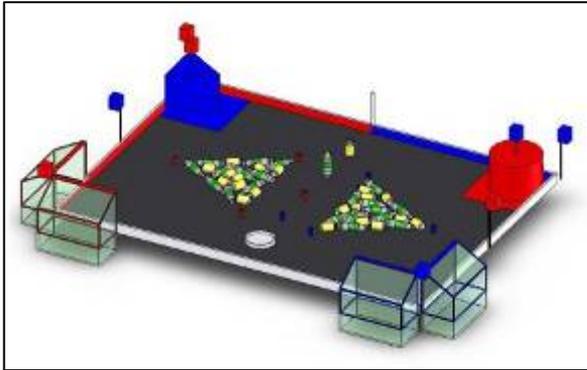


- Ranked among the top universities of Science and Technology in Europe
- INSA sees a great benefits to teach their students on the Renesas 16-bit & 32-bit architectures
- INSA Lyon effectively prepares their students to work for international companies and have about 1000 industry contacts.





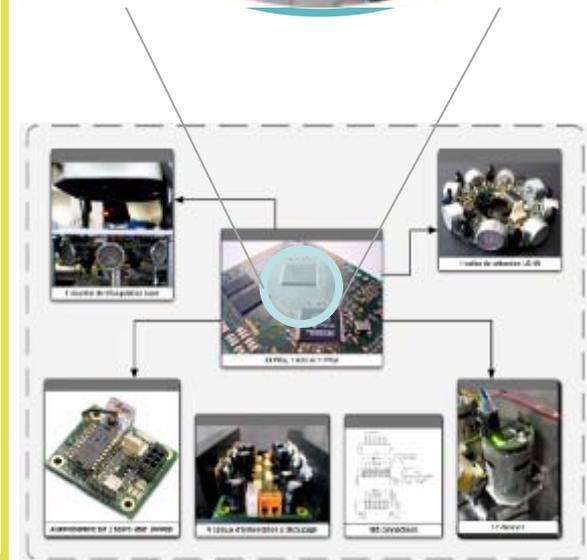
Eurobot Recycling Rally Contest



Waste, Sort & Win!
The robot which sorts the most waste into correct bins will be the winner.



INSA Lyon Robot run on the **M32C/83** device took place at the Eurobot competition and won the 3rd place amongst the competition of 200 teams from 22 different countries over Europe



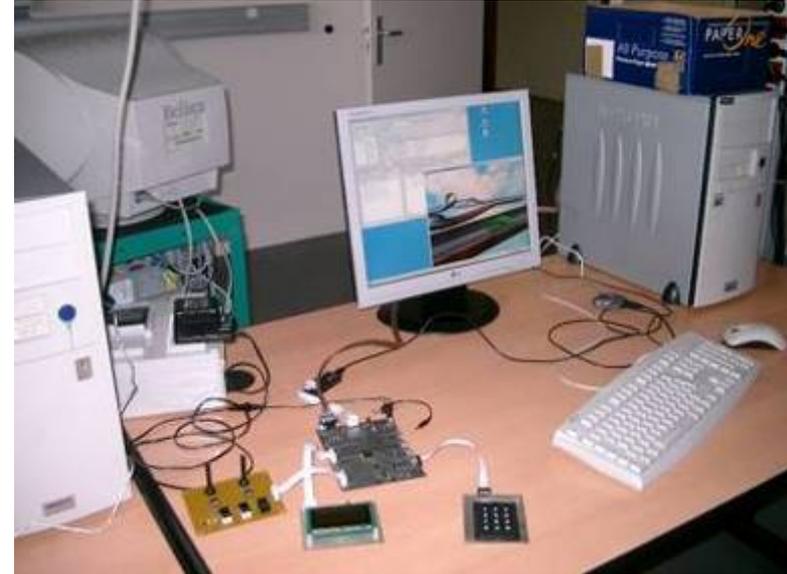
University meets industry...



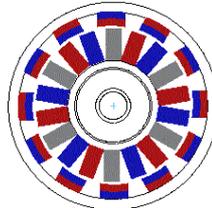
Students of the INSA University demonstrated during 3 days their Robot based on M32C at "Embedded World 2008"



Their waste recycling robot inspires many visitors.



Up to 200 hours practical work per year in Polytech Clermont-Ferrand Lab based on M32C + real-time kernel to drive a specific simulation car game on PC



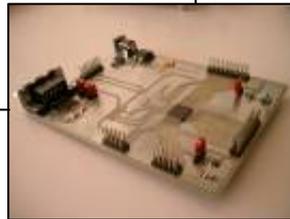
Direct Torque Control (DTC) for a Permanent Magnet Synchronous Motor (PMSM)

by
Romain Gaudillard GE3 CET POLYTECH CLERMONT
Christian Jury GE3 CET POLYTECH CLERMONT
Cedric Renault GE3 STICC POLYTECH CLERMONT

Contents

1. Command rules
 - Status
 - Issues and Problems
 - Solutions chosen
 - Hardware and software
 - Future (Next steps for the oncoming weeks)
2. Power card
 - Description
 - Status
 - Issues and Problems
 - Future (Next steps for the oncoming weeks)
 - The cost

Motor Control developments:
with Renesas SH Tiny



ENGINEERING SCHOOL POLYTECH'CLERMONT-FERRAND

Polytech' Clermont-Ferrand

Locating algorithms for positioning system on ZigBee

GE2 Placement report 2007-2008
from 1st May to 31st July 2008
RENESAS TECHNOLOGY Ratingen

30/07/2008

Supervisor: M. SMOLINSKI Daniel
Teacher: M. JAMES Michel
Trainee and author: Miss ABRAHAMSE Fanny

RENESAS
Everywhere you imagine.

During her 3 month placement in Renesas Miss Fanny ABRAHAMSE from Polytech Clermont Ferrand was focusing on Location Algorithms for a positioning system on ZigBee



VAASAN AMMATTIKORKEAKOULU
VASA YRKESHÖGSKOLA
UNIVERSITY OF APPLIED SCIENCES

University of Applied Sciences Vaasa



- 2007 Vaasa started teaching M16C Renesas family and equipped their laboratories with Renesas RSK starter kits running training projects and supporting student thesis on Renesas technology.
- Vaasa also plans to use Renesas processor TBD) as a platform for their RoboCup team. (more at www.puv.fi and <http://robotics.puv.fi>)



Faculty of Computer Science and Electrical Engineering Center for Adaptronics

FACHHOCHSCHULE KIEL

University of Applied Sciences

- Various R&D activities with support of Renesas :
 - Wireless sensor networks with Zigbee
 - Realtime visualization of Zigbee sensor data
 - New antenna solutions to increase the range of Zigbee applications



FACHHOCHSCHULE KIEL
HOCHSCHULE FÜR ANGEWANDTE WISSENSCHAFTEN UNIVERSITY OF APPLIED SCIENCES

7th International Conference and Workshop
on
**Ambient Intelligence and
Embedded Systems**
10 - 12 September, 2008
Kiel, Germany

TOPICS OF INTEREST
The conference will cover (but is not limited to) the following topics.
Problems and solutions related to Ambient Intelligence, Embedded Systems, Embedded Systems for Ambient Intelligence, Microcontrollers, Software engineering for Embedded Systems and Ambient Intelligence, System Design and Architecture for Ambient Intelligence, Ambient Intelligence Devices, Java, Java Programming, Embedded Java, Artificial Cognition, Computer Vision, Machine learning, Artificial Intelligence, PDAs, Mobile Devices, Wireless Applications, Sensor Networks, Multi Agent Systems, Affective Computing, Communication protocols for Ambient Intelligence, Interfacing and Interoperability, Applications of Embedded Systems, Applications of Ambient Intelligence, Case Studies.

OFFICIAL LANGUAGE
The official language of the conference and workshop will be English.

COORDINATION
Prof. Dr. Helmut Disert
Faculty of Computer Science and Electrical Engineering
Kiel University of Applied Sciences, Kiel, Germany

ORGANIZING INSTITUTIONS:

- Kiel University of Applied Sciences, Germany
- Vaasa University of Applied Sciences, Finland
- Universidade de Aveiro, Portugal
- Technological Educational Institute of Crete, Greece
- KHK - Katholieke Hogeschool Kempen, Belgium

1010011100101100010 Website: <http://karus.e-technik.th-kiel.de/workshop/>

1010001010011100
10001010011100101100

Kiel University of Applied Sciences Faculty of Computer Science and Electrical Engineering Grenzstr. 5 24149 Kiel Germany
Tel: ++49 431 2310-4000 Fax: ++49 431 2310-4010 Internet: <http://karus.e-technik.th-kiel.de/workshop/>





Hochschule für Technik, Wirtschaft & Kultur

Fachbereich Elektrotechnik und Informationstechnik

Lecturing & developments focus on microcontrollers and signal processor applications.

Under guidance of Prof. Sturm an international team of students has developed and installed an M16C based radio amateur beacon on top of the **Memorial to the Battle of the Nations, Leipzig**



Renesas contact Prof. Sturm, has been awarded as one of 10 best professors in Germany.



Universitat Politècnica de Catalunya, Barcelona (Spain)



Belen Matilla talking to Spanish T.V.



Lab of university UPC Sarti, Cataluna



Special plastic boxes for RSKs

■ The professional lab of university “UPC Sarti” in Vilanova, Cataluna: Renesas M32C/87 and R8C/25 RSK’s and E8 to be connected to the PC and used by the students.

Tomsk State University of Control Systems and Radioelectronics



TUSUR is one of the leading universities of the Russian Federation, training highly qualified specialists in a wide range of engineering specialties. The university provides training of approximately 15,000 students in 36 specialties including different branches of economics and information technologies, electronics and computer engineering, programming, automation and control systems, etc. The University Faculty staff comprises 430 lecturers, many of whom are recognized for their achievements.



TUSUR has setup the Renesas lab of 8 working desks

- TUSUR are the 1-st Russian University that started the Renesas education program followed by MIEM Moscow and St. Petersburg Politechnical University.
- In Renesas Laboratory at the Department of electronic systems TUSUR formed a group of 14 students of the 3-rd year who began study the SuperH platform. The next group of the 3/4 year students will be formed this September 2008.
- Department of electronic systems are going to start a lecture and lab course for Master's program on M16C and SH. Some student are already developing a project of PC Oscilloscope and mobile robot based on RSK7201





Institute of Energy Conversion Technology

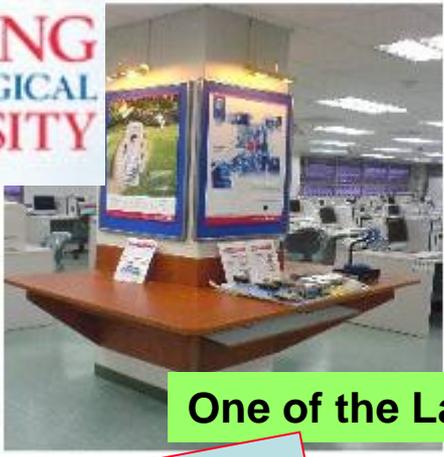
Prof. Herzog and his team investigate solutions to improve the design and optimization process of electrical drives in mechatronic systems

Students' work from **TU** Munich



<p>TUM TECHNISCHE UNIVERSITÄT MÜNCHEN</p> <p>Fachgebiet Energiewandlungstechnik Prof. Dr.-Ing. H.-G. Herzog</p> <p>EWT</p> <p>Studiendarbeit</p> <p>Entwurf und Aufbau eines Gleichstromsteller für einen Versuchsaufbau</p> <p>Matthias Leupersieder</p> <p>27. August 2007</p> <p>Bachelorbetreuer: Dipl.-Ing. Dominik Stiefel Prof. Dr.-Ing. Hans-Gregor Herzog</p>	<p>TUM TECHNISCHE UNIVERSITÄT MÜNCHEN</p> <p>Fachgebiet Energiewandlungstechnik Prof. Dr.-Ing. H.-G. Herzog</p> <p>EWT</p> <p>Studiendarbeit</p> <p>Mikrocontrollerbasierte Implementierung einer polynomialen Interpolation zur Drehzahlprädiktion</p> <p>von Christoph Wolkinger</p> <p>28. April 2008</p> <p>Betreuer: Dipl.-Ing. Michael Stoff Prof. Dr.-Ing. Hans-Gregor Herzog</p>	<p>Diplomarbeit</p> <p>Überarbeitung eines Stromrichters zur Sperrung einer zwei-trägigen Synchronmaschine für ein Hexanutenstützenystem</p> <p>Michael Stoff</p> <p>Betreut von Prof. Dr.-Ing. Hans-Gregor Herzog Dipl.-Ing. Martin Hübner</p> <p>Technische Universität München Fachgebiet Energiewandlungstechnik Prof. Dr.-Ing. Herzog</p> <p>Januar 2010</p>	<p>TUM TECHNISCHE UNIVERSITÄT MÜNCHEN</p> <p>Fachgebiet Energiewandlungstechnik Prof. Dr.-Ing. H.-G. Herzog</p> <p>EWT</p> <p>Zusatzarbeit</p> <p>Entwurf und Aufbau eines Umkehrstromrichters für einen Versuchsaufbau</p> <p>Philipp Reigold</p> <p>11. Februar 2008</p> <p>Bachelorbetreuer: Dipl.-Ing. Dominik Stiefel Prof. Dr.-Ing. Hans-Gregor Herzog</p>
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Global Renesas University Program

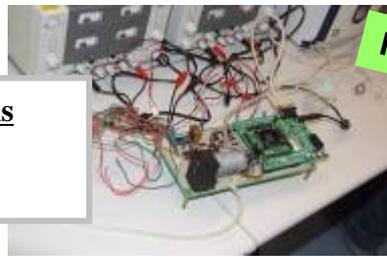


One of the Lab – Computer Engineering

Various Interesting Projects

2nd Year Design Project

Detection of different exhallsations
(H8S/2377 MCU)
(Final Year Student project)



Final Year Project

Testing of hearing capability
(H8S/2377 MCU)
(Final Year Student project)



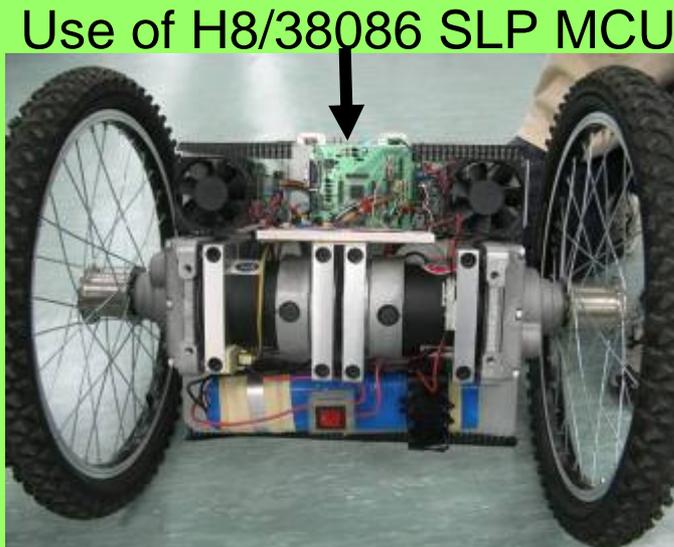
Final Year Student project
Sensor network using SLP



2nd Year Projects using SLP CPU Board –
Java Programming in PC, controlling
Obstacle-avoidance moving robot

Moving Robot picking up color balls
Using H8S/2377 MCU
(Final Year Student project)





Amazing Projects

Undergraduate Final Year Project - 1 person Output

2nd Year Lab lesson
-Creation of general application on training board



Text Editor



Lift simulator



Printer control



DC Motor – PID controller

Function Generator



Tetris Game





India

Singapore India Indonesia Malaysia Australia Thailand Vietnam

3

Anna University

MCU Subject : R8C

Students : about 350 per year



Started in Year 2006



Local Partner :

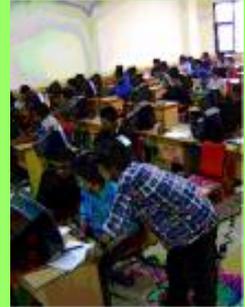


Renesas Lab

6

Engage into having Renesas Tool and Lab in 4 main university

- 1. Malang (BCS Computer)
- 2. Surabaya (STTS, Mr. Budhy)
- 3. Jakarta (Trisakti University)
- 4. Semarang (Diponegoro University)



Main Activity: Conducting Courses



Started in Year 2005



Local Partner :





Renesas Technology Europe

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