



uartronica  
Production and Industrialization of Electronic



# OUR WORLD

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## **ABOUT US, MISSION, VISION AND VALUES**

UARTRÓNICA, Electronics Ltd was established in 1996 with the mission to produce and test systems for analog and digital electronics, coils and wiring, and to provide specialized services and repair of equipment in electronics and telecommunications.

UARTRÓNICA has a history inextricably linked initially to CET - (Center for Studies and Telecommunications) and, from 1999, to PT Inovação SA, taking it as a partner and engaging in providing telecommunications services in electronics.

In 2008, the executive board of UARTRÓNICA decided to take advantage of all the knowledge and know-how acquired and consolidated over the years to start the production and manufacturing of printed circuit boards. In 2009, UARTRÓNICA enhanced its production capacity to fully automate SMD production line.

In early 2011, UARTRÓNICA was accredited with ISO 9001:2008 (APCER) and moved into new premises of 2,000 m<sup>2</sup>, located in the industrial park of Mamodeiro – Aveiro, that have all the necessary conditions for the production of electronics and manufacturing. The year 2011 is also marked by the beginning of the implementation of ISO/TS16949 that provides for continual improvement, giving importance to defect prevention and the reduction of variation and waste in the supply chain.

UARTRÓNICA's customers include prestigious companies and universities.

### **VISION**

Being a renowned company in the technology sector for the production of analog and digital electronics and in the provision of telecommunications services, with high quality standards supported by certification of our skills in new technologies, generating added value to our clients, thus guaranteeing a sustainable growth of our organization.

### **CORE VALUES**

- > Making continued efforts for continuous improvement of customer satisfaction;
- > Investing in employee training;
- > Valuing teamwork;
- > Cultivating and promoting a spirit of cooperation and deepening synergies;
- > Strictly complying with the work that we are requested to do;
- > Being flexible, constantly adjusting ourselves to the size and characteristics of our customers.



## OUR SKILLS

UARTRÓNICA has the knowledge and skills to handle the entire production process of electronic equipment, from the time of purchase of raw materials to the final stage of programming and testing.

## ACQUISITION OF ELECTRONIC COMPONENTS,

according to the specifications provided by the customer. UARTRÓNICA follows the directive on the restriction of the use of certain hazardous substance (RoHS) in electrical and electronic equipment 2002/95/EC. This directive restricts the use of six hazardous materials in the manufacture of various types of electronic and electrical equipment. It is also possible to produce according to customer specifications with solder paste with lead in critical applications such as aerospace, medical, automotive and telecommunications. UARTRÓNICA uses throughout the soldering process both SMD and THT (RoHS) exclusively SAC305. In this sense, UARTRÓNICA reinforces its concern about health and environmental protection.

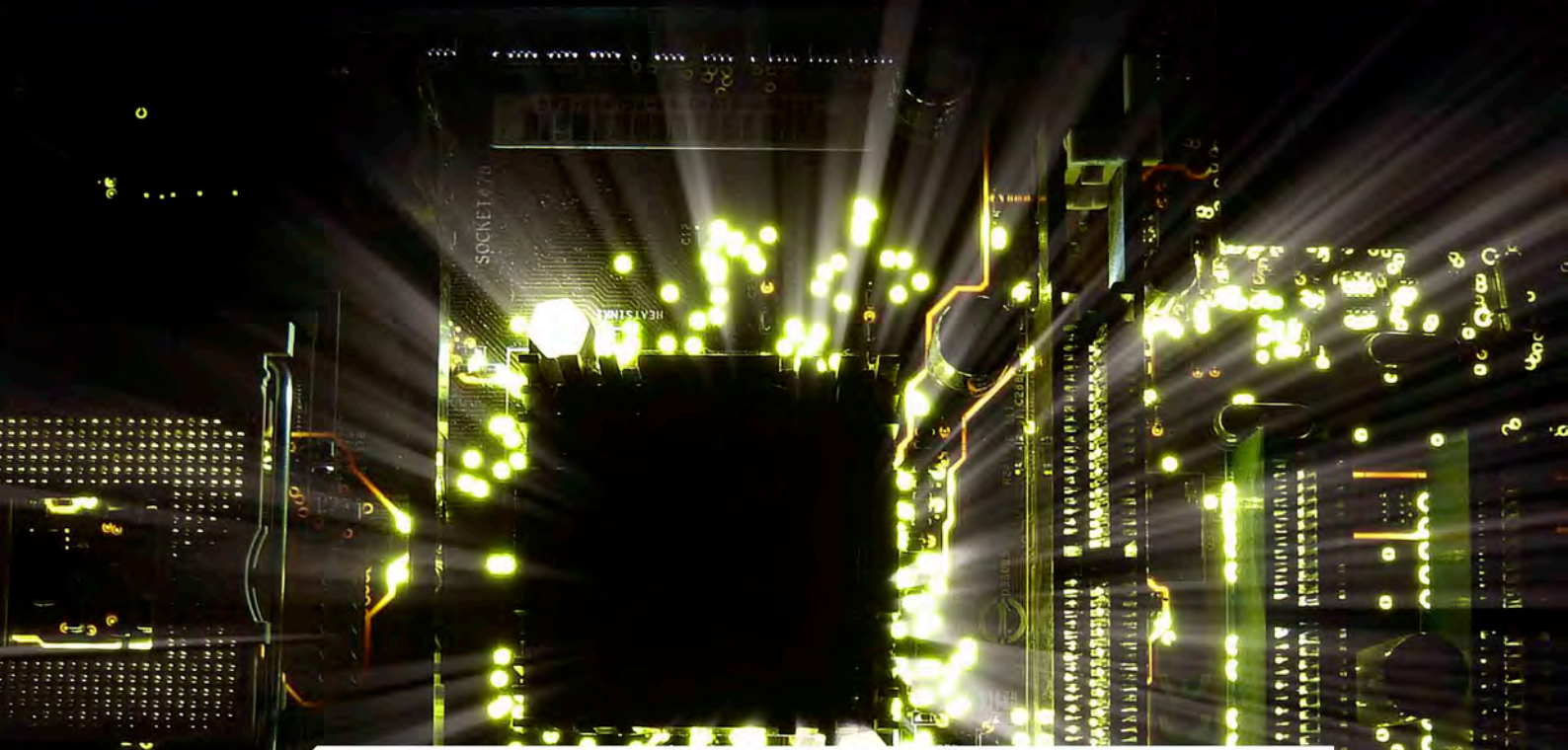




## SURFACE MOUNT TECHNOLOGY (SMT)

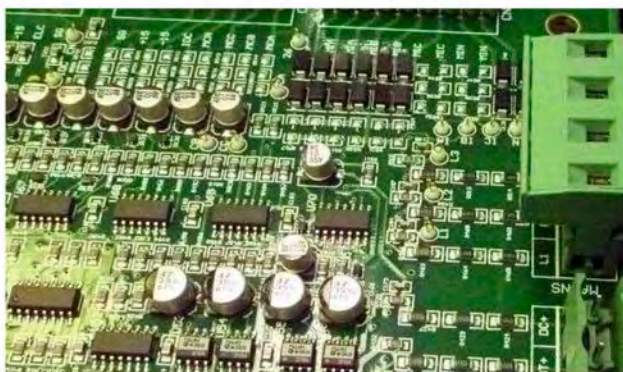
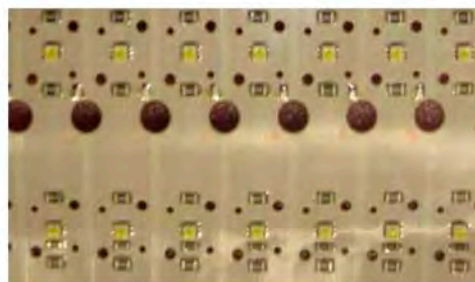
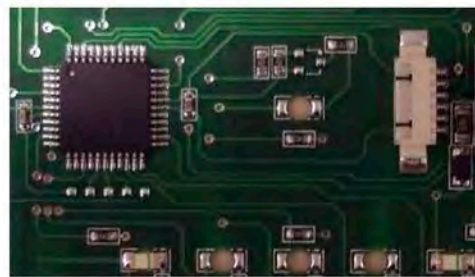
UARTRÓNICA uses this method for constructing electronic circuits in which the components are mounted directly onto the surface of printed circuit boards (PCBs). Electronic devices so made are called surface mount devices or SMDs. In the industry, it has largely replaced the through-hole technology construction method of fitting components with wire leads into holes in the circuit board.

Surface mounting lends itself well to a high degree of automation, and greatly increasing production rates. SMDs can be one-quarter to one-tenth the size and weight, and one-half to one-quarter the cost of equivalent through-hole parts.



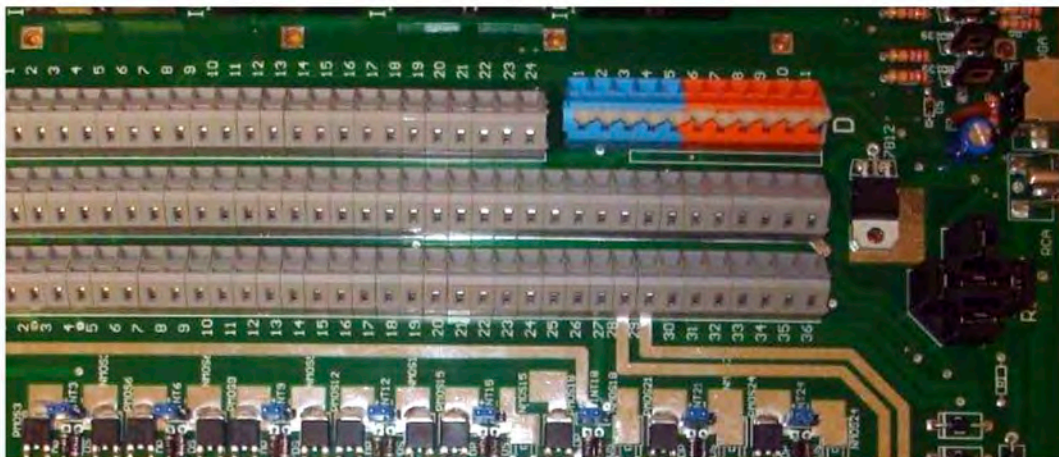
#### **FLEXIBLE PRINTED CIRCUITS (FPC),**

UARTRÓNICA uses this technology for assembling electronic circuits by mounting electronic devices on flexible plastic substrates, such as polyimide, PEEK or transparent conductive Polyester film. Additionally, flex circuits can be screen printed silver circuits on polyester. Flexible electronic assemblies may be manufactured using identical components used for rigid printed circuit boards, allowing the board to conform to a desired shape, or to flex during its use.



#### **PRINTED CIRCUIT ASSEMBLY (PCA),**

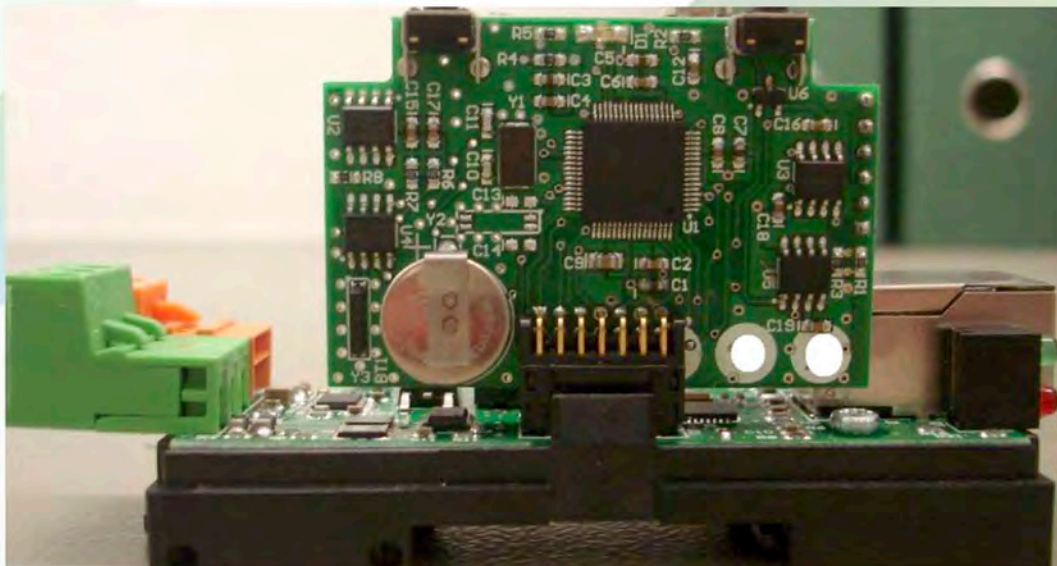
also known as a printed circuit board assembly (PCBA). Printed circuit boards are used in virtually all but the simplest commercially produced electronic devices. PCBs are inexpensive and can be highly reliable. They are much cheaper and faster for high-volume production. The production and soldering of PCBs can be done by our totally automated equipment.



### **THROUGH-HOLE TECHNOLOGY (THT),**

also spelled "thru-hole", refers to the mounting scheme used for electronic components that involves the use of leads on the components that are inserted into holes (PTH - Plated Through-Hole) drilled in printed circuit boards (PCB) and soldered to pads on the opposite side either by manual assembly by hand placement or by the use of automated insertion mount machines.

Horizontal installation of axial-leaded through-hole parts (resistor, capacitors, and diodes) is done by bending the leads 90 degrees in the same direction, inserting part in the board, bending leads located on the back of the board in opposing directions to improve the part's mechanical strength; finally, soldering the leads such that the solder seeps through to both sides of the board. Later the assembler cuts off the excess leads.



#### **AUTOMATIC OPTICAL INSPECTION (AOI),**

is an automated visual inspection such as printed circuit boards (PCBs). All UARTRÓNICA SMD production is inspected using AOI machines.

In case of PCB-inspection, a camera autonomously scans the device under test (DUT) for variety of surface feature defects such as scratches and stains, open circuits, short circuits, thinning of the solder as well as missing components, incorrect components, and incorrectly placed components. AOI is able to perform most of the visual checks performed previously by manual operators, and far more swiftly and accurately. There are systems capable of inspecting the component placement prior to reflow, the post-reflow component conditions, and post-reflow solder joints.

In this way AOI can be used to detect problems early in the production process. Since faults cost more to fix later in the production process, it is essential to notice problems early. For example, problems in the solder and assembly area of a PCB can be seen early in the production process and information used to feedback quickly to previous stages, avoiding the production of too many boards with the same problem.

Low costs and programming efforts make AOI a practical and powerful quality tool for both prototypes and high-volume assemblies.





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**Certificado de Conformidade**  
*Certificate of Registration*

NÚMERO 2011CEP-3877  
Number

APCER - Associação Portuguesa de Certificação certifica que o Sistema de Gestão da Qualidade da APCER - Associação Portuguesa de Certificação certifies that the Quality Management System of

**UARTRÓNICA - ELECTRÓNICA, LDA.**  
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PORTUGAL

implementado na montagem e inspeção de circuitos impressos e prestação de serviços especializados na área de electrónica e de telecomunicações, cumpre os requisitos da norma  
*implemented in the assembly and inspection of printed circuits and services specialized in electronics and telecommunications, meets the requirements of the standard*

**NP EN ISO 9001:2008**  
Sistemas de Gestão da Qualidade - Requisitos  
*Quality Management Systems - Requirements*

Date of emission 2011-03-11  
Date of issue

Valido até 2014-03-10  
Valid until

José Leitão  
CEO

Qualquer esclarecimento adicional sobre este certificado pode obter-se consultando a APCER  
*Any additional information concerning this certificate may be obtained by consulting APCER*

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### **ELECTROSTATIC DISCHARGE (ESD)**

UARTRÓNICA's production and test areas are protected against ESD, prevention within conductive flooring materials to conduct harmful electric charges away from the work area. EPA (Electrostatic Protected Area) include using appropriate ESD-safe packing material, the use of conductive filaments on garments worn by assembly workers, conducting wrist straps and foot-straps to prevent high voltages from accumulating on workers' bodies. UARTRÓNICA's production and test areas have humidity, CO2 and temperature control that prevents electrostatic charge generation. In fact, the thin layer of moisture that accumulates on most surfaces serves to dissipate electric charges.

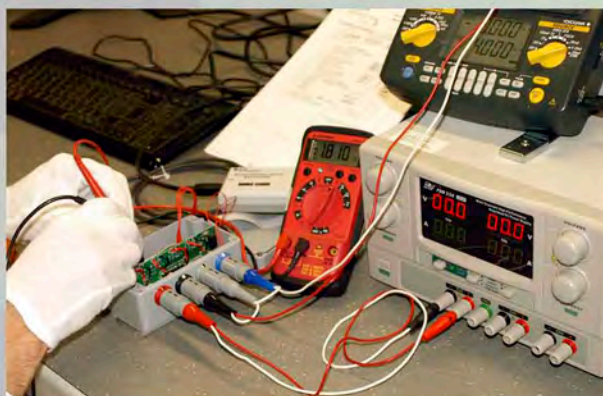
### **REWORK**

UARTRÓNICA's high quality rework re-establishes the correct function of the electronic assembly. UARTRÓNICA uses specialized techniques and equipment required to replace defective components, such as ball grid array (BGA) devices.



### **PROGRAMMING AND SYSTEM TESTING**

of hardware is conducted on a complete integrated system to evaluate the system's compliance with its specified requirements.



## RESOURCES



**KARDEX STORAGE ROBOT**, with controlled humidity and temperature, ensures the proper storage conditions for raw materials that require humidity and temperature control. All components conditioned to humidity and temperature are vacuum packed.



The production and testing areas have humidity, CO2 and temperature control and are protected against ESD. The loading and unloading area is protected from adverse weather conditions.



**Screen Printer DEK Horizon 03iX** – Automatic solder paste printing for SMT technology, machine alignment / capability; 2 Cpk @ +/- 12.5um, 6 sigma, process alignment / capability; 2 Cpk @ +/- 25um, 6 sigma, cycle core time 12 secs; maximum print area; 510mm (X) x 508.5mm (Y). Stencil cleaning is fully programmable.



**SCREEN PRINTER MPM UP3000** - Automatic solder paste printing for SMT technology with dispenser folder, alignment of the screen by camera and 2D inspection.



**PICK & PLACE JUKI FM 760**, with a capacity of assembling 760- 7500 cph with laser alignment and vision system for BGA and uBGA placement. Capability of placing 0402 - 50x50sqmm and equipped with MTC (Multi Tray Feeder).



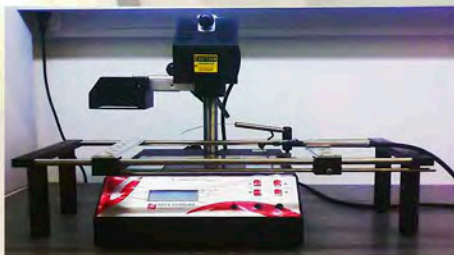
PICK & PLACE JUKI 2060, can place a wide range of components from 0201 and ICs to odd-form, all at a high rate of speed, 12,500CPH, increasing production rates.



REHM OVEN, composed of six zones, five heating and cooling, transport chain, allowing the production of double-sided, with 5,5 meters long, lower support for the hardware of higher dimensions. This oven is ready to use nitrogen.



DIGITAL OPTICAL INSPECTION - Digital optical inspection machine (AOI) of last generation, brand Mirtec, for the thorough inspection and extreme precision of SMD components, before and after assembly, so that we can ensure high quality and reliability.



REWORK STATION - With two heating zones (top and bottom) for the removal and placement of QFN, SMD, BGA, SBGA, CCGA, CSP, PGA with MIF and monitoring of the temperature profile in real time and computer interface.



DIP SOLDERING - Wave soldering machine, brand Inertec, composed of area for refinishing spray, 3-zone preheat and wave solder turbulent (last generation). This equipment is properly equipped with 10 transportation vehicles and is already prepared for welding in accordance with the RoHS standard, raw material and component solder without lead.



INERTEC ELS 3.2 - NITROGEN SELECTIVE SOLDERING SYSTEM, with board size up to 460 x 460 mm and with double soldering units able to assembly flexible PCB. Production and soldering quality is guaranteed by the use of nitrogen.

Also, UARTRÓNICA's productive and testing areas have an automatic standby power generator of 100 Kw, and UPS's on all production equipment, thus avoiding any breaks in that power supply to stop the production line and undertake the delivery dates agreed with customers.

UARTRÓNICA is very pleased to invite you to visit its facilities and to have a first-hand glimpse into the world of high technology applied to electronic production.

**We look forward to see you soon.**



The background of the entire page is a dark, almost black, space filled with intricate, glowing green light trails. These trails are composed of many thin, overlapping lines that swirl and curve, creating a sense of motion and energy. The light trails are most concentrated on the left side of the page, where they form a large, circular, tunnel-like structure that recedes into the distance. The overall effect is reminiscent of a high-speed camera capturing the movement of a bright object or a complex, dynamic system.

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