

BALANCE BETWEEN PRODUCTIVITY AND FLEXIBILITY

A Smart Solution for Manufacturers of High-Mix/Low-Volume Electronics

NES – an EMS provider based in Naples, Italy – has fully modernised the hardware and software of its assembly production line. The installation of the first SMD pick-and-place machine – an RS-1 equipped with a Takumi Head – took place about one year ago, followed by another five models of the rapid, intelligent and modular all-rounder as well as IFS-NX traceability software. I-Tronik, JUKI's Italian sales partner from Padua, was in charge of the systems' installation and commissioning.

smart. fast. modular: JUKI's motto also applies to the RS-1. This flexible all-rounder comes with JUKI's revolutionary Takumi Head, an 8-nozzle placement head which can adjust to the component height in 6 positions. Using this machine, manufacturers can optimise a production line without having to change the placement head, and thus achieve a throughput of up to 42,000 components per hour. At the productronica trade fair (hall 3, booth 141), JUKI will present another version of the RS-1 series – the RS-1 R pick-and-place machine – and intelligent production control software.

„Our strategy for the future involves continuous investments in equipment, software and employees. In order for us to be able to remain successful and up to date in our line of business, which is subject to continuous developments, these three pillars have to grow continuously,“ stresses Marco Punzo, founder and managing director of NES.

NES is short for Net Electronic Smt Srl. The professional, Naples-based EMS company manufactures technologically sophisticated electronic assemblies in the high-mix/low-volume segment.

„Apart from our passion for electronics, our customers appreciate the safety, reliability, high professionalism and flexibility they can expect from us,“ the managing director stresses. Certified to ISO 9001, ISO 9100, IRIS and ATEX, NES supplies 69 customers from the areas of railway technology, defence, aerospace technology, telecommunications, high-frequency technology, industry electronics and building technology. The company has been cooperating with Chinese, Spanish, German and Swedish partners for several years, and is especially proud of a joint venture with a supplier to the German automotive industry.

„We assist our customers in their product development work – from the manufacturability's point of view – so that they can design and industrialise a high-quality product which can be manufactured in a straightforward and economic way,“ the managing director explains. In order to achieve this, the manufacturer is required to always use the latest technology and to invest in well-trained and skilled employees. Team players are of particular importance, for only a well-functioning team can systematically optimise the operational processes through innovations and automation solutions which result from continuous improvements.

Quick Component Placement and High Flexibility with One Machine

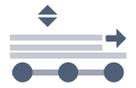
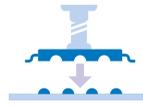
„Over the past eleven years, we have grown with JUKI,“ Marco Punzo says. During the selection process for the new production lines, JUKI had competed with two other providers. In comparison to the two competitors' pick-and-place machines, JUKI's RS-1 had achieved the best results with regard to speed, precision, reliability, guarantee and costs.

RS-1 machines are equipped with the revolutionary Takumi placement head with fully automated height adjustment. In the past, the placement head had to be mounted so high that it was always possible to place the highest component onto the PCB. This resulted in an unnecessarily large traverse path for flat components. When it comes to the Takumi Head, however, a fully automated centring system adjusts the placement head to the component height – individually, in six positions and during operation. Thus, the placement head is positioned as close as possible to the feeders and the PCB, which results in optimised cycle times and a reduced Z-axis travel.

European Headquarters:
JUKI Automation Systems GmbH
Neuburger Str. 41, 90451 Nuremberg, Germany

phone: +49 911 93 62 66 0
fax: +49 911 93 62 66 26
email: info@juki-smt.com

JUKI
www.juki-smt.com



Equipped with eight vacuum pipettes, the Takumi Head reaches a placement speed of 42,000 components per hour. The placement head also scores with flexibility: Components from 0201 (metric) to 74 mm (square) and/or 50 mm × 150 mm (rectangular) and a height of 25 mm are included in the wide range of parts that can be handled. Each vacuum pipette comes with RFID tags for monitoring and traceability purposes.

Equipped with JUKI's new offline teach camera and JaNets/NPI Plus software, the RS-1 allows for easy data inputs and quicker programming for all component shapes. The new RF feeders are another innovation. They are smaller and lighter without compromising on the positioning accuracy. Thanks to the small width, up to 112 feeder inputs are possible when using 8 mm feeders.

Full Traceability of Products and Processes

Traceability is an important topic at NES. In case of defects, it is imperative to be able to quickly detect the possible error sources, which is why each electronic component must be clearly identifiable and traceable. Customers expect their suppliers to offer gapless traceability. However, this is something manufacturers can benefit from as well. Greater transparency enables sustainable cost management and process improvement.

Apart from the hardware, NES installed JUKI's traceability software for intelligent set-up control and full traceability: IFS-NX (intelligent feeder system with contactless RFID). To ensure that the correct components are installed, the software checks the part numbers required for the used reels. Production cannot start if there are any incorrect components. Upon positioning of the feeder bank, each feeder position is recognised automatically. Every time a component is restocked, the consistency is checked as well. In order to ensure full traceability, the components' batch numbers are recorded and linked up with the serial number of the PCB onto which they had been placed.

The feeder is set up offline using feeder carts, which reduces errors and shortens the entire set-up time, because the operator is guided through the process. The components' batch numbers can be recorded during production and linked up with the serial number of the PCB onto which they had been placed. Full traceability is thus guaranteed. IFS-NX records and manages the feeders' maintenance and inspection history. Maintenance schedules are created, and warnings can be specified on the basis of the actual use, including order picking cycle times, operating hours and order picking failure rates.

„Our customers value the traceability we can offer with our new production line,“ the managing director of NES stresses. „Not only does our system calculate an efficient and safe internal cycle, but it is also able to identify it from the code on a product to the entire production cycle, and to link the PCB with the components processed.“

The components, the internal production-related documents and the finished assemblies are identified by means of bar and QR codes. „The transparency we gain with the traceability of the process offers us the possibility to leverage further optimisation potential and to increase our productivity,“ concludes Marco Punzo.

Equipment Needed by the Italian Market

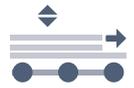
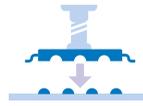
I-Tronik, an Italian company that has been JUKI's sales partner since productronica 2013, took care of the hardware and software installation. „We have been cooperating with I-Tronik ever since our foundation in 2003. And now that they are a sales partner of JUKI, we have deepened our cooperation even further,“ Marco Punzo reports.

Based in Padua, I-Tronik provides electronics manufacturers with machines, systems and consumables. I-Tronik has been supplying the Italian market, Switzerland's Italian region, Malta and Slovenia for 25 years. Seven excellently trained and experienced service technicians take care of the machine installation, training courses, maintenance work and on-site services.

European Headquarters:
JUKI Automation Systems GmbH
Neuburger Str. 41, 90451 Nuremberg, Germany

phone: +49 911 93 62 66 0
fax: +49 911 93 62 66 26
email: info@juki-smt.com

JUKI
www.juki-smt.com



For 10 years, I-Tronik has organised an annual three-day workshop with live presentations. Innovations, technical details and market developments are demonstrated in a direct way. And by discussing the requirements placed on the electronics manufacturers, it is possible to identify the equipment available on the Italian market and to look for the best technical solutions. „Apart from that, we provide our suppliers and partners with continuous feedback. In this way, we can help them improve their offer on a continuing basis,“ Michele Mattei, head of sales and one of the two company founders, explains their formula for success.

JUKI's Best Vendor and Europe's Best Service Technician

„With JUKI, we offer our customers a well-known, renowned, easy-to-install and low-maintenance brand, for every JUKI machine comes with a three-year guarantee. With JUKI, we can offer everything from a single source and with full traceability – from printers to pick-and-place machines to reflow ovens,“ the sales director explains. In 2018, JUKI honoured I-Tronik as “Best Vendor and Europe's Best Service Technician”.

„NES wanted a strong partner, a partner who could assist them with their expansion plans and investment decisions,“ Michele Mattei remembers. „The major advantage for our customers is that I-Tronik accompanies them as a real partner, and not just as a dealer,“ the sales director emphasises. „Not only do we provide electronics manufacturers with machines, standard installations and services, but we give them valuable advice on how to improve the organisation of their systems and processes,“ the I-Tronik manager underlines the added value for his customers.

„During this project, I-Tronik and JUKI supported us as genuine partners. We could discuss the reorganisation of our production with both of them, and seek advice on how to increase the efficiency of our production to a significant extent. This is our added value,“ Marco Punzo, managing director of NES, confirms.



The SMT team of Net Electronic Smt Srl: „JUKI's concept strikes the right balance between productivity and flexibility.“ (Image: NES)



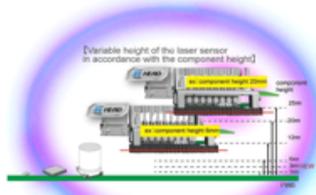
Michele Mattei, head of sales at I-Tronik: „We provide our partners with continuous feedback. In this way, we can help them improve their offer on a continuing basis.“ (Image: I-Tronik)



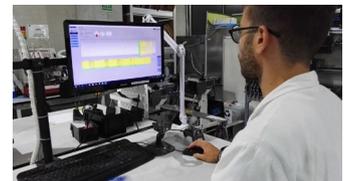
Upon positioning of the feeder bank, each feeder position is automatically recognised. (Image: NES)



The intelligent feeder uses WLAN technology to check – in a contactless manner – whether the reel provides the correct components. It blocks the line in case of any errors.



Takumi Head: Height-adjustable in six positions, the placement head is always as close as possible to the feeders and the PCB. (Image: JUKI)



In order to guarantee their customers production traceability, NES records all internal processes. (Image: NES)

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