

Best practice between two companies

Absolutely no room for defects

As the world-wide leading supplier of energy management solutions, Eaton helps its customers to increase their level of efficiency, safety and sustainability when they utilize electrical, pneumatic and mechanical energy. Numerous Eaton products monitor processes that require the highest level of security – their failure-free operation is of paramount importance. As a consequence of this, the highest standards must apply to the electronic manufacturing process at Eaton MTL, where, since June of this year, two Ersa soldering systems are installed.



Source: Ersa

Location of Eaton MTL in Luton, close to London.

The second half of the year 2016 started with a big bang for the electrical branch of the energy management specialist Eaton Measurement Technology Limited (MTL) – two new Ersa soldering systems were concurrently installed at their Luton facility, about 60 km north of the center of London. Their specifications: A full-tunnel wave soldering system model Powerflow e N₂ and a reflow system model Hotflow 4/14. Based on the specifications of the systems, the objectives of the electronic manufacturing group of Eaton MTL were obvious, their implementation, though, was rather complicated (details later): to provide a sustainable improvement of the energy efficiency of the systems while converting from the tin-lead to the lead-free process (RoHS-EU directive), and to ensure a significant increase in the production capacity while maintaining the highest level of quality. In other words: high quality, simple concept, good return on investment.

Optimal manufacturing solutions, optimal support

The original contact to Eaton MTL was established by Ersa's long-standing sales partner Blundell Electronic Production located in Coventry, about a good hours drive away from Eaton. The 12-year-old wave soldering system installed at Eaton needed to be replaced by a system based on current technology. The engineers responsible at Eaton for the processes selected two suppliers for their short list – one competitor and Ersa GmbH from Wertheim. The equipment specification prepared put forth what capabilities and features the



Source: Ersa

Dipen Dixit, Manufacturing Engineer at Eaton MTL and responsible for electronic manufacturing in Luton.

wave soldering system waste possess. It was specified that the unit should be an "open system" and operating "without N₂". "Many of the world's most security-critical processes are monitored, controlled, visualized and protected by our products – applications such as offshore oil and gas platforms, power plants and refineries. On account of our own global network of sales and services, our customers are always in the best hands – our own hands, everywhere in the world", states Dipen Dixit, the manufacturing engineer at Eaton MTL in Luton. He continues: "During the equipment evaluation process, it turned out that Ersa is not only the market leader in soldering technologies, but it also presented itself to us as a supplier that will use poka-yoke solutions – inadvertent error prevention – when striving to fulfill its customers' requirements, always following the health and safety guidelines of Eaton MTL. Ersa possesses excellent know-how – and this, combined with the service and support based in the UK, made Ersa – Blundell the perfect match for us!"

For the initial tests on the wave soldering system, Eaton's engineers visited the Ersa demo center in Wertheim. Extensive tests were performed on the equipment, processes were evaluated, and the hardware and software was scrutinized under different scenarios. During the course of this evaluation sessions Ersa, with its singular knowledge for optimal manufacturing solutions, could demonstrate to Eaton that the nitrogen version of a wave soldering system would offer substantial benefits when compared to an open system. Not only in



View of the Reflow Soldering System Hotflow 4/14 in the Eaton-MTL production area.

Source: Ersa



Source: Ersa

Bird's eye view of the production area of Eaton MTL.

higher process safety and the corresponding improvement in product quality, but also in regards to a saving in operating costs. A saving of more than € 70,000 per year was estimated, a sum which convinced the engineers of the company as well as its economists to change their specs. In addition, the quick and easy access to the fluxer unit and to the solder waves was very much appreciated by all. In the course of the discussions during the trial phase, it turned out that the company was also in the process of purchasing a reflow soldering unit. A main criterion for the reflow process was the need for an exit temperature of the boards of less than 35 °C. Here also the Ersa Hotflow 4/14 with its high availability for production (through offline profile creation, for example), its excellent thermal performance and its superior energy balance could offer convincing arguments. These arguments were substantive enough that Eaton MTL decided to order the reflow system also from Ersa, pulling

back the purchase order that had already been issued to one of Ersa's competitors. "We were very pleased to have received these two purchase orders from Eaton MTL, even though we now had to install not only one but two systems under difficult conditions: the installation of the systems and the conversion to the lead-free process was to take place on one single weekend only! There was to be no loss in production, meaning that at the start of the new week following the weekend of installations production was to continue with a safe and stable lead-free process on both systems, the wave soldering as well as the reflow soldering system. There was no Plan B that could be reverted to in case of problems", states Ersa's Area Sales Manager Christian Ott, responsible for the British market. The main issue centered on the fact that for lead-free processes completely different temperature profiles are required, so that the process parameters could not simply be transferred from the old to the new systems. It was also required that all safety systems remain functional and effective. This essentially meant that all products had to be parameterized and processed on the new systems in advance to their installation at Eaton, so that, after the installation of the units at the customer, production could smoothly commence. To achieve this, some unconventional and drastic steps had to be taken: Once the systems were ready for shipment to the customer, they were forwarded initially to Ersa's sales partner Blundell in the UK. At Blundell's facility, the systems were installed, the lead-free processes based on the customer's products were established and the operators trained on the new equipment.

Only by taking these very important preparatory steps was it possible to perform the changeover as planned on a single weekend. And indeed – it was successful! The wave soldering system with

Eaton MTL in Numbers

- MTL – established 1971 (Eaton: 1900)
- Location Luton: 314 Employees
- Sales 2015: 127 Mio. Euro
- Eaton total: 20.9 Billion US-Dollar (Sales), 97,000 employees



Source: Ersa

Dipen Dixit, Manufacturing Engineer at Eaton MTL, with Ersa Tools Manager Hansjürgen Bolg.

two solder waves and a preheat length of 1.5 meter, installed at Eaton, features – instead of a finger type conveyor as in the old system – a pallet-type conveyor, which now allows that boards of different sizes and geometries can be processed one after the other, without having to run idle for a conveyor adjustment.

Quick reaction and short communication channels

It was an extensive list of requirements which was to be implemented for this concerted action – in the end it worked out because Ersa, through its sales partner Blundell, was geographically close to its customer. Support was offered with short communication channels and quick reaction times, which laid the base for a fruitful business relationship based on trust between the customer and the supplier. This aspect, aside from the superior performance of the Ersa soldering systems, was an important point for Eaton MTL. As a global player, the company realizes projects worldwide and needs, for those cases, global support with the corresponding sales and service structures, something which Ersa, itself a global player, is uniquely positioned to provide with its own large international presence. "Eaton would like to express its gratitude to the Blundell and Ersa team for the help and assistance granted in setting up the optimized operation of their new wave soldering and reflow soldering systems. We are very satisfied with the equipment and the services delivered, particularly in view of the changeover to the lead-free process," writes Dipen Dixit in an email to his contacts at Blundell and Ersa. Eaton MTL shared the experience they made on the road to the lead-free process with their supplier of solder paste, who gave a positive assessment of the quality of the boards from their new lead-free reflow production process. Equally satisfied was the Eaton MTL team with the low exit temperature of the boards from the re-

Zusammenfassung

Ein weltweit führender Anbieter von Energiemanagement-Lösungen hilft seinen Kunden zur Steigerung ihrer Effizienz, Sicherheit sowie Nachhaltigkeit. So überwachen zahlreiche dieser Produkte Prozesse, die ein hohes Maß an Sicherheit erfordern und deren fehlerfreier Ablauf von größter Bedeutung ist. Das erfordert höchsten Standard in der elektronischen Baugruppenfertigung, wozu jüngst zwei Ersa Lötanlagen installiert wurden.

Résumé

Un leader mondial dans les solutions de gestion de l'énergie aide ses clients à augmenter leur efficacité, leur sécurité et leur développement durable. Ainsi, nombre de ces produits surveillent des procédés exigeant un haut degré de sécurité et dont le déroulement irréprochable est de toute première importance. Ce qui exige le niveau le plus élevé dans la fabrication de composants électroniques pour lequel deux unités de brasage ont été récemment installées.

Резюме

Всемирно известный поставщик решений в области управления энергией помогает своим клиентам повысить эффективность, безопасность и продолжительность работы. Множество производимых компаний изделий контролируют процессы, которые требуют высокой степени безопасности и безупречная работа которых имеет огромное значение. Это подразумевает необходимость соблюдения высочайших стандартов при изготовлении электронных узлов, для чего недавно были установлены две паяльных установки Ersa.

flow system. A manufacturing engineer with 22 years' experience commented on the results of the wave soldering process with the words "have never seen such good quality from the wave soldering process."

Aside from the large soldering systems, Eaton MTL also relies in the hand soldering area on products from Ersa – 50 i-CON single soldering stations were sent across the channel to the island, after they had proven themselves to be more reliable, more economical and simpler to use than the products offered by the competitors. Since the middle of 2016 and for most soldering applications, the system supplier equips the energy management specialists from Eaton with the optimal soldering solutions. Further inquiries from Luton have already been received in Coventry (at Blundell) or in Wertheim (at Ersa). The future looks promising for additional business, business, which hinges on zero defect tolerance!

www.ersa.com; www.mtl-inst.com



The author Christian Ott is Sales Area Manager at Ersa GmbH.

Source: Ersa