CASE STUDY

LOCTITE®

Creating ESD-Safe Tools with LOCTITE® 3D IND3380

Fueling Sustainability in the Repair and Refurbishment of PCBs and Chips

Application Introduction

As sustainability demands and environmental regulations increase, the electronics industry faces pressure to extend product lifecycles through efficient refurbishment and repair. A secure, reproducible processing tool is essential for handling temperature-sensitive components, ensuring compliance with legal requirements, and supporting both legacy and new electronic products. This case study explores how Nokia, in collaboration with Kurtz Ersa and Henkel, developed a solution that addresses these challenges and provides a sustainable path for the future of electronics repair.

MATERIAL: **LOCTITE® 3D IND3380**

The Challenge

The electronics repair industry must navigate several obstacles to meet sustainability goals. Many components are highly integrated and sensitive to temperature. This makes traditional repair methods risky, where defect components are replaced by localized desoldering with an IR-heat source. Excessive heat exposure can damage surrounding components, affecting device reliability. Additionally, the need to comply with environmental regulations and anticipate future technological changes makes it crucial to develop a standardized, scalable solution for consistent, repeatable results across various product lines.

The Approach

To address these challenges, Nokia partnered with Kurtz Ersa to create a processing tool capable of significantly reducing thermal stress on components and printed circuit boards (PCBs) during rework and repair. By precisely controlling heat exposure, this approach protects delicate components and maintains overall system reliability. The tool is designed to be easily adaptable to various board architectures with minimal effort, allowing for rapid integration into existing workflows. When additional cooling is required, simple modifications can enhance cooling capacity without major reengineering. Electrostatic discharge (ESD) compatibility is also a core feature, utilizing 3D printed material to print the ESD-compatible body tailored to specific board designs, safeguarding sensitive electronics from damage and ensuring reliability in high-precision repair environments.

The Solution & Benefits

Material selection: **LOCTITE® 3D IND3380**

Henkel Material Used								
	Color	HDT at .455 MPA (°C)	Tensile Stress at Break (MPa)	Elongation at Break (%)	Young's Modulus (MPa)	Flexular Modulus (MPa)	IZOD Impact Notched (J/m)	Shore Hardness
		ASTM D648	ASTM D638	ASTMD638 (D412)	ASTM D638	ASTM D790	ASTM D256	ASTM D2240
IND3380	Black	190	50	2	3,000	3,400	13	86 D (3 sec)

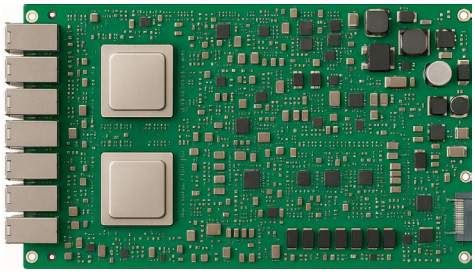

Fig 1: Circuit board layout representation.

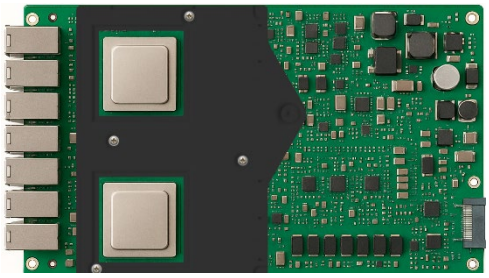

Fig 2: Board with ESD-safe tool.

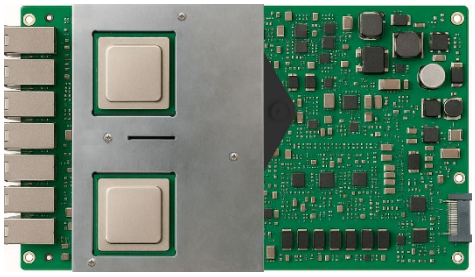

Fig 3: Metal plate on top of ESD-safe tool.

The processing tool combines metal with a 3D printed, ESD-safe body made from Henkel's **Loctite® 3D IND3380**, customized to Nokia's board layouts. Its reliable ESD properties and high heat deflection temperature allow precise heat control without harming nearby components. This supports consistent, regulation-compliant repairs while reducing thermal stress and preventing damage during component replacement. The design also enables easy automation by reusing layout data, making it scalable across product lines. For Nokia and partners like Kurtz Ersa, this means faster, more cost-effective repairs with less waste—supporting both operational efficiency and sustainability.

Want to learn more about Henkel's unique material solutions for the additive manufacturing industry? Visit Henkel's LOCTITE® 3D Printing at LoctiteAM.com or reach out to us via loctite3d@henkel.com

About LOCTITE®

With its brands, innovations and technologies, Henkel holds leading market positions worldwide in the industrial and consumer businesses. The business unit Adhesive Technologies is the global leader in the market for adhesives, sealants and functional coatings. With Consumer Brands, the company holds leading positions especially in laundry & home care and hair in many markets and categories around the world. The company's three strongest brands are Loctite, Persil and Schwarzkopf. In fiscal 2023, Henkel reported sales of more than 21.5 billion euros and adjusted operating profit of around 2.6 billion euros. Henkel's preferred shares are listed in the German stock index DAX. Sustainability has a long tradition at Henkel, and the company has a clear sustainability strategy with specific targets. Henkel was founded in 1876 and today employs a diverse team of about 48,000 people worldwide – united by a strong corporate culture, shared values and a common purpose: "Pioneers at heart for the good of generations." More information at www.henkel.com

About NOKIA

At Nokia, we create technology that helps the world act together. We put the world's people, machines and devices in sync to create a more sustainable, productive and accessible future. We are a B2B technology innovation leader pioneering networks that sense, think and act™ www.nokia.com

About kurtz ersa

Kurtz Ersa is a globally active technology group based in Spessart, Germany. The company was founded in 1779 and is now in its 7th generation of family management. Kurtz Ersa produces and sells foaming and casting machines as well as systems and tools for electronics production. The range of services is supplemented by automation solutions and the first technical systems in the field of additive manufacturing. With numerous subsidiaries and production facilities in Europe, North America and Asia, the company offers customized solutions for various industries and applications and consistently lives the "global footprint". We are an attractive employer in the region and offer our employees a wide range of training opportunities through our in-house academy. Kurtz Ersa attaches great importance to sustainability and aims to be CO2-neutral by 2029. www.kurtzersa.com

About stratasys

(Ecosystem Partner) Stratasys is leading the global shift to additive manufacturing with innovative 3D printing solutions for industries such as aerospace, automotive, consumer products, healthcare, fashion and education. Through smart and connected 3D printers, polymer materials, a software ecosystem, and parts on demand, Stratasys solutions deliver competitive advantages at every stage in the product value chain. The world's leading organizations turn to Stratasys to transform product design, bring agility to manufacturing and supply chains, and improve patient care. www.stratasys.com