



Elephantech announces new sustainable industrial printer

August 26, 2024, Tokyo, Japan—Japanese green tech innovator Elephantech today announced the release of their new industrial inkjet printing platform, [the ELP04](#). A cutting-edge inkjet printer compatible with metal nano inks, the new platform uses cutting-edge technology to offer manufacturers a way of producing sustainable electronic components to the same standards as conventional products but with significant resource, cost, and time savings.

[Introducing the Elephantech ELP04 and ELP04-PCB:](#)

[Our next-gen industrial inkjet printing platform and PCB printer \(with video \)](#)

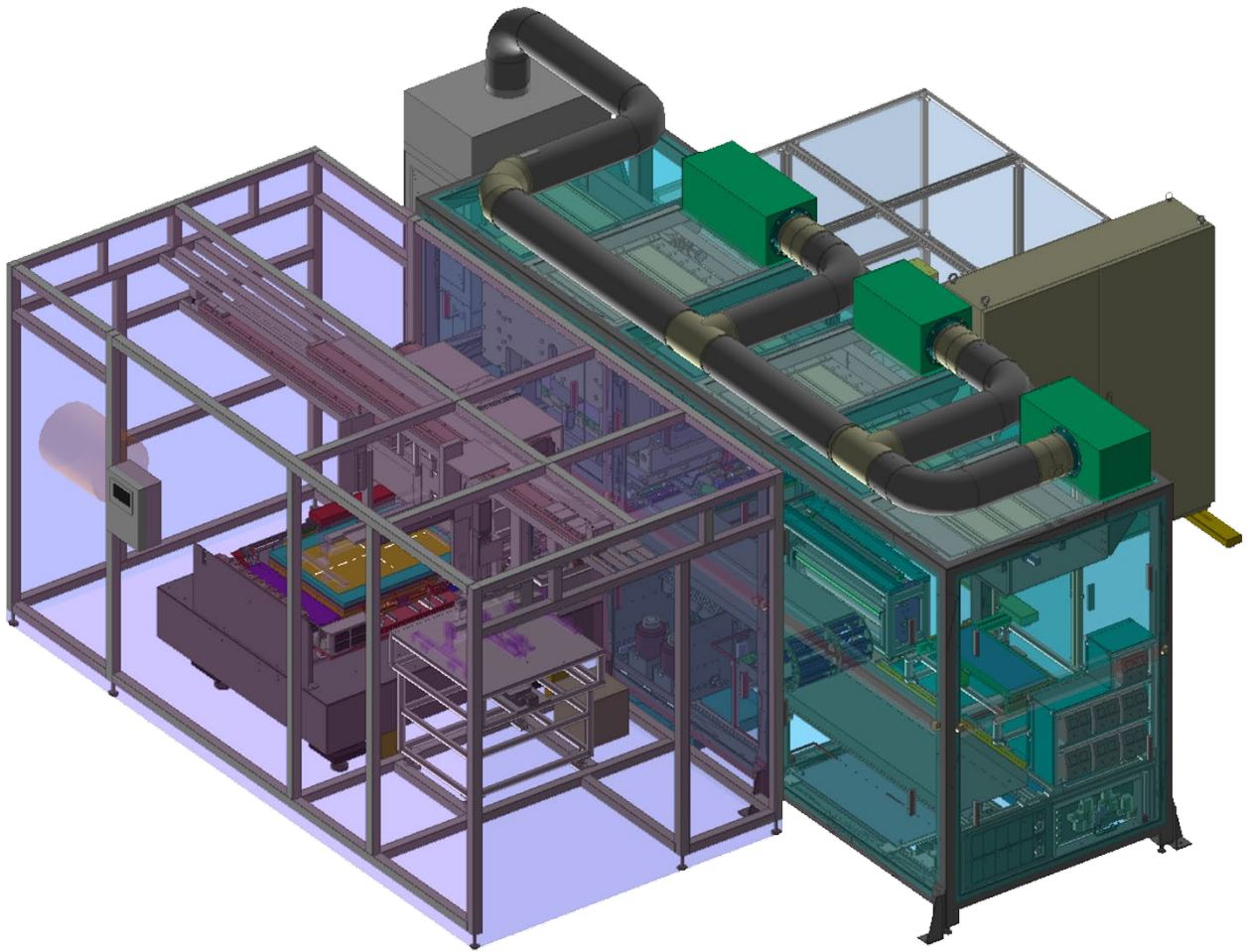
Representative Director and CEO Shinya Shimizu says the new print system is ideal for printing a wide range of electronic components from printed circuit boards to flat panel displays, as well as use in semiconductor advanced packaging. He explains that the new machine “builds on existing Elephantech technology to print components with speed and accuracy that is unprecedented in the printed electronics industry.”

Shimizu established Elephantech while studying in the United States in 2014 out of a desire to create a sustainable printing company that could change the world by using inkjet technology to print metal—something that he believed could dramatically reduce the environmental footprint of the electronics industry while offering manufacturers benefits such as greater productivity and cost savings.

Elephantech printers utilize nanotechnology and ultra-high precision Micro-Electromechanical Systems (MEMS) to print metal ink directly on component substrates. Their newest industrial printer, the ELP04-PCB, is optimized for printed circuit board production and can be used to create circuits without the need for conventional processes such as photolithography and etching.

Elephantech will use the new printer in-house to produce their own printed circuit boards, SustainaCircuits, as well as adapting it for a wide range of other uses, including semiconductor advanced packaging and flat panel display production. It will also be available for purchase by other manufacturers for the first time.

“It’s a remarkable technology that could shift the manufacturing paradigm,”
Representative Director and CEO Shinya Shimizu says.



The new ELP04 print platform and ELP04-PCB printer

Inkjet technology is ideal for use in printed electronics but has long been underutilized due to being difficult to control to the required level of precision when working at high speeds.

However, convinced of the potential metal inkjet printing held for a more sustainable electronics industry, Elephantech have dedicated themselves to developing this technology to a level of precision and reliability that means it can be used in mass production of even the most intricate electronic components to standards on par with or superior to equivalent products made using conventional methods.

Specifically, the new ELP04-PCB can print a 500 by 830 mm workpiece in approximately 31 seconds, demonstrating excellent productivity that is eight times that of previous models. In terms of reliability, it demonstrates repeatable droplet impact position accuracy with less than one micron of deviation—an essential feature to ensure high production stability and end product reliability.

It is equipped with an array of mass production features that facilitate exceptional precision, speed, and productivity on the factory floor, including nozzle discharge status monitoring, automatic maintenance, high-precision print stage control, ink recirculation, and compatibility with Elephantech's proprietary [NeuralJet™ print processing control technology](#) which uses AI to achieve unprecedented ink patterning quality.



Elephantech's contribution to sustainable electronics

Elephantech are committed to bringing sustainable change to the electronics industry by using innovative technology to reduce the environmental footprint of essential electronic components while offering manufacturers the added benefits of reduced production costs, a more compact factory setup, and time savings.

For example, Elephantech have used their printers to produce printed circuit boards that require 95% less water and 70% less copper to produce and carry only a quarter of the carbon footprint of equivalent products made using conventional methods¹. With printed circuit boards responsible for around half of a smartphone's carbon footprint,² their printing technology has the potential to make a significant impact on the industry.

Shimizu states that, "what I felt in the U.S. was a powerful driving force that pushes humanity forward, this technology we are using provides fundamental value by significantly reducing the materials and processes needed to produce electronic components that are now an essential part of our everyday lives."

"It's inherently necessary for humanity due to its resource and energy efficiency."

Elephantech expects their new printer to propel their contribution even further by facilitating more sustainable production of a much wider variety of essential electronic components, including semiconductors and flat panel displays.

Background and looking ahead

Elephantech started in 2014 and has developed technology, manufacturing systems, and processing equipment that enables the production of electronic components through essentially just printing. In doing so, they are paving the way for the electronics industry to use fewer materials and avoid creating hazardous byproducts.

They are already making a significant contribution through sustainable printed circuit boards manufactured in house that can cut the PCB manufacturing carbon footprint by 75% while offering electronics manufacturers around 15% cost savings.

Now, with the unprecedented speed and precision of the ELP04 industrial print platform in their arsenal, they're set to make an even greater impact through sustainable printing solutions for a wider range of electronic components.

"With cutting-edge, exclusive equipment and materials as our business model, we're set to continue to drive humanity forward," Representative Director and CEO Shinya Shimizu says.

"The path to becoming a company where 'the world lines up to buy from us' and 'the world can't function without us'—like some current semiconductor material and equipment companies—is already clearly visible."

With increasing pressure on businesses to contribute to the SDGs and comply with intensifying environmental

¹ <https://elephantech.com/en/sustainability/environmental-results/>

² Cordella, M., Alfieri, F., & Sanfelix, J. (2021). Reducing the carbon footprint of ICT products through material efficiency strategies: A life cycle analysis of smartphones, <https://onlinelibrary.wiley.com/doi/10.1111/jiec.13119>

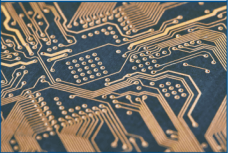
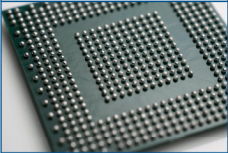
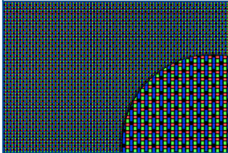
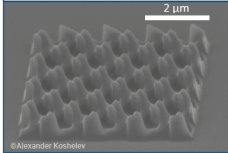

regulations, Elephantech’s printing technology could be a timely solution for forward-thinking manufacturers.

“Let’s advance the world through science and create a better future.”

For further information or for inquiries about production services or printers go to the [Elephantech website](#).

More technical details about the ELP04 printing platform can be found [here](#).

Applications of the ELP04 Printing Platform

Printed Circuit Boards (PCBs)	Semiconductor packaging	Flat panel displays (FPDs)	Nanoimprint lithography (NIL)	Perovskite solar cells
				
<ul style="list-style-type: none"> ■ Wiring Cu seed layer printing ■ Solder resist printing 	<ul style="list-style-type: none"> ■ Advanced packaging and RDL ■ High-density solder resist printing ■ Flux printing ■ Package marking 	<ul style="list-style-type: none"> ■ Quantum dot (QD) layer formation ■ OLED layer formation ■ Thin film encapsulation (TFE) 	<ul style="list-style-type: none"> ■ Nanoimprint resin printing 	<ul style="list-style-type: none"> ■ Perovskite layer formation ■ Electrode formation ■ Encapsulation layer formation

Company Overview

Name	Elephantech Inc.
Establishment	January 2014
Headquarters	4-3-8 Hatchobori, Chuo-ku, Tokyo 104-0032, Japan
Representative	Shinya Shimizu, Representative Director & CEO
Business Description	Development of printed electronics manufacturing technology and provision of related services
URL	https://elephantech.com/en/

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