ADDITIVE MANUFACTURING CENTER

Ink Discharge Evaluation

Using a high-performance printhead made by Seiko Epson Corporation (hereinafter "Epson"), we will evaluate the performance of your inkjet ink in a short time.

The service is ideal for the following situations.

- ✔ For evaluating the inkjet compatibility of the functional ink that you have developed.
- ✔ For a discharge evaluation of the enzyme and protein inks you have developed.
- ✔ You are after a specialist's opinion on the development of your ink.
- ✔ You want to test your ink with a printhead that has a proven track record in mass production of printed electronics.

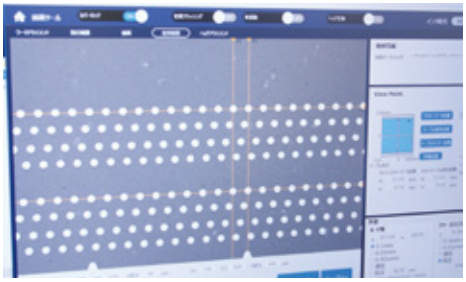
Electronics

Healthcare

Textile

Optics

Different aspects of the service

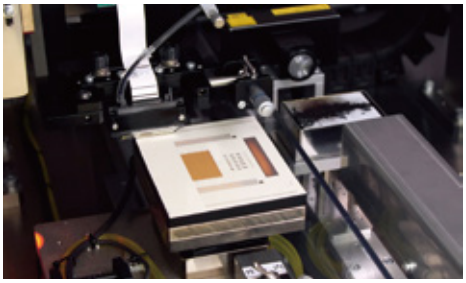


A one-stop ink discharge evaluation service

An ink discharge evaluation service to bring inkjet printing to a wider range of applications.
From receiving the ink to running ink discharge tests and writing reports, Elephantech provides a one-stop service.

Ink evaluation using a cutting edge inkjet machine for R&D

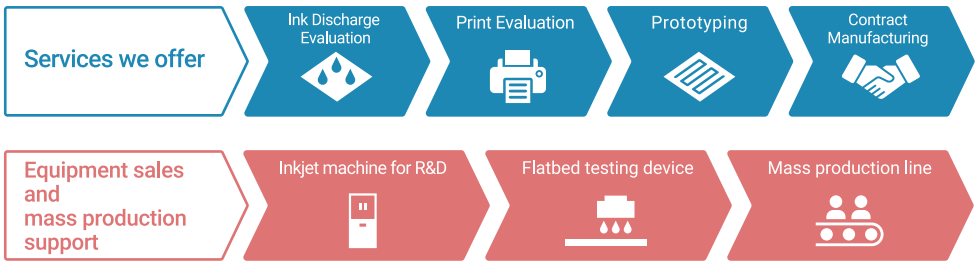
Using Epson's PrecisionCore inkhead, droplet flight and landing are measured and performance indicators for printing onto substrates and such are evaluated with inkjet printing equipment used for cutting edge R&D.
If necessary, we will also perform waveform adjustments and printing precision tests.



Conditions regarding the evaluation

This service is provided by Elephantech under license from Epson. The evaluation results will be shared with Epson.
In general, we will offer the fees for the initial ink discharge evaluation service for free. There may be cases where we cannot progress to the evaluation following a safety data sheet (SDS) check.

Post evaluation steps



Explanation for each service

- **Ink Discharge Evaluation** — Verification of ink discharge from the inkjet printhead.
- **Print Evaluation** — Verification of the printed circuits & patterns.
- **Prototyping** — IJ prototyping collaboration for circuits & biosensors.
- **Contract Manufacturing** — Prototyping & manufacturing from small lots.

Machine overview

EPSON : Inkjet machine for R&D

Manufacturer	SEIKO EPSON
Printhead	PrecisionCore
Ink viscocity guide	1-10 mPaS (other values possible)
Min. ink volume	50 mL
Observation	Observe ink droplet flight
Printing function	Print on 100mm square stage
Ink type	Water-based and solvent-based inks
Evaluation	By Elephantech with EPSON

Results provided by the ink discharge evaluation service

Test items	Description of items
Initial ink filling	We will evaluate the initial fill characteristics on an inkjet nozzle. We will mainly judge whether the characteristics as a fluid are good.
Intermittent stability	Stability evaluation under intermittent ink discharge (ink discharge stability, resistance to drying, etc.).
Volume followability	We will evaluate whether the volume of the droplet follows changes in voltage. Higher followability will allow for finer control.
velocity followability	Verification of concordance between drop velocity and voltage (higher velocity allows for higher-precision).
Frequency characteristics	We will evaluate suitability for high-frequency printing. We will determine how far the printing throughput can be increased to.

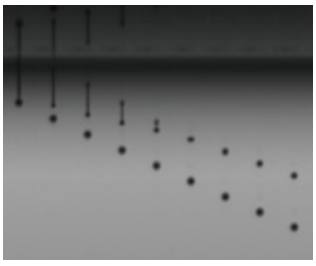


Image of droplet during flight

Company Overview

Elephantech

Company name	Elephantech Inc.
Establishment	January 6, 2014
Address	4-3-8 Hatchobori, Chuo-ku, Tokyo 104-0032, Japan
Capital	JPY 310 million
Representative	Shinya Shimizu, CEO
Website	https://www.elephantech.co.jp/en/
Contact	https://www.elephantech.co.jp/en/about/#contact

ADDITIVE MANUFACTURING CENTER

Website

Contact

- AMC Tokyo : Till the pilot phase
- AMC Nagoya : Mass production & testing

Department name	AMC (Additive Manufacturing Center)
Website	https://info.elephantech.co.jp/ij-ink-test-en
Contact	https://info.elephantech.co.jp/ij-ink-test-en#ijlab-form