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Technical Sales Manager  
The Peak Group

# VOLTERA V-ONE

A PCB Printer to accelerate your hardware development



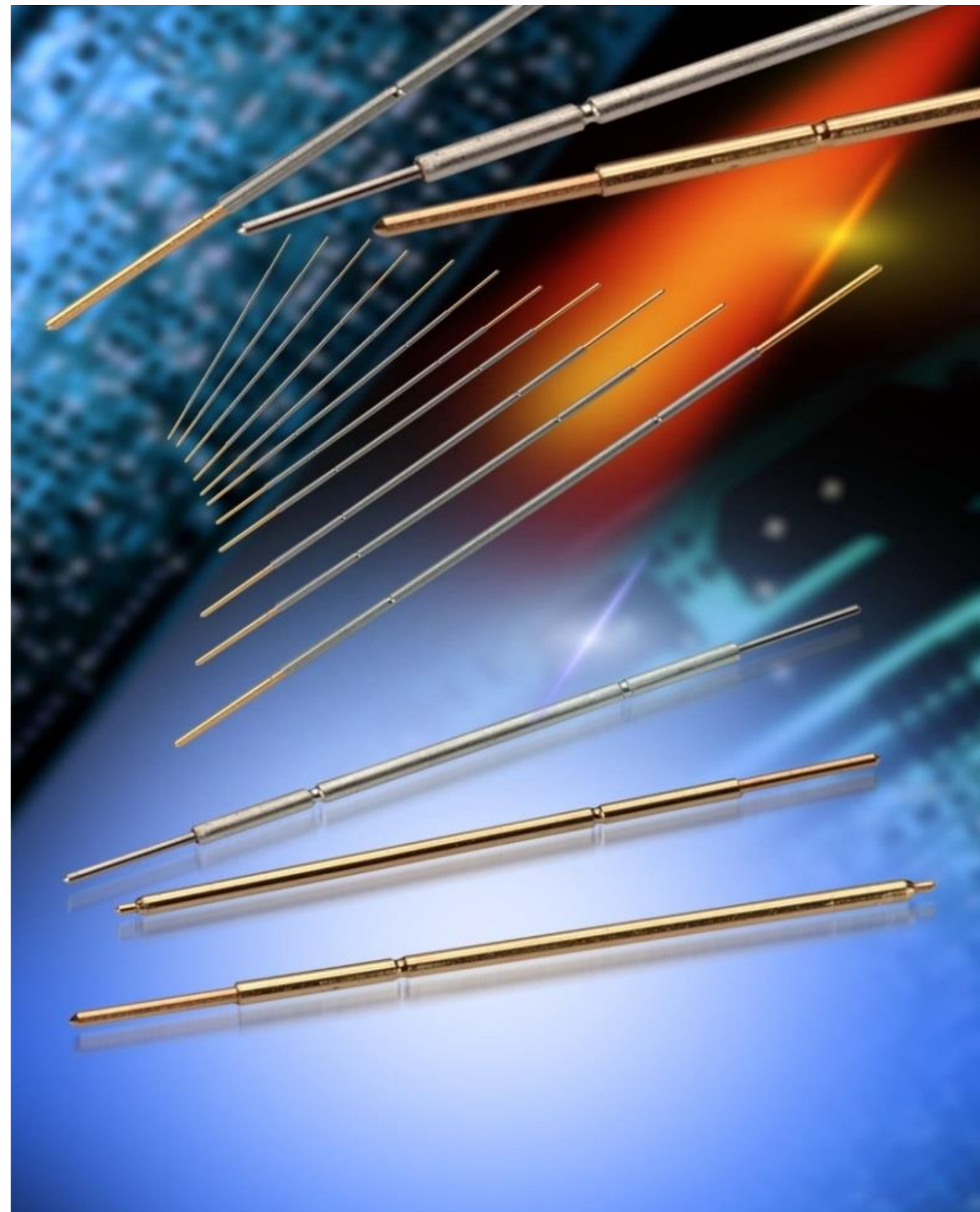
# THE PEAK GROUP

- **Established in 1984**
- **67 Employees**
- **Turnover 2018 = £6.1M**
- **Manufacturing Site in Letchworth,  
Hertfordshire, UK**
- **Distribution site in Chester-Le-Street,  
County Durham, UK**

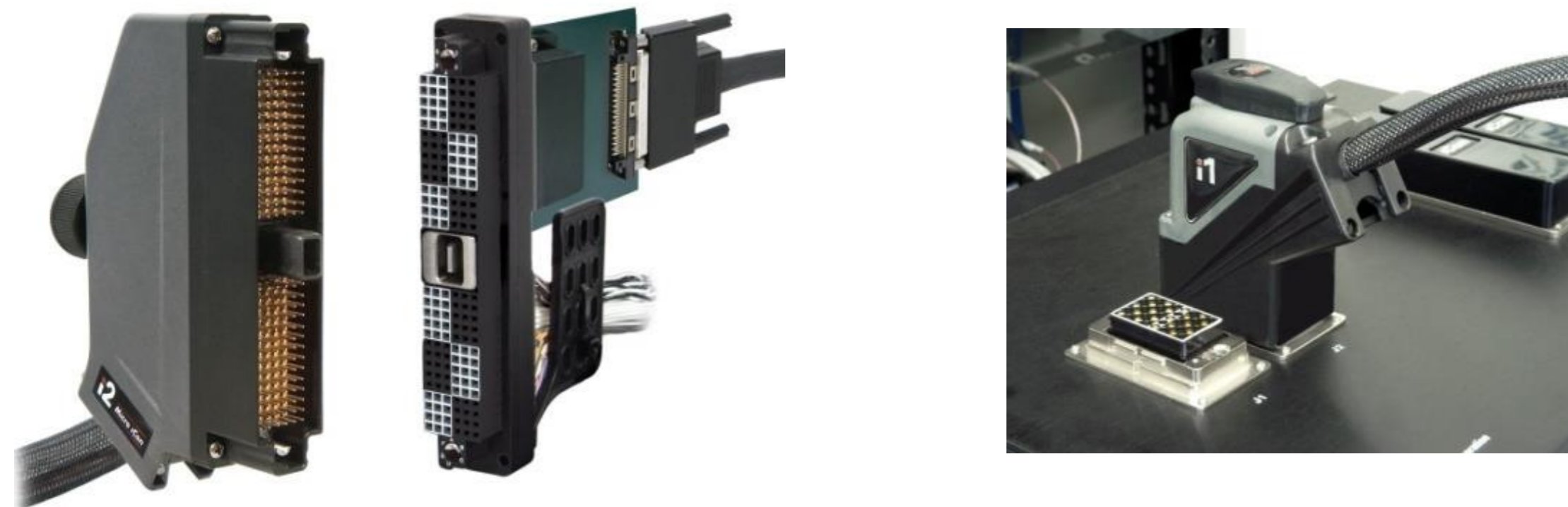
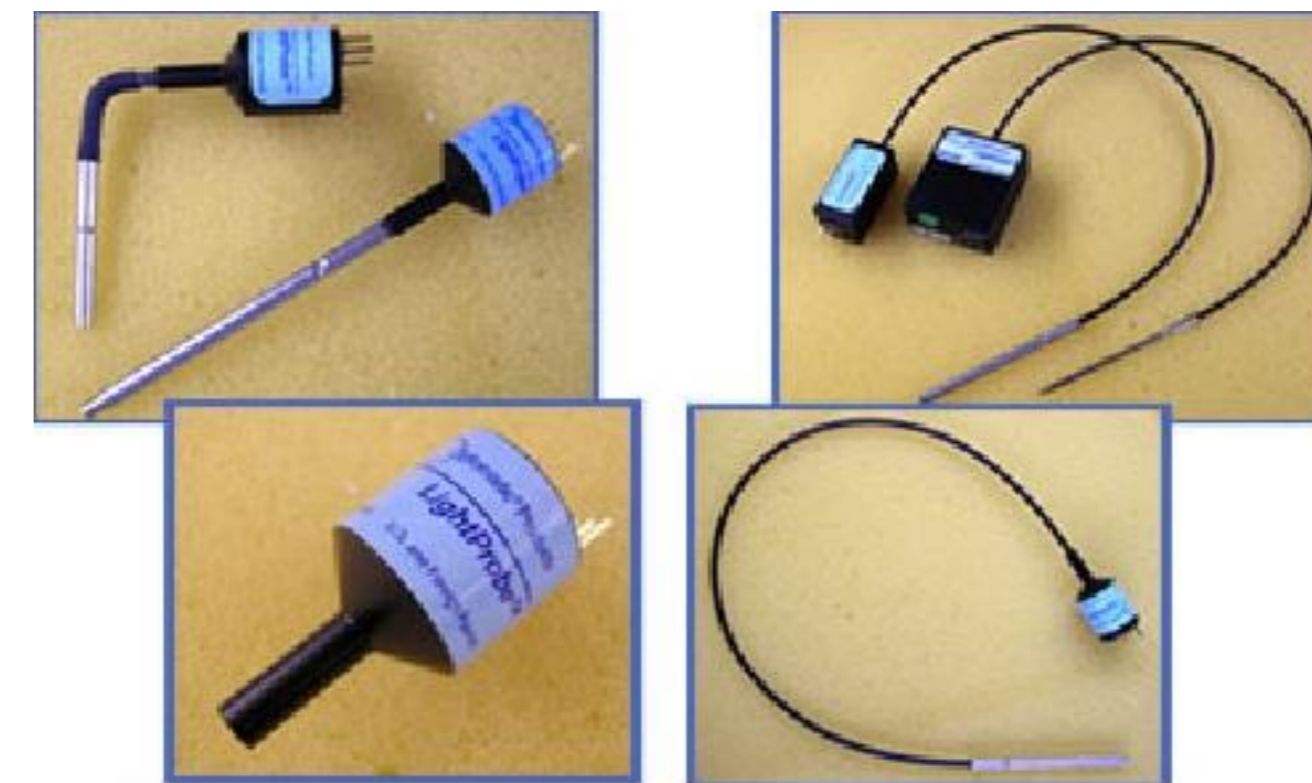
# Design and Manufacture of Test Solutions and Fixtures



# Leading UK Distributor of Test Probes and Receptacles



# Exclusive UK Distributor for



- Light detection
- LED testing
- Colour
- Intensity

# AGENDA



**01**

VOLTERA V-ONE

Printing functional circuits on your desk.

**02**

WHERE IT IS USED

Current customers and use cases.

**03**

HOW IT WORKS

A shallow dive into additive electronics.

**04**

WHAT'S IN THE BOX

Everything to get you started

**05**

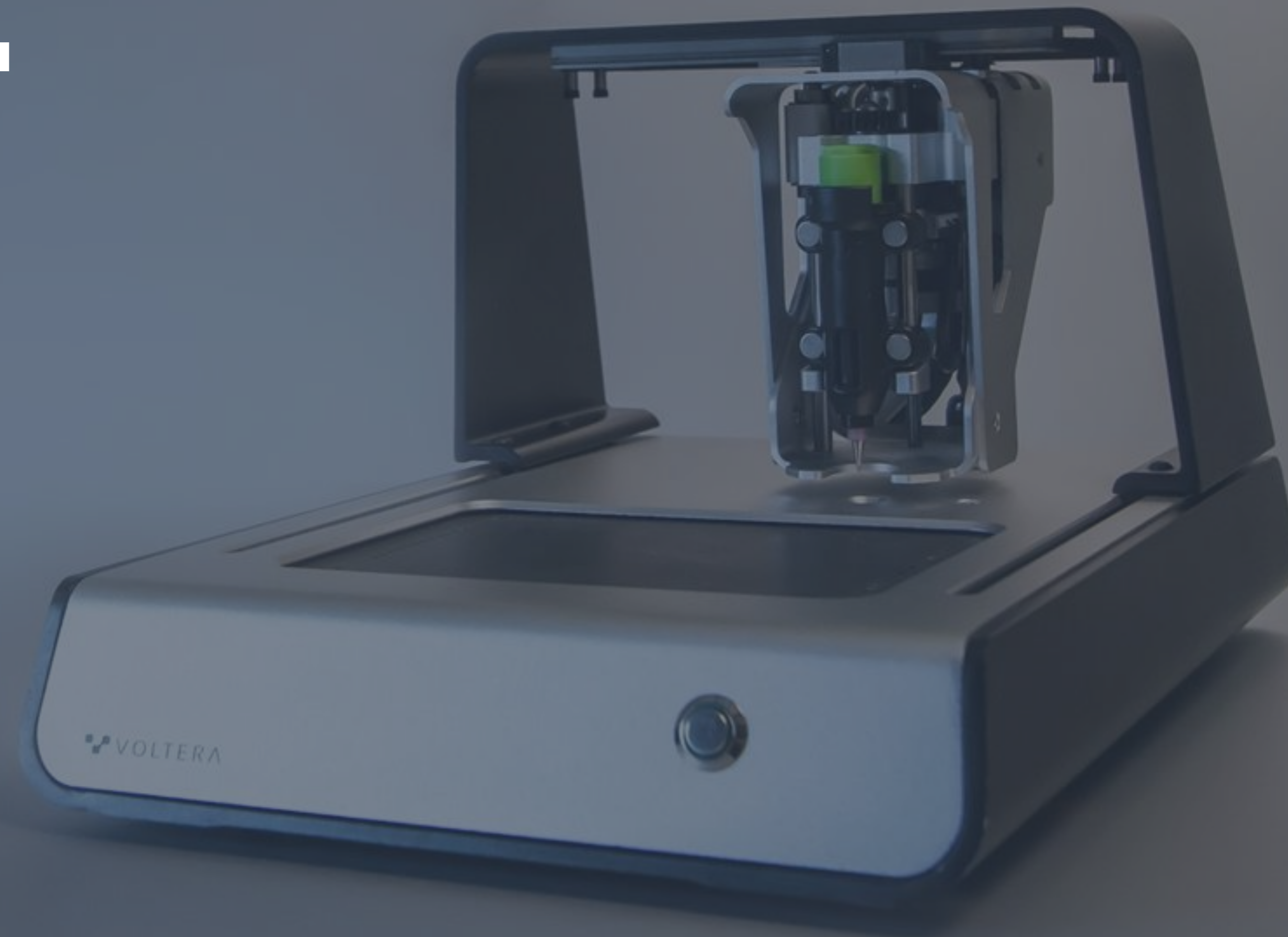
ABOUT VOLTERA

How we see the industry evolving.

MEET THE VOLTERA

# V-ONE

DESKTOP PCB PRINTER



# VOLTERA V-ONE PCB PRINTER



**Idea**



**Iterate**



**Mass Manufacture**

The Voltera V-One doesn't replace PCB factories. It helps you get there faster.

We've all been there... Waiting for days or even weeks for prototype boards to ship from a fab house only to receive them and find a mistake in the design or that requirements changed. Now you need to start the entire painful process all over again.

By additively printing conductive ink and drilling vias, the V-One puts the power of a fab house on your desk. Go from a concept on your computer to a functional board in your hands in minutes.

With built-in solder paste dispensing and reflow functionality, you can say goodbye to hand soldering, stencils, and messy reworks.

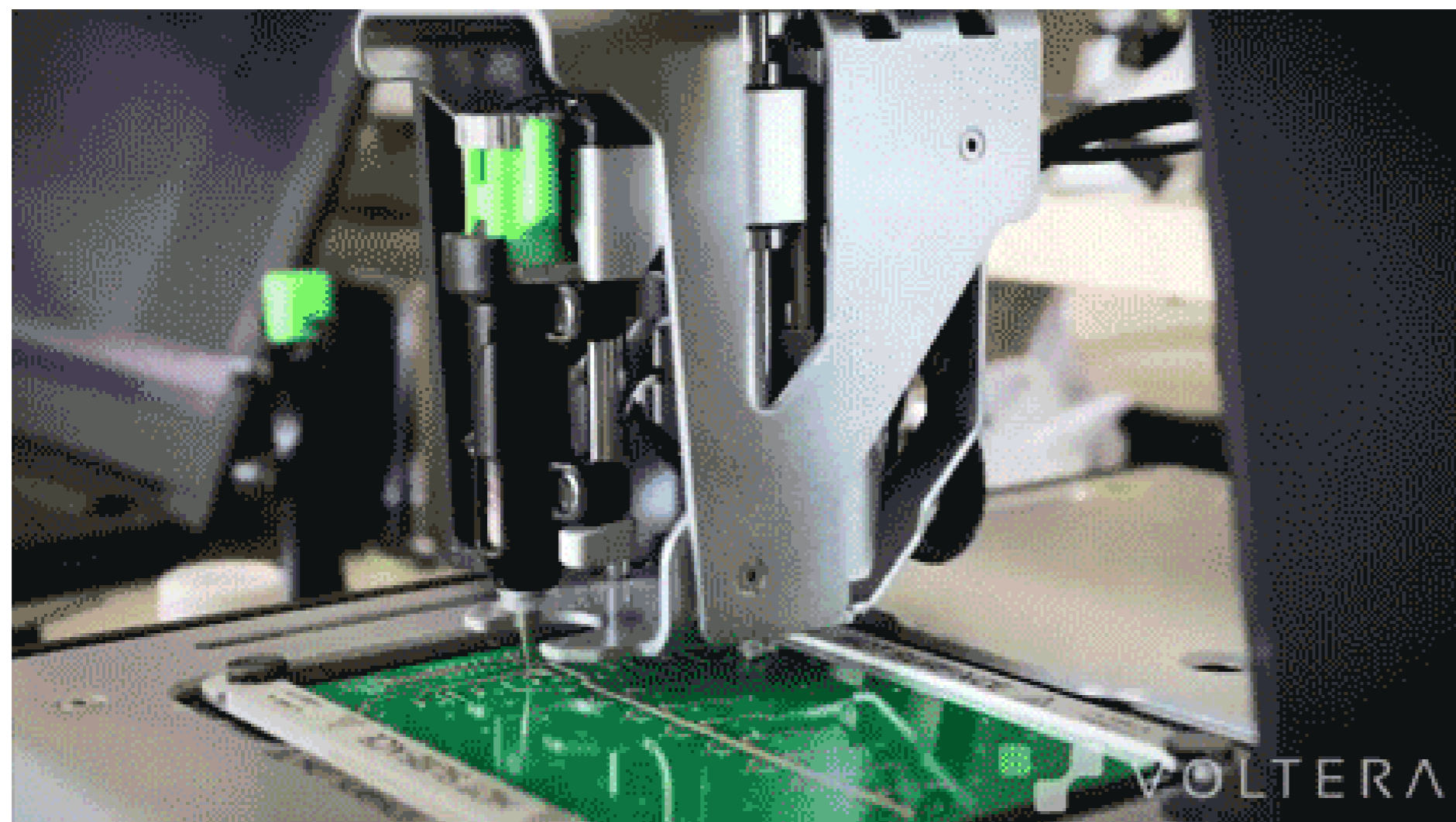
An international design award winning product, the V-One focuses on guiding new users through the simple process of printing boards while still getting out of the way of experienced users prototyping their 100th design.

Intuitive. Fast. Powerful. Affordable. The Voltera V-One helps you *build hardware faster*.



## VOLTERA V-ONE

# ZERO DAY LEAD TIME



### **Fabricate**

Sometimes you just need to get an idea out of your head and into your hands. Sometimes you need to get a quick demo to a client. Getting a few boards fabbed shouldn't mean waiting for a factory on the other side of the world.

Just load your files, drill your vias, click print, and have your board in less than an hour. No lead time, no stencils, no hassle. At \$5-10 a board, you can't go wrong.

### **Populate**

Put away the soldering iron and don't bother with ordering stencils. Your time is too precious to spend fiddling with a squeegee or hand-soldering a high pin count component.

Since the V-One knows where your pads are, it will dispense solder exactly where you need it and then use its heated bed to reflow everything into place.

# VOLTERA V-ONE WORKFLOW



Have a brilliant idea

Design electronics in your CAD tool of choice

Upload Gerbers to the V-One software

Quickly calibrate

Drill holes and print both sides of the circuit

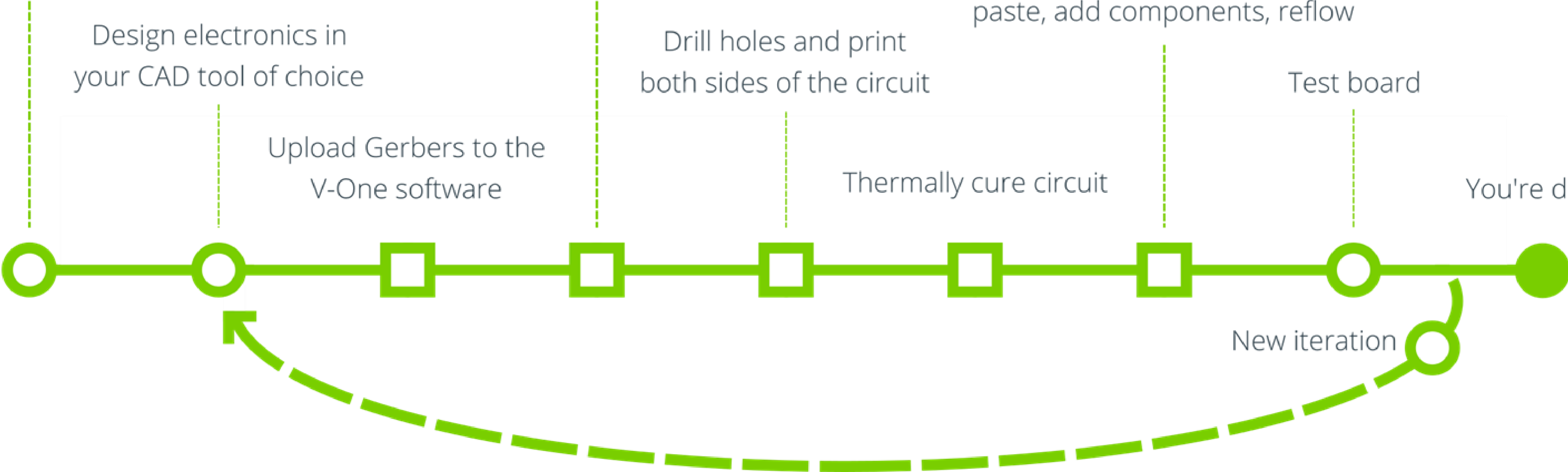
Thermally cure circuit

Insert PCB rivets, apply solder paste, add components, reflow

Test board

You're done!

New iteration

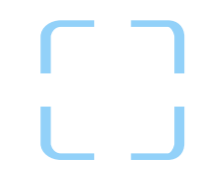


VOLTERA V-ONE

# WORKS WITH FACTORY BOARDS

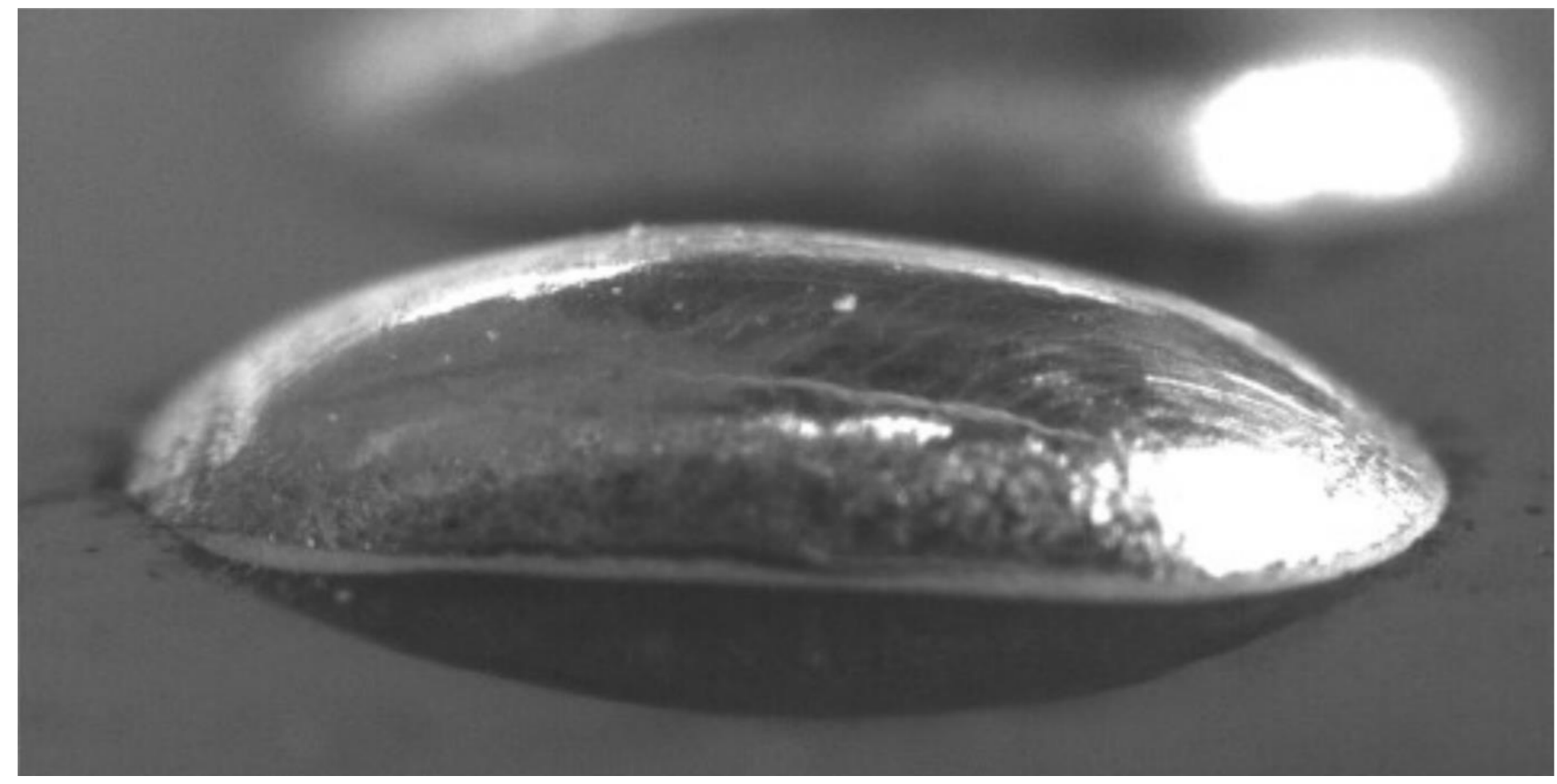


Sometimes it makes sense to skip the V-One and get your boards fabbed at a PCB factory. What doesn't make sense is paying/waiting for assembly. The V-One can quickly dispense paste and reflow factory-fabbed boards right from the comfort of your desk.



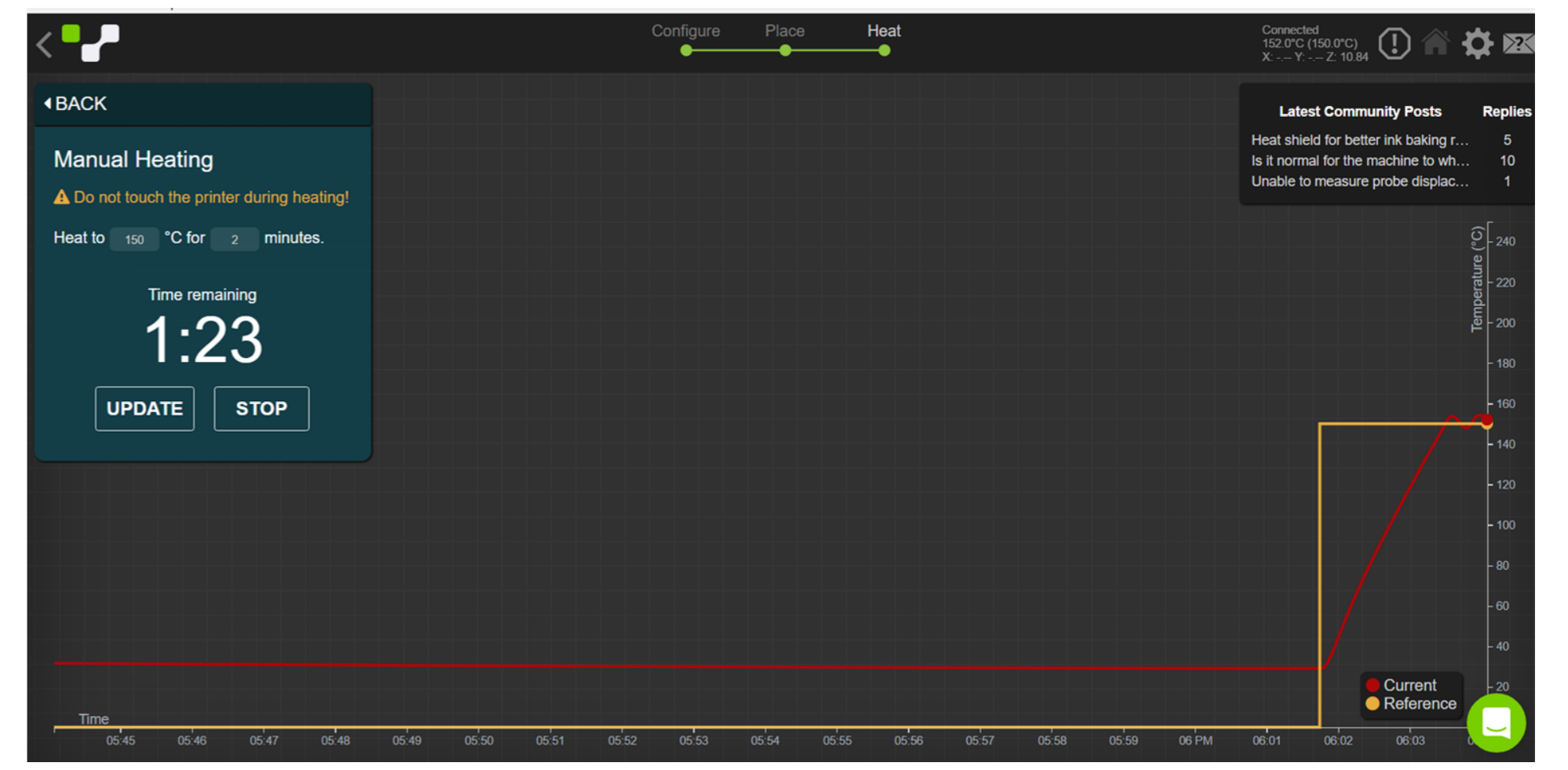
## No Stencil Required

Stencils are messy, wasteful, and expensive. The V-One will populate your boards in no time.



## Custom Reflow Profiles

Have your own solder alloy? Easily input custom values for target temp and soak time.





# VOLTERA V-ONE


## SOFTWARE THAT DOESN'T SUCK



Sick of using lab software that requires Win95, FORTRAN knowledge, and a dial-up connection? We are.

 **Gerber Input**  
Compatible with Altium, OrCAD, Autodesk EAGLE, KiCad, Proteus, etc.

 **Free To Use**  
No monthly payments. No massive upfront license. Download and use!

 **Newest Features**  
Software and firmware auto update with the new features and bug fixes.



**No Learning Curve**  
Step by step video instructions means you've never used software this easy.



**Sleek Interface**  
Most customers praise our app for being incredibly elegant and intuitive.



**In-App Support**  
If you ever need help, we're always a click away with real-time chat.



## VOLTERA V-ONE

# A GROWING PLATFORM



The printer was designed to have minimal maintenance and to be open so that the work area can be viewed at all times. It has a single button (for power) and magnetically swappable heads. It couldn't be simpler to use.



Over the last few years, the V-One has evolved from only PCB printing to including paste dispensing, reflow, and drilling for through-holes and vias. As we continue to release new attachments, improve our algorithms, and add new inks and substrates, its power will continue to grow.

VOLTERA V-ONE

# SUPPORT YOU CAN RELY ON

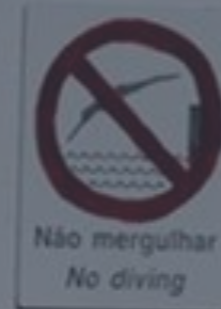


Despite our best efforts to make the machine and software as intuitive as possible, sometimes things go wrong and we need to be there for you.

Live chat is built right into our software allowing us to troubleshoot alongside you. We're also reachable by email, phone, and Skype. If we're ever in the area, we'll even come visit!

Our website is also teaming with easy searchable guides, safety data sheets, getting started projects, video tutorials, and educational content.

Follow us on social media to see what the rest of our users are creating!



# VOLTERA V-ONE SPECIFICATIONS



## FOOTPRINT

Dimensions (L x W x H)	390mm X 257mm X 207mm	15.4" X 10.1" X 8.2"
Weight	~7kg	~15.4lbs

## PRINT BED

Print Area	128mm X 116mm	5.0" X 4.5"
Max. Heated Bed Temperature	240°C	464°F

## SOFTWARE REQUIREMENTS

Operating Systems	Windows 7, 8, 10 (64bit), OSX 10.11+
Compatible File Format	Gerber
Connection Type	Wired USB

# VOLTERA V-ONE SPECIFICATIONS



## PRINTING

Minimum Trace Width	0.2mm	8mil
Minimum Passive Size	1005	0402
Minimum Pin-To-Pin Pitch	0.65mm	26mil
Sheet Resistance	12mΩ/Sq @ 70um Height	12mΩ/Sq @ 3mil Height
Maximum Board Thickness	3mm	0.125"

## SOLDERING

Minimum Pin-To-Pin Pitch	0.5mm	20mil
Soldering Iron Temperature	180-210°C	355-410°F
Solder Paste Alloy	Sn42/Bi57.6/Ag0.4	
Solder Wire Alloy	SnBiAg1	



# VOLTERA V-ONE SPECIFICATIONS



## DRILLING

Spindle Speed (Maximum)	13,000 RPM
Power	12V, 25W
Drilling Data	Excellon

## DRILL BITS

Runout (TIR)	0.075mm	0.003"
Shank Diameter	3.175mm	1/8"
Bit Diameter (Maximum)	2.0mm	0.078"
Bit Length (Maximum)	38.1mm	1.5"



WHERE THE VOLTERA  
**V-ONE**  
IS USED



# WHERE IT IS USED OUR USERS



Voltera users span 65 countries and over a dozen industries.



Aerospace  
Consumer Electronics  
AgTech  
Automotive

Education  
Lighting  
IoT  
AR/VR

Clean Tech  
Robotics  
Military  
Industrial Electronics

# WHERE IT IS USED EDUCATION AND ACADEMIA



“ I’m setting up our spacecraft design lab with a strong focus on enabling our students to make every piece of a spacecraft in house. To see something actually get built. ”



MIKE GALVIN - SR. TECHNICAL SUPPORT, MECHANICAL ENGINEER AT PRINCETON UNIVERSITY



# WHERE IT IS USED FROM STARTUP TO ENTERPRISE



“As an engineer, I know the frustrations of waiting for circuit boards, and the Voltera V-One elegantly solves this problem.”



SIR JAMES DYSON - INVENTOR & FOUNDER AT DYSON





HOW THE VOLTERA

# V-ONE

WORKS



## HOW IT WORKS

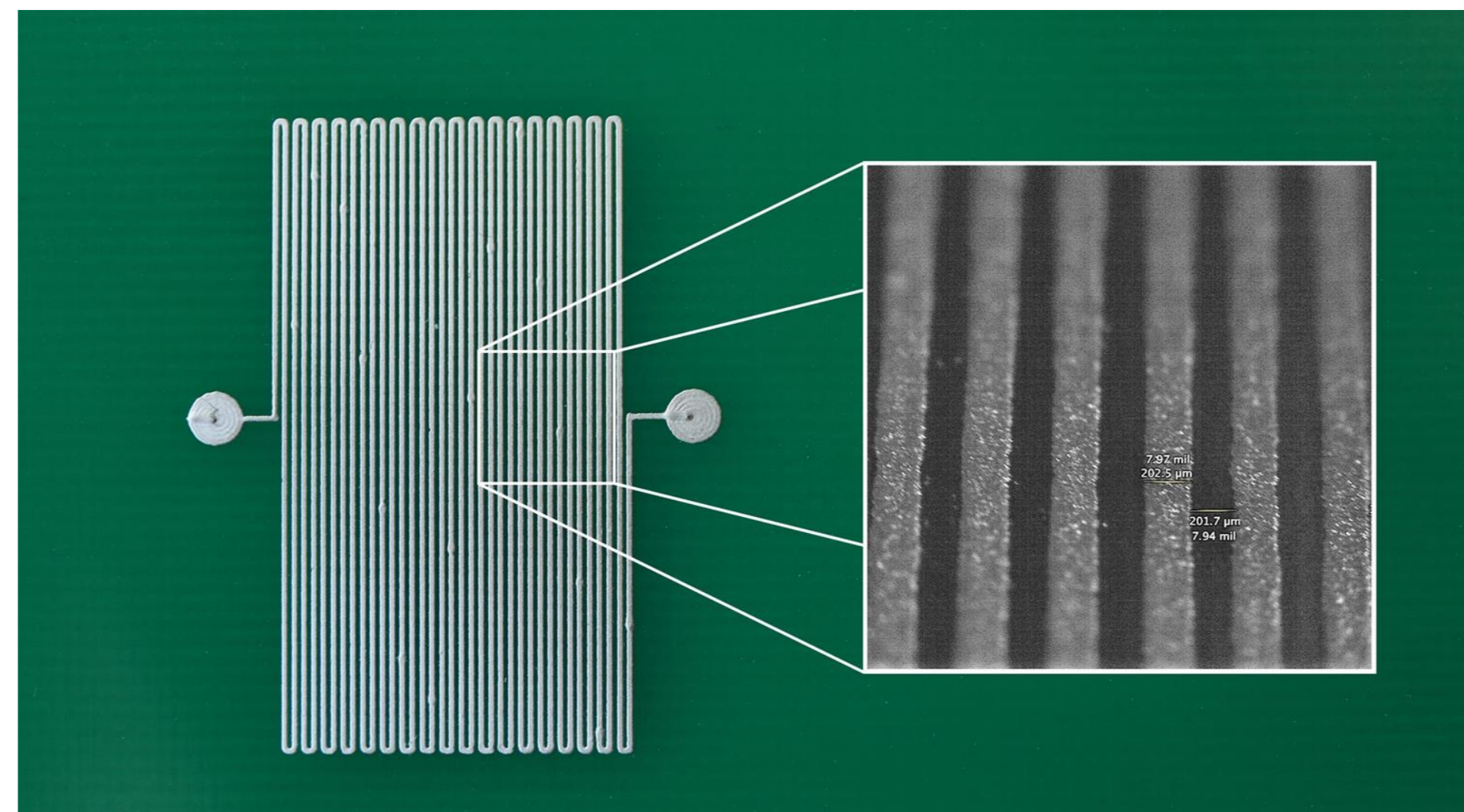
# CONDUCTIVE INK



Printing circuits is not a new concept - in fact, the first circuit boards created over 100 years ago used printed conductive materials.

Conductive inks are made up of metal particles (usually silver) suspended in polymer matrix. After being thermally cured, they provide solid metal connection between the components on your board.

Voltera is unique in our use of very viscous inks which make them highly conductive and easily solderable. The performance you can expect is similar to copper for digital, RF, and low power circuits (avoid high power).



## HOW IT WORKS

## THE PATH TO PRODUCTION



While traditional PCBs and FPCs (flexible printed circuits) are made at electronics fab houses, new forms of electronics that are flexible, stretchable, or structural are mass produced by screen printing.

Voltera printers use screen printing inks so the path to production is easy.



Most major conductive ink companies use Voltera equipment to validate and demonstrate their material's properties.

Substrates no longer need to be fiberglass (FR4, FR1, etc.). Rigid options include ceramic, glass, Rogers, and Acrylic. Flexible options include PET, polyamide, PP, coated paper, TPU, and PDMS.

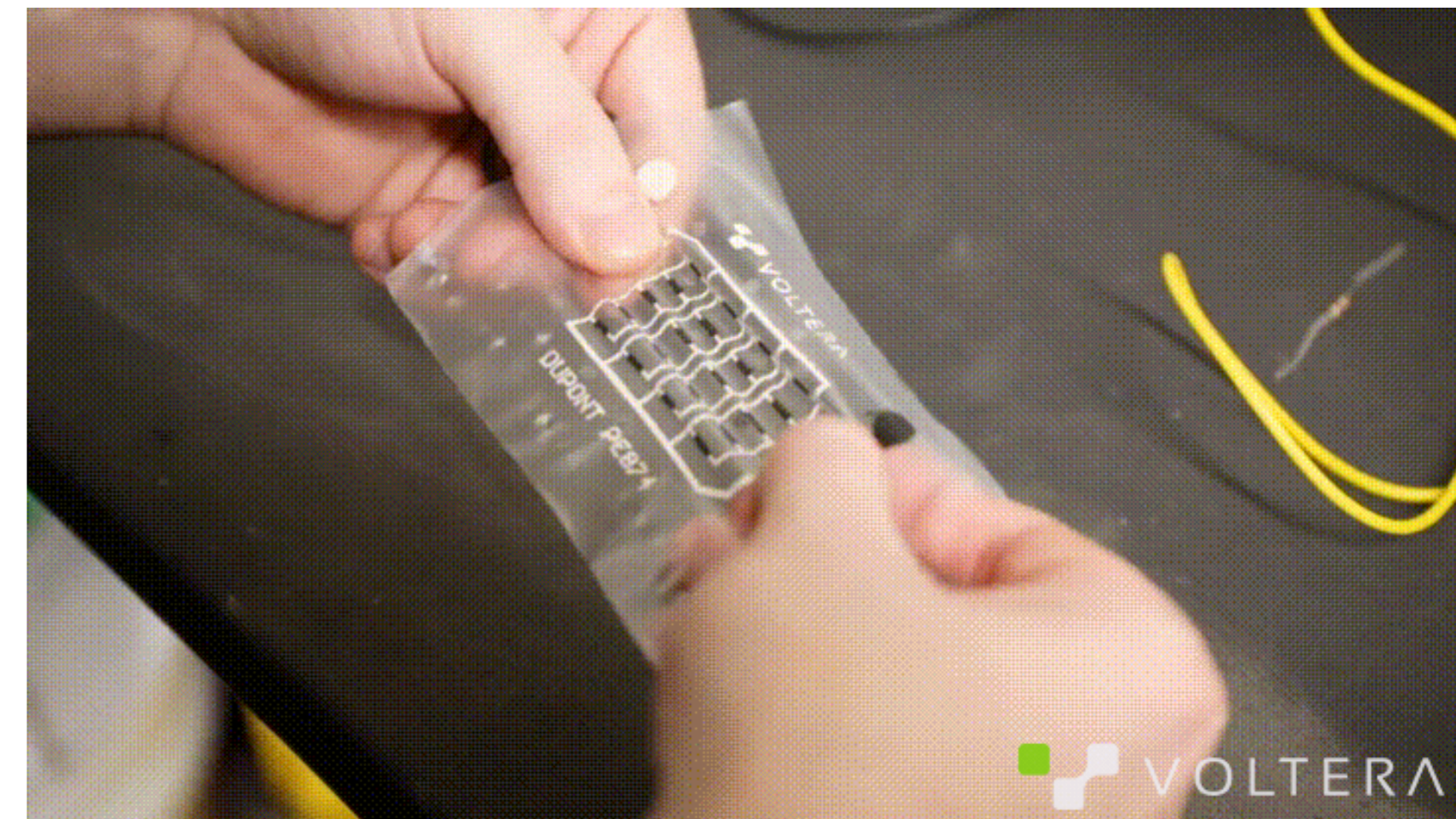


## HOW IT WORKS

# NEW OPPORTUNITIES



The V-One is low-cost and low-risk solution for product developers to begin designing nontraditional electronics that are solderable and durable. This is especially valuable for applications like automotive seat heaters, membrane switch keyboards, smart packaging, and IoT devices. Non-porous, non-compressible substrates can be used for stretchable electronics that are often used in wearables and medical sensors.



## HOW IT WORKS

# NEW OPPORTUNITIES



More companies are adopting structural electronics in order to reduce weight or conform to stricter form factors. Specifically, in-mold electronics (IME) is gaining popularity in areas like the automotive industry. Voltera makes it easy to begin experimenting with these new forms of electronics.



### CONFORMAL ELECTRONICS

By using adhesive-backed substrates, electronics on 3D surfaces can be approximated. This approach is especially useful for validating antennas, heaters, and wire harnesses.



### THERMOFORMED ELECTRONICS

Printing onto a flat plastic surface allows you to thermoform a circuit. This board can be embedded into an injection molded part to create novel touch interfaces.

VOLTERA V-ONE

# WHAT'S IN THE BOX

AND ACCESSORIES

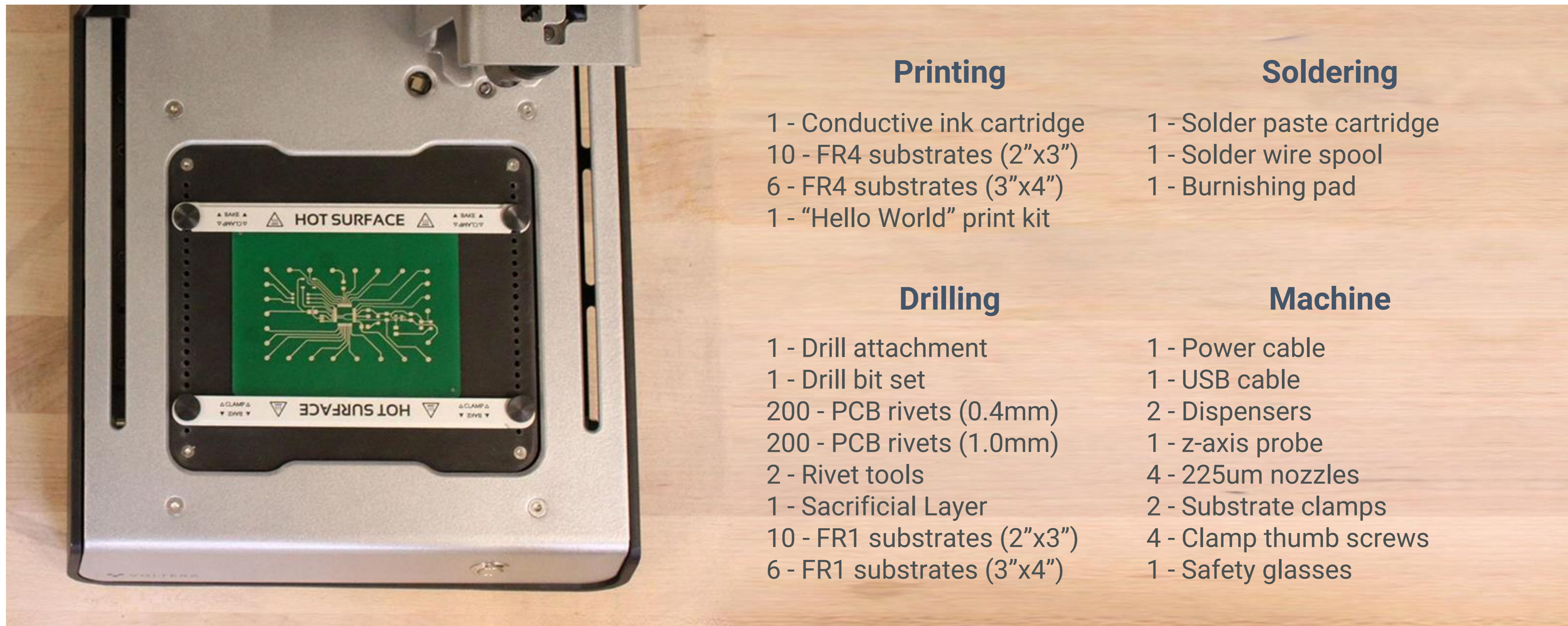


## PRICING

## WHAT'S IN THE BOX?



We want to make sure you can open the box, plug the machine in, and immediately get to work.

**Printing**

- 1 - Conductive ink cartridge
- 10 - FR4 substrates (2"x3")
- 6 - FR4 substrates (3"x4")
- 1 - "Hello World" print kit

**Soldering**

- 1 - Solder paste cartridge
- 1 - Solder wire spool
- 1 - Burnishing pad

**Drilling**

- 1 - Drill attachment
- 1 - Drill bit set
- 200 - PCB rivets (0.4mm)
- 200 - PCB rivets (1.0mm)
- 2 - Rivet tools
- 1 - Sacrificial Layer
- 10 - FR1 substrates (2"x3")
- 6 - FR1 substrates (3"x4")

**Machine**

- 1 - Power cable
- 1 - USB cable
- 2 - Dispensers
- 1 - z-axis probe
- 4 - 225um nozzles
- 2 - Substrate clamps
- 4 - Clamp thumb screws
- 1 - Safety glasses

PRICING

# ACCESSORIES AND CONSUMABLES



Whether you need to replace or restock, we make sure you're ready with next-day shipping.



SUBSTRATES



DRILL BITS



SOLDER

INKS



NOZZLES



AND MORE

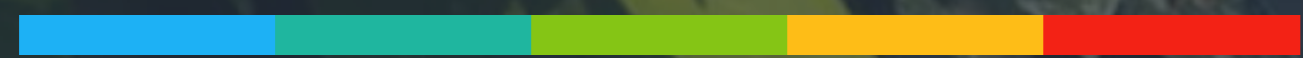




ABOUT

# VOLTERA

- A HARDWARE MANUFACTURING BUSINESS





## WHO WE ARE



Voltera was born out of a frustration that is common to all hardware devs – waiting weeks for boards to arrive from a fab house. Meanwhile, mechanical and software developers have the tools they need to prototype instantly or within hours.

The company was started in 2013 by four nanotechnologists and mechatronics designers. The V-One was launched after two years of intense chemical R&D and supply chain development.

This involved travelling the world to learn from hardware designers that were struggling with the same problem and moving the business to China for a period of time to evaluate different manufacturing options. We work with many local Canadian factories and complete all assembly and testing in our own facility.

We're now committed more than ever to giving product developers the tools they need to iterate faster, design better, and make an impact in the lives of their customers.

# Thank you

## Any Questions ?

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