



Beyond a needle free injector

Needle-Free Delivery in Aesthetic Practice with SYNERJET PRO™



WHAT PATIENTS ACTUALLY WANT

The expectations that now decide whether a procedure is accepted



01

Minimally invasive

The visible trace of the procedure matters as much as the result itself.

02

Quick

A full-face session has to fit inside a normal appointment slot.

03

Simple

Fewer steps, less preparation, no elaborate aftercare.

04

Fast recovery

Back to ordinary life the same evening – not in three days.

In the social-media era the downtime is the procedure.

This is why the market moved from fillers toward biostimulators and skin boosters – and why any delivery method that leaves marks, bruising or redness is judged more harshly than it was five years ago. Patients no longer trade a visible week for a better result.

The delivery method is now part of the clinical result, not a technical detail behind it.

TWO BARRIERS TO ADOPTION

What kept jet delivery out of routine practice



01

Regulatory constraint on agents

Beyond exosomes, a large share of the agents used in practice is cosmetic-grade. The regulatory questions raised in recent years made clear that a jet-type platform would be needed to keep working within a defensible framework.

02

Cost of the early jet systems

Earlier jet systems were demonstrated widely but adopted slowly. The reason was single and simple: at those prices, manual injection remained the rational default.

What changed the answer

- A price position that no longer makes manual injection the rational default.
- Pain low enough that physicians report using the device on themselves.
- Compatibility with the skin boosters already in routine use.

The device only becomes interesting when cost per session and patient comfort move together.

THE PAIN PROBLEM

Where conventional needle delivery reaches its practical limit

HIRONIC



“Only that which never ceases to hurt stays in the memory.”

Friedrich Nietzsche — a small stimulus that keeps hurting becomes a lasting wound.

Scalp

Topical anaesthetic is impractical — it makes the hair tacky and coverage is unreliable.

Volume of punctures

Delivering exosomes, botulinum toxin or any agent into the scalp means roughly 200 needle passes per session.

Patient response

Most simply ask to be sedated rather than sit through it.

Body sites

Treatment now extends far beyond the face — hands, décolleté, knees, buttocks — where cream anaesthesia is not a realistic answer.

Pain is not a comfort feature — it decides which treatments a patient will ever repeat.

SYNERGY — THE ORIGIN OF THE NAME

Why the platform is not described as a jet injector



Etymology

syn together, jointly

ergon work, action

From the Greek synergia — cooperative action.

The definition

1 + 1 > 2

The combined effect of two elements exceeds the sum of what each contributes alone — the whole is greater than the sum of its parts.

Synergy with everything already in the room

The relevant question is not what the device does on its own, but how it combines with the procedures a clinic already performs. Across the skin boosters in common use it has proven a compatible partner for each of them — and where agents are mixed with biostimulators, adjusting volume alone is enough to keep delivery consistent.

SynerJet is positioned as a delivery platform, not as a replacement for a syringe.

THREE CORE VALUES

Fast · Precise · Needle-free



01

FAST

Rapid shot delivery and an efficient procedure flow that fits a real appointment slot.

02

PRECISE

Controlled arrival at the target layer, with depth and volume set independently.

03

NEEDLE-FREE

Non-invasive delivery that minimises both pain and the burden carried afterwards.

Fast, precise and painless — SynerJet changes the method of delivery itself.

Three axes that are only meaningful when they hold at the same time.

JET VELOCITY TEST — CONDITIONS

Independent high-speed measurement of the SynerJet jet



Method

- Distilled water was loaded into a luer-lock syringe; the spray pattern was filmed with a high-speed camera and peak velocity derived from it.
- Recording above 200,000 fps — 5 μs between frames; exposure 1 μs per frame.
- Distance measured to the furthest point reached between frames; velocity = distance ÷ time.

Instrumentation

- High-speed camera · DPSS laser · synchroniser
- PIV software with PC
- Seeding generator with olive oil
- Tripod and optics; laser illumination of the spray zone

Test	Nozzle Ø (mm)	Power (V)	Volume (Lv.)	Test	Nozzle Ø (mm)	Power (V)	Volume (Lv.)
1	0.18	200	3.0	5	0.18	160	3.0
2	0.18	200	2.0	6	0.18	140	3.0
3	0.18	200	1.0	7	0.18	120	3.0
4	0.18	180	3.0	8	0.18	100	3.0
9	0.18	170	2.5	Typical clinical setting used in routine treatment			

Nine settings tested; below 140 V no measurable jet was produced.

JET VELOCITY — MEASURED RESULTS

Peak velocity across power and volume settings



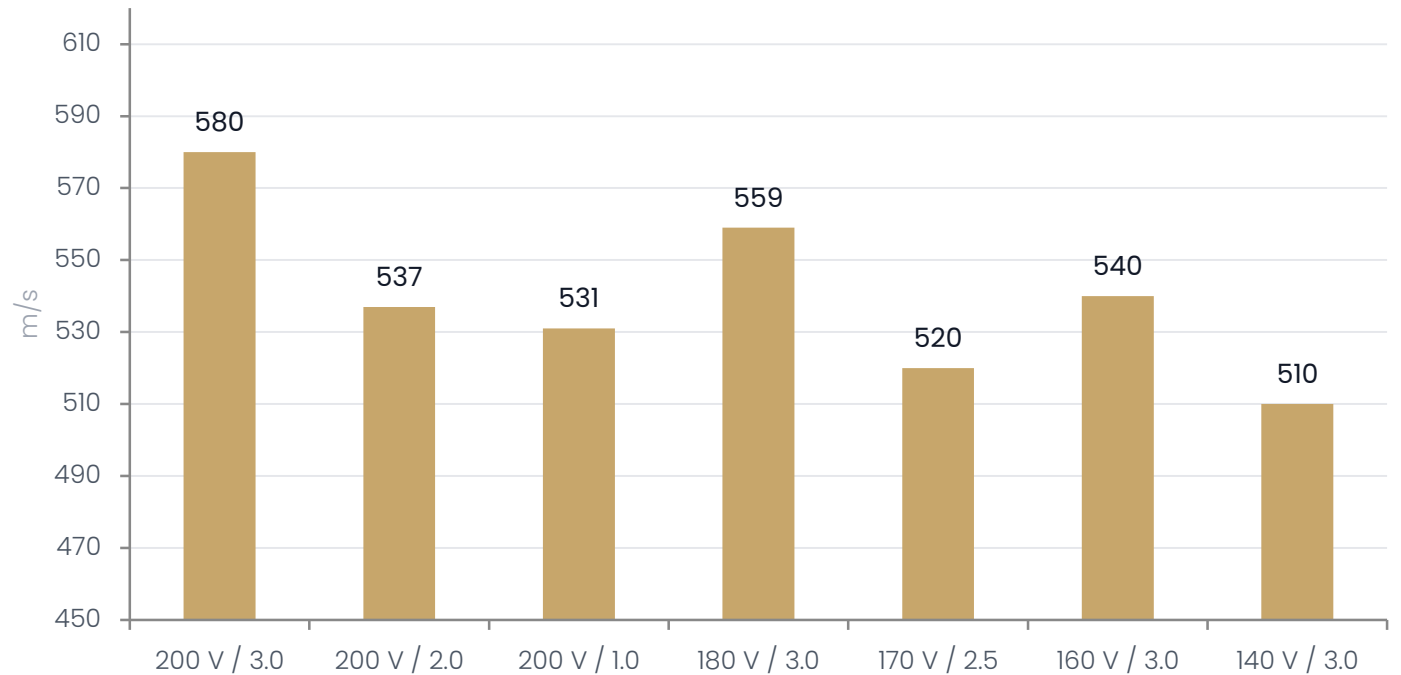
580

m/s peak jet velocity

Every tested setting exceeded 500 m/s, placing performance at or above the competitive reference of 500 m/s.

At 120 V and 100 V no jet could be measured — the practical floor of the system sits at 140 V.

Peak jet velocity by power / volume setting



Delivery performance is at or above the competitive reference across the whole usable power range.

580 M/S IN PERSPECTIVE

What that velocity actually corresponds to



580 m/s = approximately 2,088 km/h · roughly Mach 1.7

Reference	Approximate speed	Compared with 580 m/s
Fastest land animal	≈ 70 km/h	About 30× faster
KTX high-speed train	≈ 300 km/h	About 7× faster
Passenger aircraft, cruise	≈ 850–900 km/h	About 2.3× faster
Speed of sound	≈ 1,235 km/h	About 1.7× faster
Handgun round	≈ 300–450 m/s	Faster than a handgun round
Rifle round	≈ 700–1,000 m/s	Slower than a rifle round

A jet moving faster than a handgun round is being applied to skin — which is exactly why the question is not whether it leaves the nozzle, but whether it enters the tissue.

Velocity alone is not the claim — controlled entry into tissue is.

VOLUME LEVEL — SPRAY BEHAVIOUR

How the volume setting changes length, dispersion and stability



Volume (Lv.)	Jet length	Dispersion	Stability	Character
3.0	Very long	Excellent	High	Maximum performance, strongest jet force
2.0	Long	Excellent	High	Well-balanced atomisation, stable delivery
1.0	Medium	Moderate	Moderate	Usable range; sharp narrow jet

200 V / 3.0 Lv.

The agent emerges as a tight bolus in the first frames, then forms a broad conical spray. Density along the central axis is maintained well past mid-flight; high pressure gives a long jet that disperses like mist.

200 V / 2.0 Lv.

Very fast onset with a clearly defined shape and well-formed conical spread. Dense flow is sustained after mid-flight and atomisation quality is high — dispersion and central density are both balanced.

200 V / 1.0 Lv.

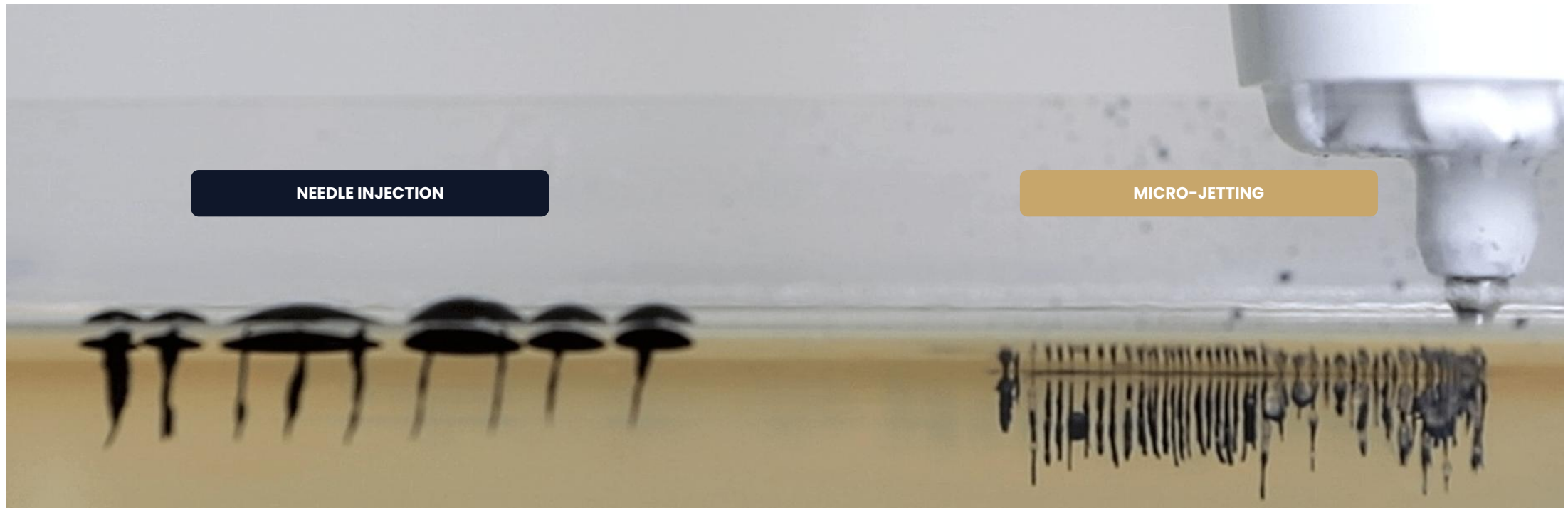
Onset is fast and the shape is narrow and sharp. Spread stays limited late in flight with lower density and a long tail on the axis. Small delivered volume gives a short, keen jet — penetration can be strong, dispersion is not.

Volume is the control that matches the jet to the agent — thinner, stickier or mixed formulations each need a different level.

PENETRATION IN A GEL PHANTOM

High-speed footage of the jet entering a transparent tissue model

HIRONIC



NEEDLE INJECTION

MICRO-JETTING

Needle injection

Pooling at the surface with irregular, unevenly deep tracks.

Micro-jetting

Dense, fine channels arriving at a consistent depth across the pass.

Uniform depth is visible, not inferred — the same jet produces the same channel on every shot.

MICROJETTING ADVANTAGES

What depth control and shot rate mean in practice



DELIVERY

Precise uniform delivery

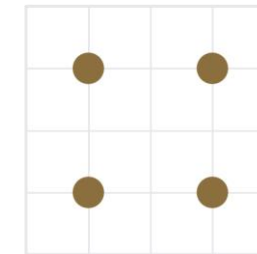


Depth range 0.05 – 2.5 mm

Depth control, volume control and uniform distribution — no risk of injecting too deep or too shallow.

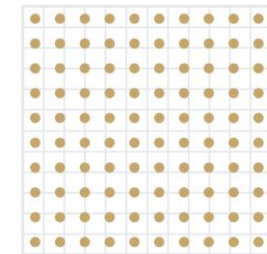
SPEED

25 shots per second



Micro-droplet
conventional technique

VS.



Nano-droplet
SynerJet delivery

Three cubic centimetres in about three minutes — faster treatment, faster absorption and diffusion.

No risk of over- or under-injection, and no depth guesswork — the parameters carry the precision.

SPEED IN THE CHAIR

What the difference looks like inside a working schedule

HIRONIC

≈ 20 min

Manual injection

Full face, 4 cc of a polynucleotide skin booster — at an experienced operator's pace.

< 5 min

SYNERJET, one pass

The same full-face coverage completed inside a single short pass.

25 shots per second — 3 cc delivered in about 3 minutes

Micro-droplet distribution replaces point-by-point injection, so the time saved does not come from working faster by hand — it comes from removing the puncture count entirely. In a busy clinic that difference compounds across every session of the day.

A four-fold reduction in chair time changes what can realistically be offered in a day.

PRECISION AND QUALITY CONTROL

The argument that matters most in a multi-physician clinic



“Is a trained hand better than the device?” — the answer is consistency.

01

Constant speed

The jet leaves at the same velocity every shot, independent of who is holding the handpiece or how far into the day it is.

02

Constant depth

Depth is set by stand-off distance and then trimmed with power and volume — not estimated by feel at each puncture.

03

Reproducible outcome

For junior physicians, and for the most meticulous cases, the reason to use an injector is precision rather than preference.

In larger clinics where more of the treatment volume is carried by junior physicians, uniform quality control is often the decisive argument — not the speed.

The device removes operator dependence — which is the variable a clinic cannot train away entirely.

THE LONG-TERM QUESTION

What repeated needling means over decades of treatment



The arithmetic

Roughly 200 punctures per session, repeated every three months, continued from middle age into the nineties. Set out that way, the question of what happens to the tissue at those needle tracks is unavoidable.

Cumulative fibrosis at repeated puncture sites is a fair question to raise — and one that a needle-free method sidesteps rather than answers.

200 ×

punctures per session

every three months, for as long as the patient keeps coming

Where the discussion is moving

More physicians are now suggesting that for skin boosters — as with dermal filler work — cannula technique may serve the skin better over the long term than repeated sharp-needle passes. A needle-free jet belongs to the same line of reasoning: deliver the agent without accumulating mechanical trauma at fixed points.

Long-term skin health is becoming a selection criterion for the delivery method itself.

FROM FACE TO FULL BODY

An ageing patient base with widening expectations

HIRONIC

83

the age of the oldest patients now presenting for routine aesthetic treatment

Hands

Décolleté

Knees

Buttocks

Scalp

Full body

Treatment areas have moved well beyond the face. Cream anaesthesia does not scale to any of them — which is precisely where a painless delivery method stops being a convenience and becomes the enabling condition.

In an era of ninety- and hundred-year lifespans, the treatable area is the whole body.

CLINICAL CASE — SAME-DAY SOCIAL EVENT

The patient who could not afford any visible trace

HIRONIC



Patient account

She had a wedding reunion in two days and had come back from holiday with peeling, flaking, dehydrated skin. She wanted a skin booster but had always refused because of the pain and the embossing. She was told there was a booster that needs no needle — micro-jetting with microcurrent stimulation, no anaesthetic cream. Her description of the sensation was of being flicked on the face with a fingertip.

No anaesthetic cream

The session ran without topical preparation at all.

No embossing, no bruising

Nothing that would need to be covered or explained two days later.

Same-day return to normal life

She went to the event; the glow that follows comes from within the skin.

The decisive factor was not the result — it was that nothing had to be hidden afterwards.

THREE ENERGIES IN ONE PASS

Barrier preparation, mechanical delivery and electrical uptake

HIRONIC



01

Micro-jetting

Ultra-fast delivery at up to 580 m/s.
Minimised pain through a fine 180 μ m jet diameter.



02

Electroporation

Temporarily opens cell membranes with microcurrent stimulation, maximising absorption through gentle electrical impulses.



03

Cold Plasma

Converts oxygen in the air into ions to enhance sterilisation and skin absorption.

Barrier preparation, mechanical delivery and electrical uptake are applied in sequence within one pass.

WHY THE COMBINATION MATTERS

The differences that show up in daily use



Splash-back is recovered, not lost

With other jet systems the common complaint is rebound — the agent scatters off the surface. Micro-jetting plus electroporation catches what splashes back and drives it in again. This is the clearest single difference against the two competing platforms.

Plasma as a bonus in scalp work

In hair treatments plasma is used extensively — particularly for its antibacterial action. Passing plasma over the area first and then delivering with electroporation is a sequence the other two platforms cannot offer.

180 μ m jet diameter — fine enough that the sensation is a tap rather than a puncture.

Splash-back recovery and a plasma step are what the competing platforms do not have.

NEEDLE-FREE PLATFORM COMPARISON

Core strengths seen from the SynerJet perspective



Criterion	SynerJet Pro	Laser Based Injector	Conventional Solenoid Injector
Core concept	Triple Synergy Delivery	Laser-powered microjet	Needle-free jet injector
Mechanism	Microjet + Electroporation + Cold Plasma	Er:YAG laser-based microjet	Solenoid-based high-pressure jet
Delivery character	Fast and uniform delivery	Depth adjustable	Strong pressure delivery
Patient experience	Precise, with low pain burden	Sensation can be relatively strong	Sensation varies by indication
Principal strength	Balance of speed, precision and non-invasiveness	Laser-based specialisation	Scar and subcision concept
Positioning	Most integrated and balanced platform	Laser-technology-centred platform	Scar-focused platform

SynerJet is not simply a jet injector — it is the most balanced Triple Synergy Delivery platform, combining microjet, electroporation and plasma.

Price competitiveness aside, the combination of mechanisms is what separates the platforms.

KEY INSIGHTS

Why SYNERJET PRO belongs in daily practice

SHIRONIC

01

Painless is the whole argument

Comfort is what makes a treatment repeatable — on the scalp, on the body and on patients who would otherwise decline.

02

Speed changes the schedule

Under five minutes against roughly twenty for the same full-face coverage, with no puncture count to absorb.

03

Consistency over craftsmanship

Constant speed and constant depth give quality control that does not depend on who is holding the handpiece.

04

Electroporation is the differentiator

It recovers the agent that splashes back, and plasma adds a step the competing platforms do not have.

For care from the scalp to the feet — delivery without pain, at high efficiency — SynerJet is a complete answer.



Beyond a needle free injector

Needle-Free Delivery in Aesthetic Practice with SYNERJET PRO™

