

The Potenza Fusion Tip: Enhanced penetration of topical products

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From 1999 until 2016 she was Director of Skinperium Clinic in Boom, Belgium before relocating with her family and private medical dermatology practice to Luxembourg. Here she continues to specialize in aesthetic dermatology and laser surgery and remains actively involved in research in various energy-based devices and their applications. She is widely published and lectures internationally in the field of laser surgery, energy-based devices, and photodynamic therapy.

She is a past Vice-President of the American Society of Laser Medicine and Surgery, member of the American Academy of Dermatology and honorary member of the British Medical Laser Association and the European Society for Lasers and Energy Based Devices.

RADIO FREQUENCY MICRONEEDLING

The recent launch of the advanced Potenza radiofrequency microneedling device (Cynosure, LLC Westford, MA) has brought new levels of versatility to a market where 70% of consumers are considering undergoing non-invasive treatments¹ and 1,200,000 microneedling treatments were performed in 2018².

The Potenza device offers treatment options of four modes of radiofrequency; monopolar and bi-polar and 1MHz and 2MHz, and a wide selection of treatment tips that the physician can use to optimize and individualize treatment for every patient. Every patient has a unique requirement of therapy to address their skin health so versatility with a device is important. Radiofrequency microneedling also offers some different opportunities for patients that might not be completely suitable for light-based revitalization treatments due to their skin color or who want to continue treatments during the summer months when this type of treatment is more difficult to perform without risking causing post inflammatory hyper-pigmentation.

The Potenza has a broad range of ten different treatment needle tips to further customize the treatment delivery, single insulated needles to precisely target and improve blemishes on the skin, insulated needles, and the proprietary Tiger Tip™ semi-insulated needle tips, available with 16,25 and 49 needle densities, which allow the treatment of more tissue in a single treatment without sacrificing the epidermis.



THE EXCLUSIVE FUSION TIP FOR ENHANCED PENETRATION OF TOPICALS

The latest tip to join the Potenza portfolio is the Fusion Tip, which is exclusive to Potenza and brings a triplex of treatment effects to the skin; 1. Mechanical effect by microneedle insertion, 2. Coagulation by Radio Frequency energy, and 3. Enhanced penetration of applied topicals (Image 1).

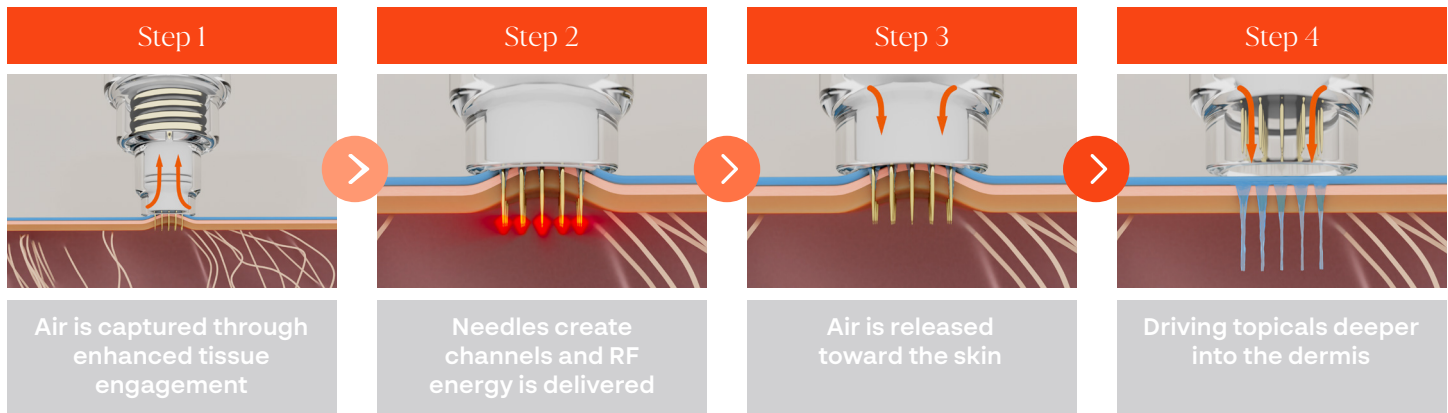
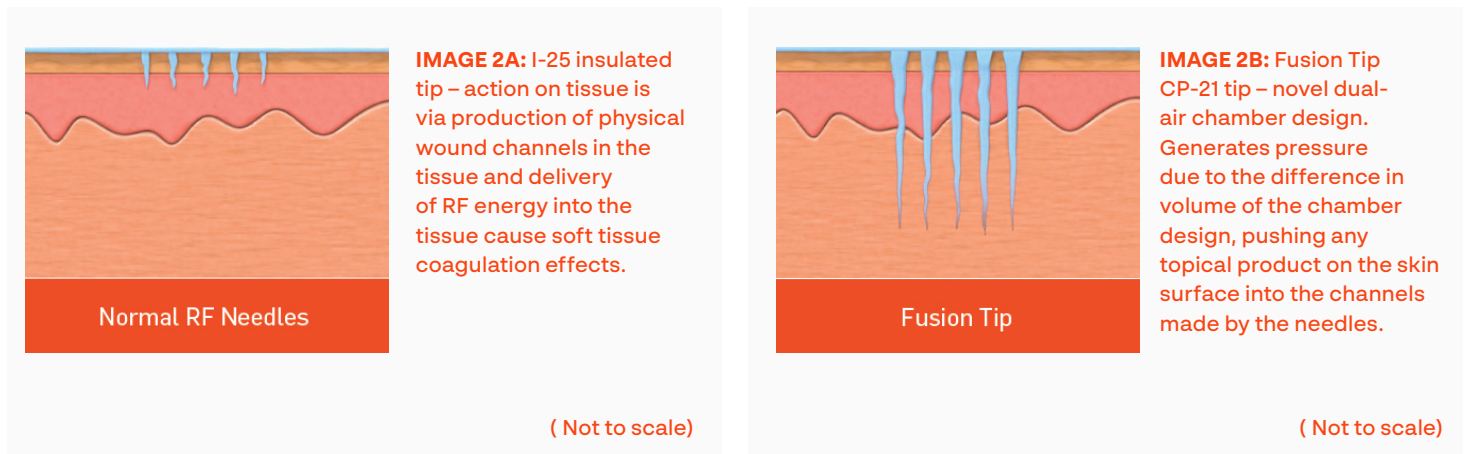


IMAGE 1: Mechanism of action of the Fusion Tip (CP-21) by Potenza

The Fusion Tip uses a dual-air chamber design to capture and release air towards the skin (with each pulse that is applied to the skin) using positive and negative pressure to enhance the penetration of topicals laying on the surface of the skin.



67% MORE PENETRATION OF SURFACE TOPICALS USING THE FUSION TIP

To assess the efficacy that the Fusion Tip offers to enhance the penetration of topicals, Cynosure performed a study on ex-vivo porcine skin, directly comparing the amount of black India tattoo ink ingress into the channels made in the tissue when it was treated with the Fusion Tip (CP-21) compared to using the Insulated I-25 Tip. The black India ink provides an easy to visualize representation of the movement of topical products placed on the skin surface prior to treatment with the RF microneedling.

Identical surface areas of porcine skin were treated with the I-25 and the CP-21 tips after application of the black ink to the sample surface. 1MHz Monopolar RF energy with a preset 2mm needle penetration depth and a double pass across the tissue surface for both tips was used. The large samples were then cross sectioned to enable photographic assessment of the ink ingress into the tissue bulk.



IMAGE 3A

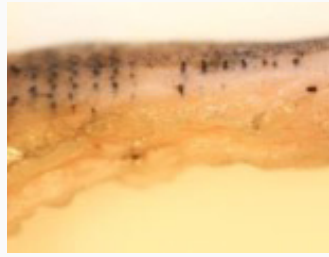


IMAGE 3B

3A: Cross section of Porcine tissue sample after treatment with I-25 tip and black ink - Finer ink 'channels' caused by needles dragging ink into tissue as the needles plunge.

3B: Cross section of Porcine tissue sample after treatment with CP-21 tip and black ink - Ink staining of the channels appears to be deeper into the tissue and broader in shape with denser ink volume closest under the epidermis compared to the I-25 samples. The CP-21 tip creates suction which could enable the pull of more ink into the channels as the needles are finally retracted.

Immediately visible in the cross-section samples is the difference in the shape of the ink staining left in the channels created by the needles. In those created with the I-25 tip treatment, the ink staining is finer and not as deep into the tissue. Whereas for the treatment with the CP-21 tip, the ink staining has a more conical appearance with heavier staining closest under the epidermis and deeper penetration into the tissue even though the preset tissue depth of needle entry was equal to 2mm for each of the I-25 and CP-21 tips. This larger and deeper 'saturation' of ink after treatment with the CP-21 tip is thought to be due to the dual chamber construction of the tip that creates a pressure change that both pushes any topical fluid on the surface of the epidermis into the wound channels created by the needle penetration.

These cross-sectional images were imported into ImageJ, a computer image processing program for optical and computational instrumentation area evaluation, and a basic color filter to help identify the ink that was deposited into the tissue was used. Areas were highlighted red and then changed to a selection of areas for measurement (yellow areas). Each deposit of ink selection area was then refined on a per needle channel basis and measured for overall ink

Sample #	CP21		I25		% Imp
	N-	Area	N-	Area	
Overall	53	0.22	49	0.13	67%
1	7	0.17	9	0.11	57%
2	6	0.16	11	0.11	52%
3	9	0.18	9	0.13	37%
4	8	0.28	8	0.22	24%
5	15	0.28	5	0.11	125%
6	8	0.22	7	0.12	74

TABLE 1: Summary of individual needle channels assessed, area in mm²

amount. This was completed for all images and then the overall average of ink deposited per needle was determined.

In total, across both sample areas, 102 individual needle channels were assessed using the imaging software (see summary in Table 1). The average amount of ink per needle channel was 67% higher when using the new Fusion Tip CP-21 tip as compared to the existing I-25 tip.



IMAGE 4A: Area calculations of I-25 ink ingress after two passes, 1Mhz, Monopolar, 2mm needle penetration depth in slice of Porcine skin (ImageJ image processing for ink area)

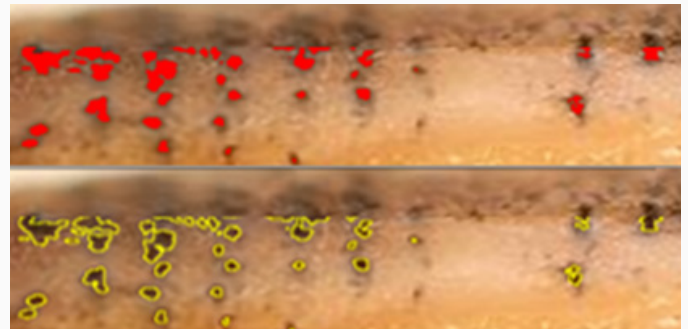


IMAGE 4B: Area calculations of CP-21 ink ingress after two passes, 1Mhz, Monopolar, 2mm needle penetration depth in slice of Porcine skin (ImageJ image processing for ink area)

The use of topical ingredients during in-clinic procedures as well as the patient continuing to utilize products at home is an important keystone for improving and maintaining skin health. This would be customized to each patient's skin requirement, in male or female patients, whatever the decade of life they happen to be in.

The testing completed on animal skin has demonstrated an average of 67% increase in penetration of topicals present on the surface of the skin at the time of Potenza RF microneedling treatment with the unique Fusion Tip (CP-21) due to the exclusive dual chamber design of the CP-21 tip to 'push the topical product into the channels left behind in the tissue after needle penetration'. The addition of the CP-21 tip to the Potenza portfolio of ten tips gives the physician a

comprehensive toolbox to address the bespoke needs of each of their patients in a minimally invasive treatment.

Potenza offers me the ability to completely tailor my patient's skin treatment experience with the revitalization effects of medical microneedling and the thermal coagulation effects from radio-frequency energy. It has the benefits of both monopolar and bipolar radiofrequency energy delivery and a wide variety of insulated and semi-insulated tips with multiple needle densities as well as single needle option for when I need precise targeting. I have control over needle depth up to 4mm and now with this new Fusion Tip, I can also be confident of maximizing the skin health benefits of the topical additives that I might select for a patient with enhanced delivery into the tissue.

REFERENCES

1. American Society for Dermatologic Surgery. 2018 Consumer Survey on Cosmetic Dermatologic Procedures. 2018. Accessed June 19, 2019. <https://www.asds.net/medical-professionals/practice-resources/asds-consumer-survey-on-cosmetic-dermatologic-procedures>
2. Estimates based upon Medical Insight RF GAM XVII, EBD & BS&ST syndicated reports (2019) and additional research



CYNOSURE® BEAUTIFUL ENERGY

The Potenza radiofrequency microneedling device is intended for electrocoagulation and hemostasis of soft tissue for dermatologic conditions. Potential side effects include temporary redness, temporary tingling, and burning sensation while receiving treatment. Like all medical procedures, not all patients are suitable for the treatment. Talk to your medical provider about the risks and benefits of this procedure. A qualified practitioner is solely responsible for evaluating each subject's suitability to undergo treatment and for informing those being treated about any risks involved with the treatment, pre-and postoperative care, and any other relevant information. Individual results may vary and are not guaranteed.

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