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Canadian hair removal case study preliminary result with the Alpha System using LLD laser Diode, 3rd generation POWER-MOTION™

Dr. Nadav Pam (M.D) Formatk Systems, Israel
Lacey Allen Senior Hair Removal Technician, Canada
Amanda Killan Senior Hair Removal Technician, Canada
Shannon Roche Senior Hair Removal Technician, Canada

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Case Study - preliminary result with the Alpha System using LLD laser Diode, 3rd generation POWER-MOTION™

Dr. Nadav Pam M.D[1], Fromatk Clinical Director, certified CRA/ CTA /CRC by the Technion – Israel Institute of Technology 2022
Lacey Allen[2] - Senior Hair Removal Technician
Amanda Killan[3] - Senior Hair Removal Technician
Amanda Killan[4]- Senior Hair Removal Technician
1 FormaTK Systems Ltd Medical equipment manufacturer in Tirat Carmel - Yozma St 3, Tirat Carmel– Clinical Department.
2,3,4 Divine and Free Wellness and Medical Spa, located at 25 St. Michael St, St. Albert, AB T8N 1C7, Canada.

Background:
The global laser hair removal market is projected to experience significant growth in the coming years. According to a recent global market forecast report , the market size was valued at USD 1,129 million in 2024 and is expected to reach USD 5,362.06 million by 2032, growing at a compound annual growth rate (CAGR) of 18.9% during the forecast period (1). Similarly, Fortune Business Insights reports that the market was valued at USD 1.05 billion in 2023 and is projected to grow to USD 4.61 billion by 2032, exhibiting a CAGR of 18.1% (2).
Based on these projections, the estimated global market value for laser hair removal in 2025 would be approximately USD 1.6 billion to USD 1.7 billion. This growth is attributed to factors such as increasing demand for non-invasive cosmetic procedures, advancements in laser technology, and growing awareness of the benefits of laser hair removal.
Until today, the hair removal treatment modes considered the most popular and influential were the first-generation "Single" mode (also known as “stamping”) and the second-generation "Fast" Mode (also known as "In-motion" mode). However, Forma-TK Systems Ltd recently introduced a new hair removal treatment mode concept titled 3rd generation POWER-MOTION™ as part of the ALPHA and MAGMA Spark Pro Systems with the non-invasive Diode lasers with 808nm wavelengths.
There are two critical anatomical targets for the inactivation of hair follicles: 1) stem cells in a "bulge" of the outer root sheath about 1 mm below the skin surface and 2) the dermal papilla located at the deepest part of the follicle, which varies with hair growth cycle. Laser hair removal technology is based on the absorption of energy by the melanin (endogenous chromophore) in the hair follicle in the anagen phase and the diffusion of the power into the dermal papillae and surrounding stem cells.

Laser hair removal is achieved through follicular unit destruction in anagen phase based on the extended selective photothermolysis concept of heat diffusion (3-13).
Hence, by increasing the heat diffusion rate, as seen in the thermal images of the LLD laser Diode 808nm, the new 3rd generation POWER-MOTION™ hair removal mode , we expect to see improved end-clinical treatment.

Aim of the Case study:
This study aimed to assess the preliminary safety and clinical efficacy of hair removal using the third-generation POWER-MOTION™ LLD 808nm non-invasive diode laser applicator, developed by FormaTK Systems Ltd., after a minimum of five treatment sessions.

Methods:
This single-center, prospective case study was conducted at Divine & Free, a luxury wellness boutique and medical spa known for its advanced technologies, located in the Perron District of St. Albert, Canada. The study was carried out by a team of three senior hair removal technicians from Divine & Free: Lacey Allen, Amanda Killan, and Shannon Roche.
Six healthy patients (three females and three males), aged 35 to 42, participated in the study. Twelve anatomical areas were treated for unwanted body hair using the Alpha system, equipped with the LLD (large laser diode) 808nm wavelength diode laser, featuring a tip surface area of 15mm over 30mm (4.5cm²) in POWER-MOTION™ mode.
Participants were selected based on the Fitzpatrick skin scale and assessed with the "Milo" melanin meter to ensure inclusion of healthy adults with skin types I to III. Each participant underwent at least five treatment sessions, spaced 4 to 8 weeks apart, with a follow-up evaluation conducted one month after the final treatment. Treatment parameters were individualized, with the LLD diode laser in POWER-MOTION™ mode, utilizing energy settings between 20J/cm² and 24J/cm², and a fixed pulse duration of 40ms.
Written informed consent was obtained from all participants before the initiation of treatments. Clinical photographs were taken by the technician team before and after the treatments, and these were evaluated by Dr. Nadav Pam, Clinical Director at FormaTK Systems Ltd.

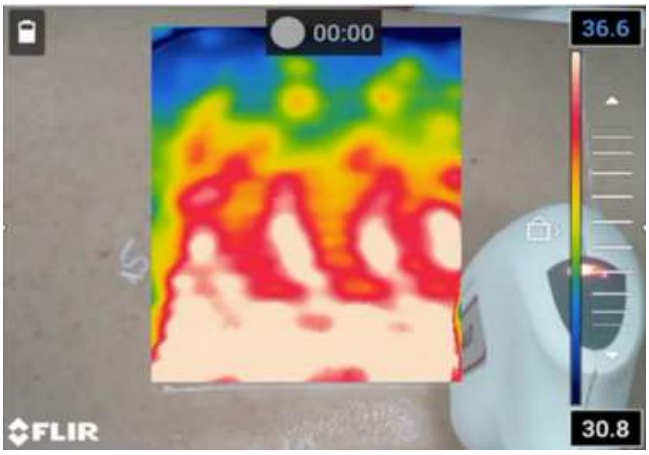


Figure 1 - ALD applicator 3rd generation POWER-MOTION™ hair removal mode 15cmX10cm box thermal photos taken with FLIR N95 camera. Courtesy of Formatk System Ltd.

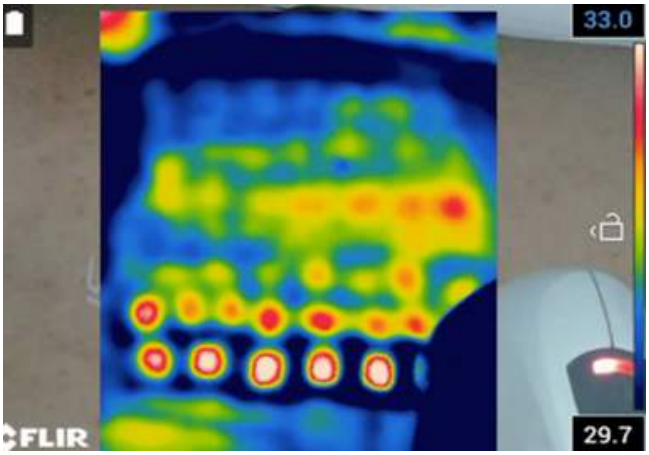


Figure 2 - ALD applicator 1st generation Single-mode ("stamping") hair removal mode 15cmX10cm box thermal photos taken with FLIR N95 camera. Courtesy of Formatk System Ltd.

Inclusion criteria:

1. Healthy adult subjects aged between 18 and 70 who have unwanted body hair
2. Fitzpatrick skin types 1-3
3. All participants agree to refrain from exposure to the sun or solarium (solar lamps) during the whole study period.
4. All patients will be informed about the study objectives, terms of treatments, eventual benefits, and adverse effects and will express their willingness to participate deliberately in this clinical study.
5. All participants signed an appropriate informed consent form.

Exclusion criteria:

1. Fitzpatrick skin type 4-6
2. Drug-induced photosensitivity (e.g., Isotretinoin, Retin A
3. Pregnancy and breastfeedin
4. Cancer
5. Epilepsy
6. Severe diseases
7. Auto-immune diseases
8. Frequent episodes of labial Herpes Simplex in case of face Treatment
9. Immunosuppressive pharmacologic therapy
10. Any other medical condition considered contraindicated to the treatment by the investigator
11. Any other hair removal treatments such as drugs, topical creams/lotions, or other phototherapy medical devices.

Results:

A total of six healthy patients, comprising three females and three males, were successfully treated for unwanted hair across twelve anatomical zones. The patients, aged between 35 and 42 years (average age 40), had Fitzpatrick skin types I to III. Each patient underwent a minimum of five treatment sessions per anatomical zone. No side effects were observed during the course of this case study.

Number	Initials	Age	Gender	Fitzpatrick skin type
Patient 1	AH	42	Female	3
Patient 2	CA	39	Male	1
Patient 3	CB	35	Female	2
Patient 4	IH	41	Male	1
Patient 5	JK	44	Male	2
Patient 6	KF	40	Female	2

Number	Anatomical Zone	Number of Treatments	Total Improvement Rate	Side Effect
Patient 1	Armpits	5	87	N/A
	Shins		86	N/A
	Thighs		88	N/A
	Face (upper lip)		90	N/A
Patient 2	Nape	5	88	N/A
	Back (Torso)	5	86	N/A
Patient 3	Armpits	5	90	N/A
Patient 4	Nape	5	87	N/A
	Back (Torso)	5	88	N/A
Patient 5	Nape	5	86	N/A
	Back (Torso)	5	85	N/A
Patient 6	Armpits	5	91	N/A

In conclusion:
This case study highlights the Alpha system with the third-generation POWER-MOTION™ LLD Diode laser 808nm applicator as a safe and effective hair removal solution for patients with Fitzpatrick skin types I to III.

Discussion:

1. **Enhanced Aesthetic Outcomes:** All six patients experienced significant improvements across twelve anatomical treatment zones, as assessed using a 4-point evaluation scale.

2. **Reduced Treatment Sessions:** The third-generation POWER-MOTION™ mode delivered significant improvement in all patients in just five treatment sessions.

3. **Minimal Side Effects:** Patients treated with the third-generation POWER-MOTION™ mode reported no significant adverse effects. The only observed side effects included transient pain and localized perifollicular erythema, both resolving within an hour post-treatment.

Reference:

1.ZLaser Hair Removal Market Size, Share, Growth Analysis, By Technology(diode lasers, Nd:YAG lasers, alexandrite lasers, and intense pulsed light (IPL) systems), Industry Forecast 2025-2032. Report ID: SQMIG35B2099 | Region: Global | Published Date: March, 2024. Pages: 219 |Tables: 91 |Figures: 76. Source: https://www.skyquestt.com/report/laser-hair-removal-market.

2.Laser Hair Removal Market Size, Share & Industry Analysis, By Product (Alexandrite, Nd: YAG, Diode, and Others), By End User (Hospitals, Medical Spas & Specialty Clinics, and Others), and Regional Forecast, 2024-2032. Last Updated: December 30, 2024 | Format: PDF | Report ID: FBI103477. Source: https://www.fortunebusinessinsights.com/laser-hair-removal-market-103477

3.Zandi S, Lui H: Long-term removal of unwanted hair using light. Dermatol Clin, 2013; 31: 179-191.

4.Ormiga P, Ishida CE, Boechat A, Ramos E, Silva M: Comparison of the effect of diode laser versus intense pulsed light in axillary hair removal. Dermatol Surg, 2014; 40: 1061-1069.5:

5.Royo J, Urdiales F, Moreno J, Al-Zarouni M, Cornejo P, Trelles MA: Six-month follow-up multicenter prospective study of 368 patients, phototypes III to V, on epilation efficacy using an 810 nm diode laser at low fluence. Lasers Med Sci, 2011; 26: 247-255.

6. Koo B, Ball K, Tremaine AM, Zachary CB: A comparison of two 810 nm diode lasers for hair removal: low fluence, multiple passes versus a high fluence, single pass technique. Lasers Surg Med, 2014; 46: 270-274.

7. Braun M: Comparison of high fluence, single pass diode laser to low fluence, multiple pass diode laser for laser hair reduction with 18 months of follow up. J Drugs Dermatol, 2011; 10: 62-65.

8. Hirakawa N; Scale for pain evaluation. Anesthesia 21 Century, 2011; 13: 4-10,

9. Moreno-Arias G, Castelo-Branco C, Ferrando J: Paradoxical effect after IPL photoepilation. Dermatol Surg, 2002; 28:1013-1016.

10. Omi T, Honda M, Yamamoto K, Hata M, Akimoto M: Histological effects of ruby laser hair removal in Japanese patients. Lasers Surg Med, 1999; 25: 451-455.

11. Kato T, Omi T, Naitou Z, Naito Z, Hirai T, Kawana S: Histological hair removal study by ruby or alexandrite laser with a comparative study on the effects of wavelength and fluence. J Cosmet Laser Ther, 2004; 6: 32-37.

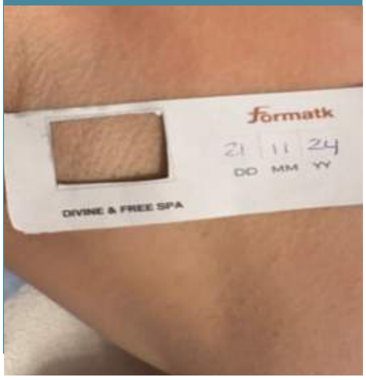
12. Al-Niami F. Laser and energy-based devices' complications in dermatology. Journal of Cosmetic and Laser Therapy [Internet]. 2016; 18(1):[25–30 pp.].

13. Elm CML, Walgrave SE, Wallander ID, Zelickson BD. Clinical study to determine the safety and efficacy of a low-energy, pulsed light device for home use hair removal. Laser in Surgery and Medicine: The Official Journal of the American Society for Laser Medicine and Surgery [Internet]. 2010; 42(4):[287–91 pp].

patient 1

BEFORE

AFTER 5 TX



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patient 2

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patient 3

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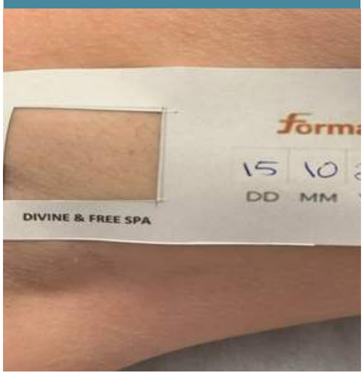

patient 4

BEFORE

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patient 5

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patient 6

BEFORE

AFTER 5 TX

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