

# DISRUPTIVE INNOVATION IN FLUID DELIVERY FOR WET SHAVING



# INTRODUCTION

We often work with clients as they seek to disrupt their businesses by changing their business model through use of technology.

An example of this is traditional CPG companies who make their revenue from formulations but they see the opportunity to pair this with a device to enhance the use/performance of the formulation and their relationship with the end consumer.

Thinking about device + chemistry opportunities is a good way of disrupting very established markets and creating new revenue streams.

In this deck we've used the example of wet shaving to explore how technical innovation, in combination with user centered design, can identify and solve previously unmet user needs and deliver new business opportunities in a very established market.

By understanding the user, the fluid properties of the formulation, and the technology of the device we can deliver real disruptive innovation.

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# AN EXPERIENCE FULL OF NEGATIVE PAIN-POINTS

## Preparation



19:31

### Time consuming

Women are often limited to shaving within the shower to contain the mess of foam.

## Shave



19:37

### Re-stroke damage

Multiple passes over the same area of skin results in razor burn post-shave.

## Moisturize



19:39

### Moisturize

Women often moisturize with their hands after shaving, finding missed hairs that were hidden by foam.

## Touch-up



19:47

### Time and irritation

Women rarely re-apply foam to perform touch-ups. Without lubrication, the skin can easily snag and get cut by blades.

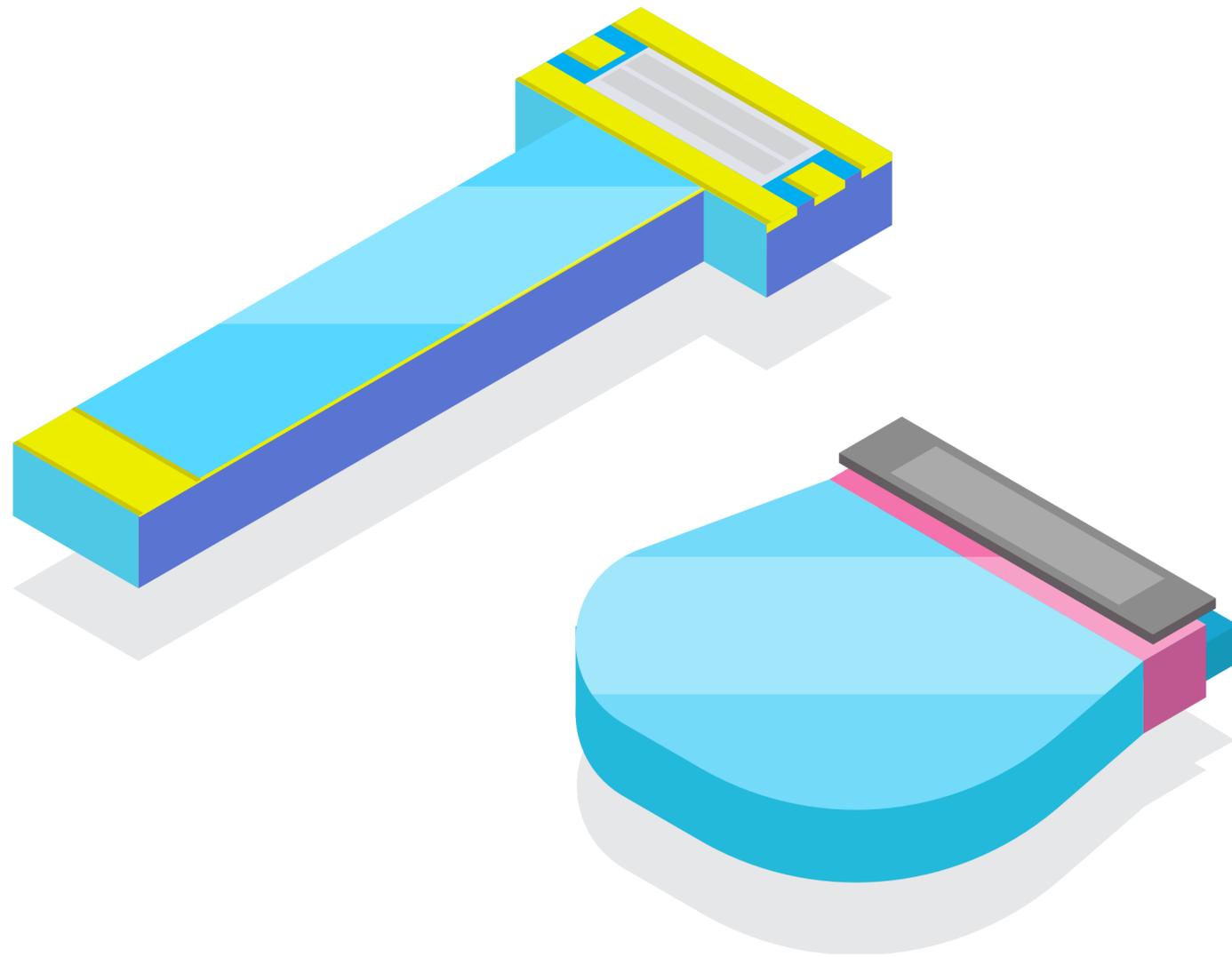
## Post-shave



21:17

### Razor burn

Razor burn can be painful and is unsightly, making women feel self-conscious and feel a need to cover up their skin.



# CURRENT OFFERINGS

Some solutions that aim to solve the problems of re-stroke irritation and gel use already exist in the market, however no current product has successfully addressed these user needs.

## **Lubricating strips**

According to the 'most helpful' Amazon reviews moisturizing and lubricating strips are only effective for a very limited time.

## **Gel combination products**

Combination products that package gel within the razor suffer from a poor user experience, requiring the user to guess the correct amount of gel needed for a shave and the increased chance for user error, causing further frustration.

# TECHNOLOGY CHALLENGES

Dispensing lubricant as part of a consumer device creates significant additional challenges.

## Leaking

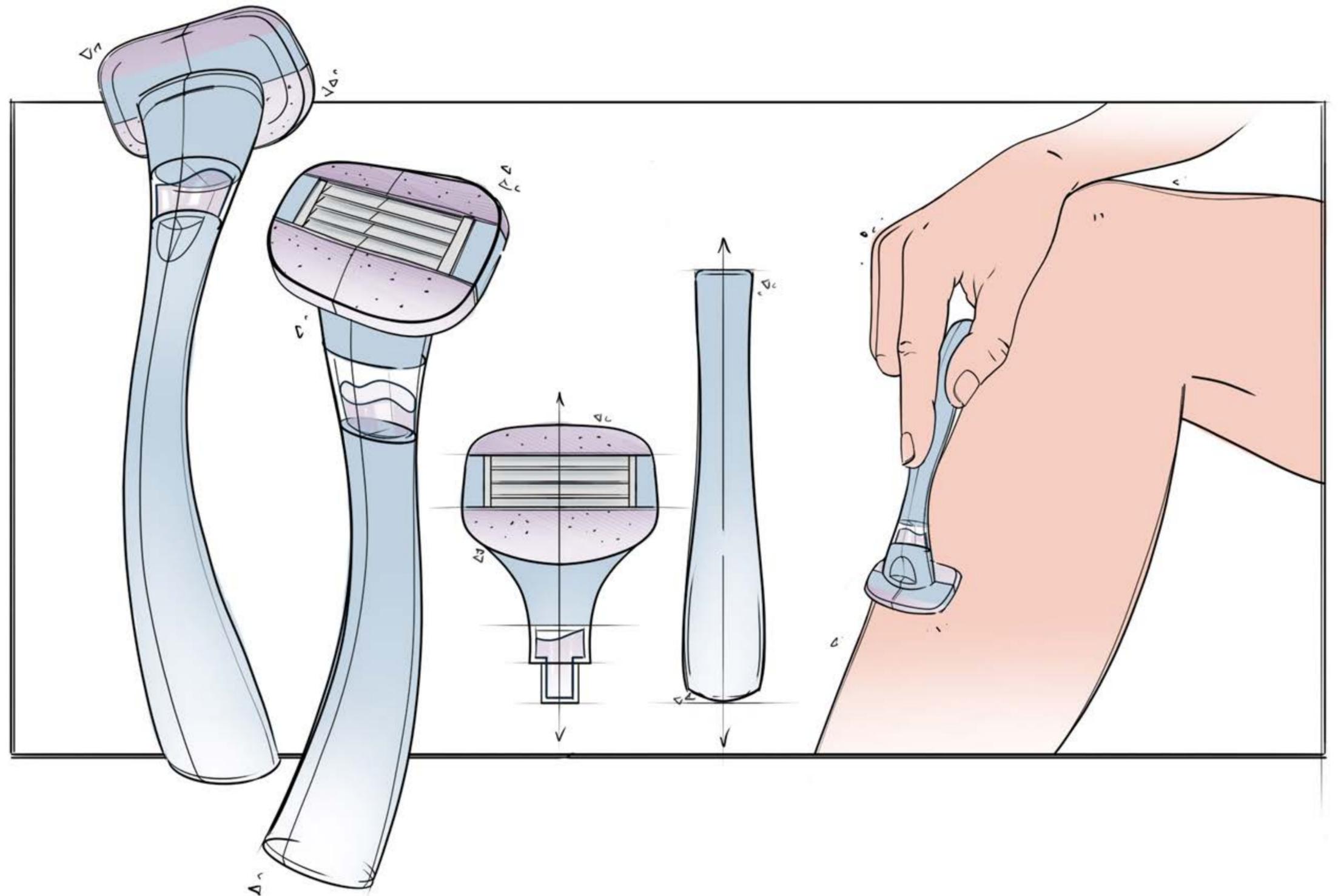
The formulation in the device must be carefully managed to prevent leaking during transport, storage, and between uses

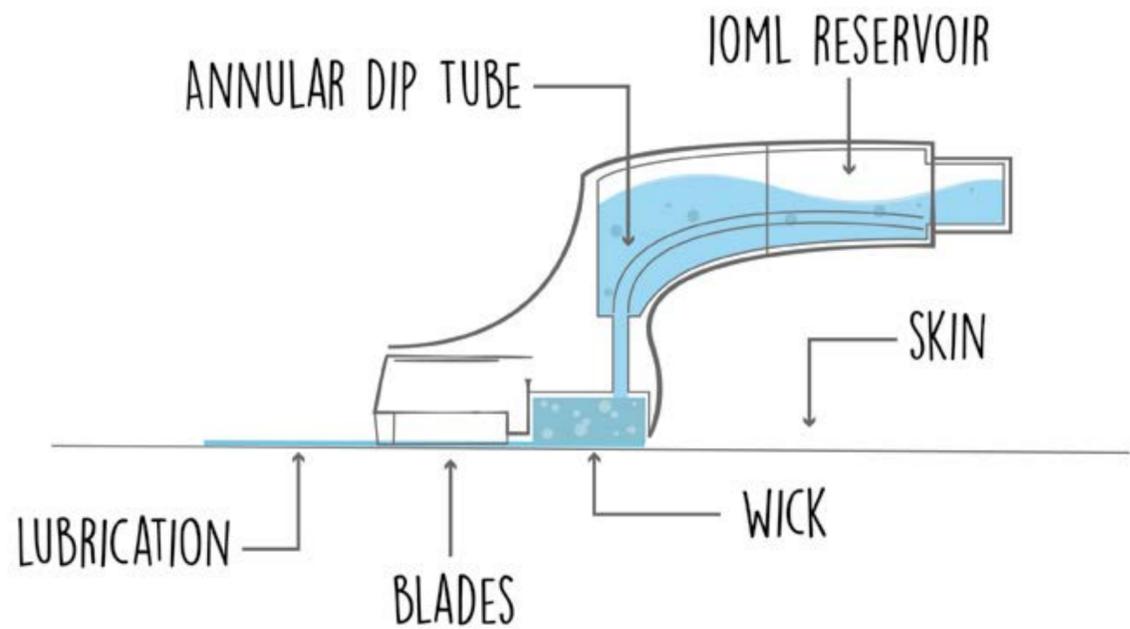
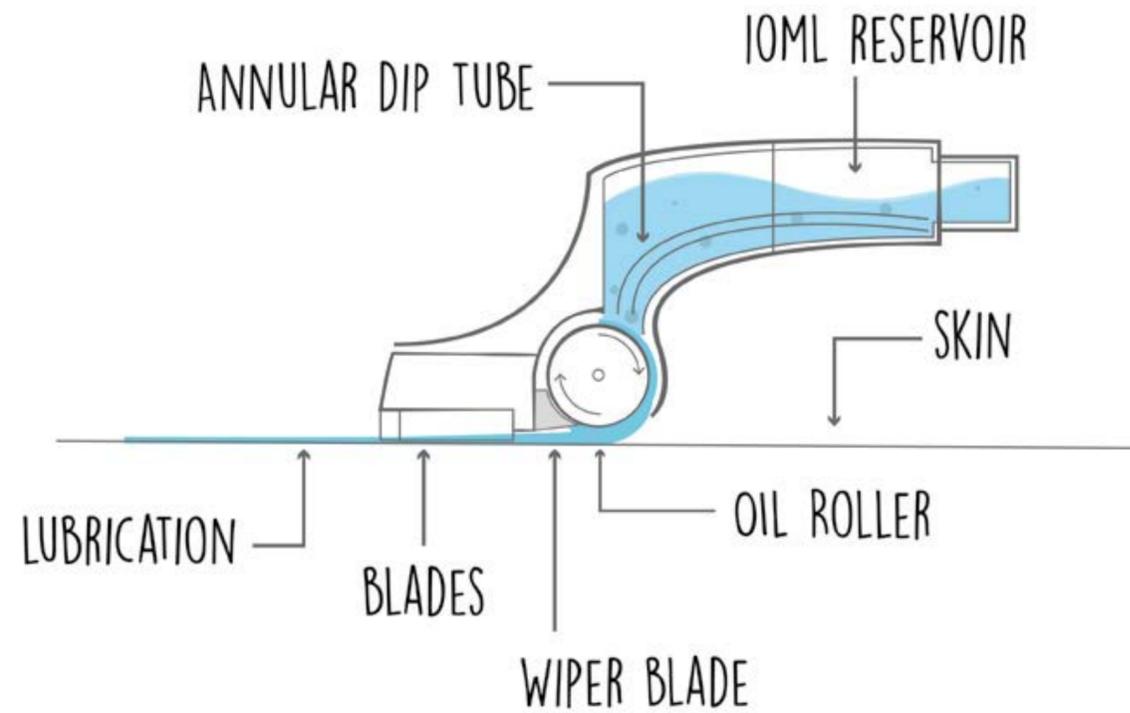
## Consistent dispense

Feed of liquid to the razor head must remain consistent as the reservoir empties and when the razor is used in different orientations

## Hygiene

The device must be easy to keep clean, rinse thoroughly and there must be no ingress of dirt or water back into the reservoir.





# TWO POTENTIAL EMBODIMENTS

A capillary fed system could address the user needs by using capillary drive to wick the lubricant/moisturizer from a reservoir to the appropriate areas on the razor head. There are two potential methods of achieving this.

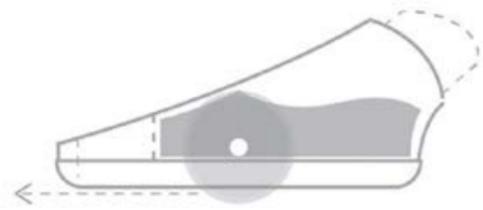
## 1. Roller applicator

A roller based applicator applies a thin layer of oil to the skin ahead of the blades.

A wiper blade removes excess oil and dirt from the roller to prevent any contamination of the reservoir

## 2. Wick applicator

A porous wick draws liquid from the reservoir and applies a thin layer to the skin. The fine pores prevent contamination of the reservoir and the porous surface is hydrophobic to reduce fouling



### Razor burn prevention

Moisturizing shaving oil is automatically applied to the users skin by the roller applicator. 10ml of oil is contained in the reservoir, and is fed through the head of the razor to the roller.

**This provides users with a quick, protected shave regardless of re-stroking**



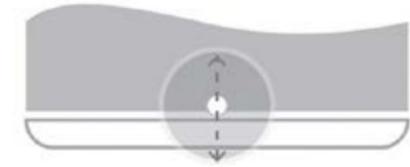
### Intuitive end of life

The blades and reservoir are contained on a single disposable component. The reservoir volume and blade life have been carefully aligned, allowing users to monitor the life of the razor through the reservoir level.

**This informs users when they will need to purchase a replacement razor head.**



# THE BENEFITS OF A ROLLER APPLICATOR



### Mess-free shaving

When not in use, the roller is sprung-loaded against the aperture, sealing the reservoir to prevent leaks. Hard stops within the spring mechanism control the gap between the roller and aperture to precisely dose the oil on the skin.

**This keeps the reservoir free from contamination whilst delivering sufficient lubrication on the skin.**



### Multi-orientation protection

Novel microfluidic features within the reservoir channel oil to the roller, irrespective of product orientation.

**This allows the user to shave naturally with confidence the product is dispensing correctly.**

# DEVICE + CHEMISTRY: OTHER MARKETS

There are lots of different opportunities to use this device + chemistry approach to bring brand differentiation and consumer benefit.

## **Cosmetics**

Precise dosing of make-up with a device can reduce the total amount of makeup applied and hence ensure even coverage to achieve the desired results.

## **Consumer healthcare**

Improving the user experience of applying topical formulations by better controlling the application and potentially avoiding skin contact outside the target area. Applying heat together with the formulation could add absorption of a topical treatment.

## **Cleaning and polishing products**

Reducing the use of chemicals while improving cleaning performance by combining precise application of formulation with mechanical agitation.



# CONCLUSION

Finding a way to stand out with new product offerings is difficult, especially in a crowded space like the razor market. This is how the multidisciplinary approach of considering key pain points in combination with smart technical solutions is the best method to approaching a challenge like this.

We identified one of the key challenges is providing a suitable 'dose' of shaving foam and making sure this is dispensed in an optimal way. Leaking, consistent dispense and hygiene are three of the key challenges and so we identified the following as potential applications:

## **Roller applicator**

This method will apply a thin layer of oil and then remove excess with a wiper blade.

## **Wick applicator**

Using a porous wick can apply a thin layer to the skin while the fine pores prevent contamination.

These solutions were designed to take the burden from the consumer of applying the oil and making it a seamless process with smart dispense solutions which resolve the key technical challenges. These are the result of a collaborative team applying different skill sets and approaches.





# PREVIOUS DISPENSE MANAGEMENT SOLUTIONS

## **NEXThaler**

Chiesi Farmaceutici came to us with the brief of creating a novel, next-generation dry powder inhaler (DPI) that could compete with the market leaders.

Flow rate independence: We designed a unique aerosol engine that ensures the maximum quantity of the drug reaches the lungs, independent of the patient's inspiratory flow rate.

High dosing accuracy: NEXThaler's integral mechanical dose counter only displays fully delivered doses, ensuring patients are well informed.

[Read More](#)

## **Plug & Play**

Plug & Play is the first wearable injector to fulfill the needs of patients and pharmaceutical companies, reshaping the wearable injector market with a novel approach to usability and technology.

The device uses an innovative (patent pending) approach to extraction of viscous drugs from a standard vial, capable of orientation independent delivery.

[Read More](#)

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