



CASE STUDY

AMBER®

FEATURING
*Pushclick
Technology*

DISPOSABLE 2-STEP AUTO INJECTOR FEATURING PUSHCLICK™ TECHNOLOGY AND UNIQUE ERGONOMIC DESIGN

The Amber® Auto Injector is a single-dose, disposable auto injector with a unique patient-centric industrial design. This device features Pushclick™ technology which enables it to be activated by simply pushing against the injection site, a total of only 2 simple steps. The unique ergonomic industrial design of the device provides various grip options when removing the cap and when performing the injection. Safety features and essential audible, visual and tactile feedback mechanisms are also integrated into the device.

This unique device has a welcoming appearance that feels reassuring and is intuitive to handle. More importantly, it was developed with manufacturability in mind and based on past project learnings and experience, making it a device that is not only user-friendly, but also practical for mass production. The activation system within the Amber® Auto Injector utilizes a shield-activated 2-step mechanism based on a market proven injection technology, while the exterior industrial design embodies an organic form factor to ease the anxiety of the injection experience for patients who are self-injecting for the first time.



DEVICE SPECIFICATIONS

Device Type
Auto Injector

Usage
2-Step Operation
Fixed Dose | Disposable

Primary Container
1mL long syringe with
staked on needle

Activation
Needle Cover

“ The Amber® truly exemplifies how SHL has the in-house expertise and experiences to integrate proven technical solutions with a unique industrial design optimized to enhance the patient experience during medication.

- Nicholas Heaton
Executive Director,
Business Development,
SHL Group

THE CONCEPT

As the transfer of responsibilities and point-of-care continues to shift from hospitals to patient homes, the acceptance towards self-injection devices like auto injectors continues to increase. To ensure a patient-centric approach, device manufacturers are expected to incorporate the growing knowledge base of patient device preferences such as ease-of-use, size and safety features into device designs.

Although SHL has developed a broad range of market proven devices and technologies, there is still an internal drive to constantly invest in R&D, especially in the area of usability. As a result, the initial intention behind this unique device was to not only develop an auto injector that is easy to understand, intuitive to handle, has a non-medical appearance, but also to design a device that is suitable for mass production.

THE CHALLENGE

Finding the balance between various form factors, functions and features when designing an auto injector is a delicate process. Not only do devices have to accommodate certain standardized primary containers, they have to embody market proven mechanisms that are robust enough to meet the injection requirements specified by the pharmaceutical company. Patient-centric designs such as aesthetics, an ergonomic grip and simple activation steps are also crucial for patient compliance. Finally, the design concept has to be optimized for manufacturability to minimize unnecessary costs accrued during mass production.

THE SOLUTION

After years of innovating auto injector mechanisms and having received recognition for several proven platforms on the market, SHL has accumulated the in-house expertise and experiences to introduce proven mechanical solutions like the Pushclick™ technology, a shield-activated 2-step mechanism. This technology was integrated into the Amber® Auto Injector, providing a reliable injection process and safety features such as a permanently hidden needle and audible, visual and tactile feedback.

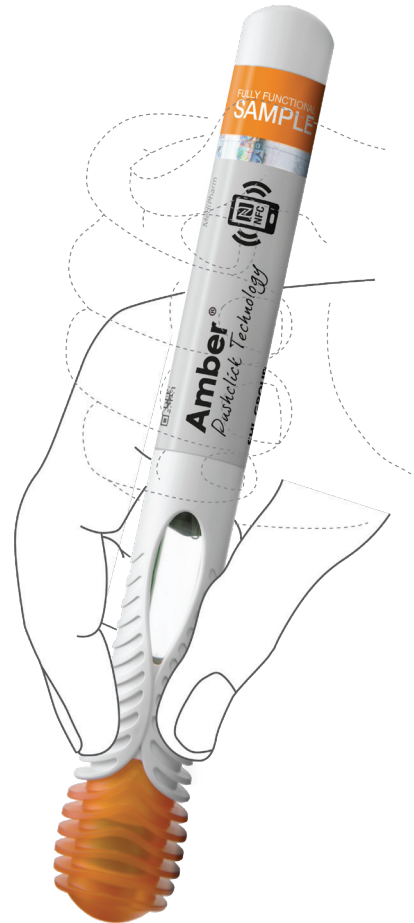
Extensive thought and research were put into the industrial design of the Amber® from the cap to the body and rear tip to reflect learnings from user handling studies and user perspective in general. Surrounding the Amber® Auto Injector's viewing window are two overlapping leaf-like shapes with extrusions that provide a noticeable friction area for an excellent pen grip. The organic shape



of this area helps the device to steer away from the typical medical device look and thus further enhances the acceptance level from patients. For patients that prefer a power grip, the device's rear section is designed with a curvature to fit the thumb whereas the unique pen grip allows for precise control of the device close to the injection site. An enlarged needle shield remover cap with patterned extrusions has also been incorporated into the device to allow for improved grip where the patient can easily pull or twist to remove the cap depending on their preferences.

For an effortless activation suitable for various body/skin types, the front end of the needle cover is designed to incorporate a ring shape to create increased skin contact surface area coupled with a well balanced activation force. In addition, the colored needle cover helps to indicate the status of the device. By pushing down on the needle cover until the green area disappears, the patient can be visually assured that the automatic needle insertion has taken place and that the injection has started. A click will also be heard when the injection starts and ends, overall providing audible, visual and tactile injection status feedback for the patient as required by various regulatory bodies. Following the end of injection, the needle cover locks to avoid potential needlestick injuries while the plunger rod utilizes the same green color to help patients visually differentiate between used and unused devices.

A 2-STEP INTUITIVE AUTO INJECTOR WITH AN ERGONOMIC PATIENT-CENTRIC DESIGN



“ The iconic Amber[®] device is a result of our human factors experience and SHL's desire to add more value into the investments of our customers.

- Jochen Ratjen
Chief Industrial Designer,
SHL Group

Furthermore, taking production into consideration, the cylindrical rear body is optimized for mass production and high speed labeling.

THE RESULTS

The combination of the Amber[®] Auto Injector's non-medical organic appearance and intuitive handling enhances the user's acceptance of the injection device. In addition, with its unique industrial design and SHL's Pushclick[™] technology, the Amber[®] has quickly attracted attention from various biopharmaceutical companies around the world.

KEY PRODUCT FEATURES:

- › Pushclick[™] Technology
- › Ergonomic Industrial Design
- › Simple 2-step Operation
- › Pull or Twist-Off Cap
- › Various Grip Options
- › Audible, visual and tactile feedback
- › One-handed operation

