

## PRODUCT SHOWCASE: APTAR PHARMA'S MDI eDOSE COUNTER



Aptar Pharma, will unveil its latest innovation, the eDose Counter for metered dose inhalers (MDIs), at the RDD Europe scientific conference in Antibes, France, on April 25-28, 2017.

### DOSE COUNTERS IMPROVE ADHERENCE

Asthma and COPD patient adherence is a major health and economic challenge. Several studies report very poor adherence to asthma medication regimens, with measured rates of non-adherence in the range 30-70%.

In the March 2003 US FDA Guidance for Industry, "Integration of Dose-Counting Mechanisms into MDI Drug Products", it is recommended that drug manufacturers integrate a dose-counting system into any new MDI drug products marketed in the US.

"This technology allows for the incorporation of visual MDI priming reminders and feedback on use as well as end-of-product-life warnings."

Patients appreciate dose counters because they are convenient and improve safety by allowing them to identify the number of doses of medication left in their inhalers and to avoid running out unexpectedly.

The global inhalation market has followed the US trend and today multiple MDI drug products with some form of dose-tracking system are marketed outside the US.

### ENHANCED PERFORMANCE

Currently, marketed MDI dose indicators and counters are based on mechanical technology. Although this technology offers great opportunities to design simple and cost-effective devices, it does not always meet the expectations of users, regulators and other stakeholders due to poor legibility of the numbers, its effect on MDI user-handling and pharma performance, and the lack of robustness impacting safety (e.g. miscounting events).

Electronic components offer almost unlimited possibilities to display large, clear and legible counter digits required for a wide range of user age segments and medical conditions. In addition, this technology allows for the incorporation of visual MDI priming reminders and feedback on use as well as end-of-product-life warnings. Thanks to the integration of electronic components, these systems

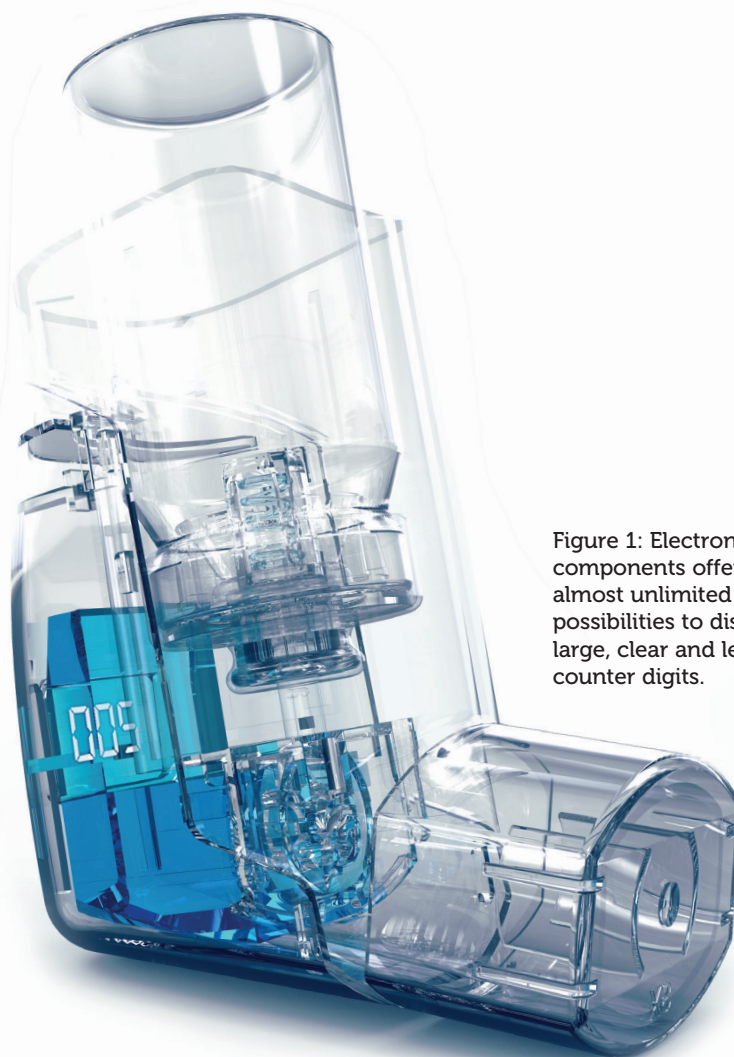


Figure 1: Electronic components offer almost unlimited possibilities to display large, clear and legible counter digits.

not only count doses, but mark a move towards comprehensive connected inhaler solutions.

### INTEGRATED UNIQUE SENSING TECHNOLOGY

MDIs are complex systems that integrate several components such as the metering valve, the canister and the actuator. These components must be carefully designed

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and manufactured to ensure they work together effectively. This is particularly true for the valve and the dose counter. As the world leading supplier of MDI valves, Aptar Pharma's expertise and experience enables a smooth integration of all MDI components, including the dose counter.

Our patented eDose Counter for MDIs is designed to be easy-to-use and reliable, and contributes to patient compliance.

"Our unique sensing technology offers direct detection of the spray which eliminates risks of miscounting. The sensing technology is versatile and compatible with any metering valve design."

Our unique sensing technology offers direct detection of the spray which eliminates risks of miscounting. The sensing technology is versatile and compatible with any metering valve design. In addition, our eDose Counter for MDIs includes inhaler priming and medication reminders-to-use and end-of-product-life warnings (flashing digits) while remaining cost-effective.

For more information on Aptar Pharma's eDose Counter for MDIs, please come and see us at our table top at RDD Europe 2017 conference and/or visit our website: <https://pharma.aptar.com/en-us/dispensing-solutions/edose-counter-mdis.html>

#### ABOUT APTAR PHARMA

Aptar Pharma is part of the AptarGroup, Inc. family of companies, along with Aptar Beauty + Home and Aptar Food + Beverage. The company creates innovative drug delivery systems that meet the evolving needs of bio, healthcare and pharmaceutical companies around the world.

Aptar Pharma provides customers with a wide range of delivery technologies and analytical services backed by decades of proven expertise. AptarGroup is headquartered in Crystal Lake, IL, US, with manufacturing facilities in North America, Europe, Asia and South America.



## 2017/18 EDITORIAL CALENDAR

Publication Month	Issue Topic	Materials Deadline
May 2017	Injectable Drug Delivery: Devices Focus	DEADLINE PASSED
June 2017	Connected Drug Delivery Systems	April 17th
July 2017	Novel Oral Delivery Systems	May 22nd
Sept 2017	Wearable Injectors	July 24th
Oct 2017	Prefilled Syringes	Aug 21st
Nov 2017	Pulmonary & Nasal Drug Delivery	Sept 25th
Jan 2018	Ophthalmic Drug Delivery	Nov 20th
Feb 2018	Prefilled Syringes	Dec 22nd
Mar 2018	Skin Drug Delivery: Dermal, Transdermal Microneedles	Jan 20th
April 2018	Pulmonary & Nasal Drug Delivery	Feb 19th

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