

# Modernizing Field Artillery Maintenance Equipment

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James Brooker, VP of Engineering

**Otis Technology**

Abstract # 20256



# Introduction

- Otis Technology founded in 1985 by Doreen Garrett
  - Revolutionized Breech-to-Muzzle® small arms cleaning in Military and Commercial markets
  - In 2010 Otis established a dedicated engineering center near Syracuse, NY to focus on new product



**OTIS**<sup>™</sup>  
**DEFENSE**



# HISTORY OF OTIS



Doreen invents *The Whole Kit and Caboodle™* after an unsuccessful hunting trip



*The Whole Kit and Caboodle™* transitions to a round soft pack case



Tactical Cleaning System is introduced



Logo is redesigned



Otis Technology is awarded the first of many Defense Supply Center Columbus (DSCC) awards



24,000 sq ft addition to the manufacturing facility, which includes a 16,000 sq ft automated warehouse



Otis introduces the S.O.N.E.® Tool, which would go on to win the 2014 NRA American Rifleman Golden Bulseye Award for Accessory of the Year



Chemical Launch



New logo launch



The Ripcord®, an innovative new one-pass gun cleaning tool is launched

1984

1985

1989

1990

1991

1992

1995

1997

2003

2005

2007

2010

2013

2014

2016

PRESENT



Otis Products, Inc. is founded



Doreen attends her first SHOT Show at age 17. She attended to gauge interest in her product, but came home with her first order and had to employ her high school friends to deliver the order. Product is made, assembled and shipped at the kitchen table of her parents' house



Operations are moved from the family house to a renovated horse barn in Boonville, NY



Otis Elite® Cleaning System is introduced



Otis Technology relocates operations to its current location in Lyons Falls, NY



43,000 sq ft state-of-the-art manufacturing facility is opened



Opened 22,000 sq ft state-of-the-art research & development facility in Phoenix, NY



# Cleaning Innovation

- Current State:



- Challenges:

- Large number of personnel to operate
- Time to assemble / disassemble rods
- Poor ergonomics

# Cleaning Innovation

- Project Goals
  - Reduce time & personnel required
  - Effective
  - Compact
  - Control cost



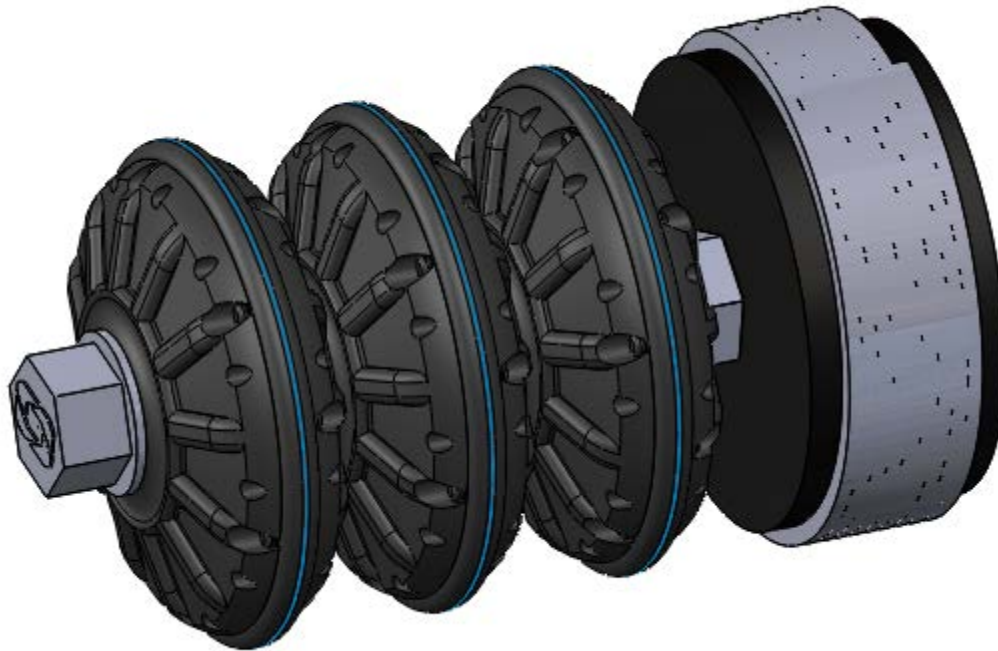
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# Cleaning Innovation

- New Technologies
  - Designed to reduce personnel and time required
    - Power-assisted devices
      - Air Powered
      - Electric
    - Manual
      - Rod
      - Cable

# Otis Large Bore Cleaning System Highlights

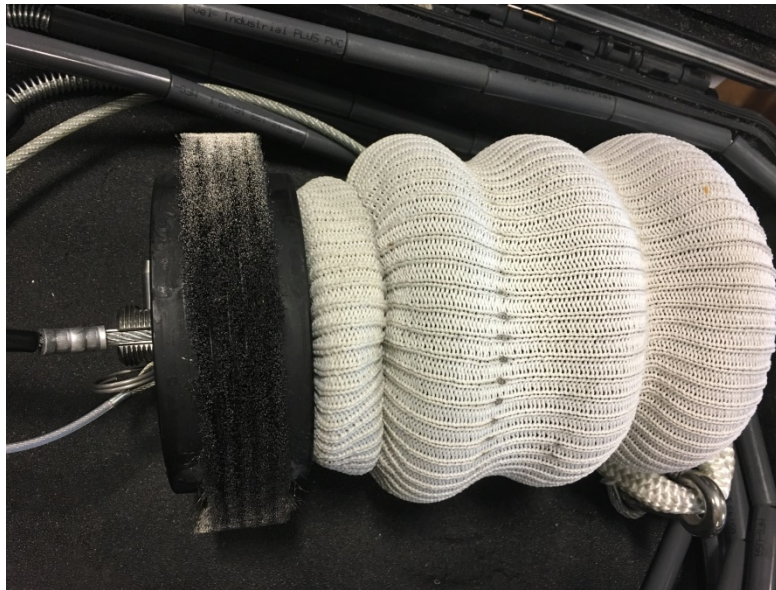
- Control swab diameter
- Cable rigidity while feeding cable





# Otis Large Bore Cleaning System Highlights

- Control swab diameter
  - Expandable swab mandrel enables finite adjustment





# Otis Large Bore Cleaning System Highlights

- Cable rigidity while feeding cable
  - Spring-loaded sleeves bias cable straight to enable the cable to be pushed down the tube to attach brush/swab section



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# Otis Large Bore Cleaning System Highlights

- Feed cable from muzzle until loop extends beyond breech
- Attach swab with or without brush to cable
- Pull cable until swab exits muzzle





# Otis Large Bore Cleaning System

- Conclusion
  - Requires 2-4 people
  - Cleans with fewer passes than current rod system
  - Cost comparable with other manual systems
  - Less storage space required
- Future Development
  - Expand number of compatible weapon systems
  - Expand scope to include maintenance items



# Contact Information

James Brooker, VP of Engineering

**Otis Technology**

[JBrooker@Otistec.com](mailto:JBrooker@Otistec.com)

315-348-4300

