Improving Runway Safety

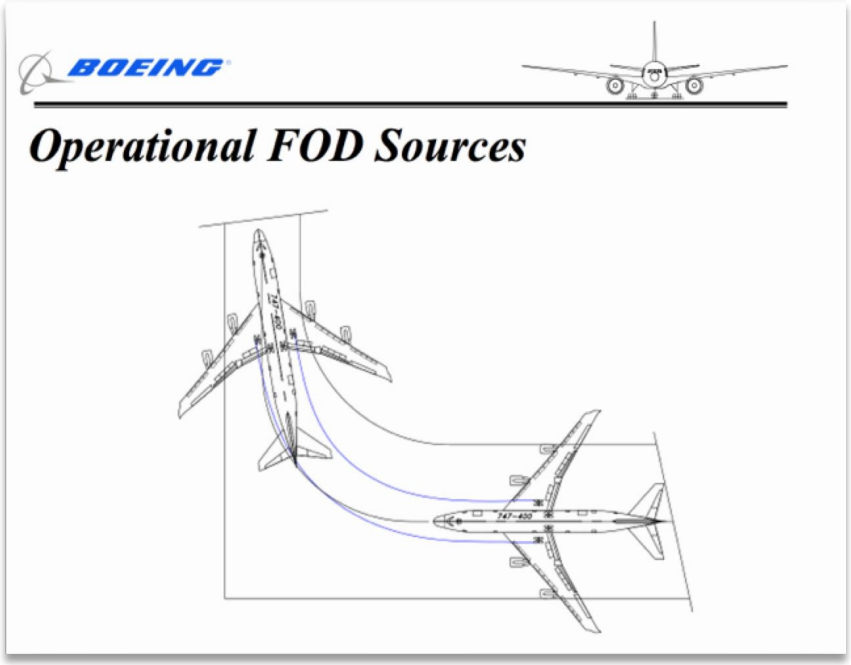
FOD PREVENTION SOLUTION

FOD Barrier ™

PAT: WWW.AIRVIRX.COM/PATENTS

FOD Sources

"The Biggest Movement Comes From Jet Blast"



Boeing's FOD presentation explains the jet blast FOD movement

Most FOD starts in a non-threatening position. The danger is that once debris is in place, it is free to move around. the biggest movement comes from jet blast – Insight FOD Report

Engine Suction Power

Civilian / Combat Airplanes

Once FOD penetrate the sterile area, jet engines can easily lift it from the ground by the engine suction power.

Enormous Damage

Civilian / Combat Airplanes

Wheels Damage
and Replacements

Engines Damage

Fuselage Hit

AIRVRIX

FOD Barrier

FOD Barrier ™ Main Features

Designed for Airports

- Collapsible
- Comply with Aviation Standards
- All Weather Resistant
- Integrated Drainage
- Jet - Blast resistance
- 300 mm height

Installations

Servicing Both Commercial and Combat Airplanes

WWW.AIRVRIX.COM

FOD BARRIER™

INTRODUCING THE FOD Barrier™ **THE ONLY SOLUTION** THATS PROVEN TO **PREVENT 80%** OF FOD BEFORE REACHING THE RUNWAY*

The FOD Barrier™ significantly decreases the amount of foreign objects that enter the runway. The blocking mechanism is placed onto the runway shoulders creating a barrier between the paved track and the unpaved areas of the runway.

80%
Decrease in the number of FOD damages

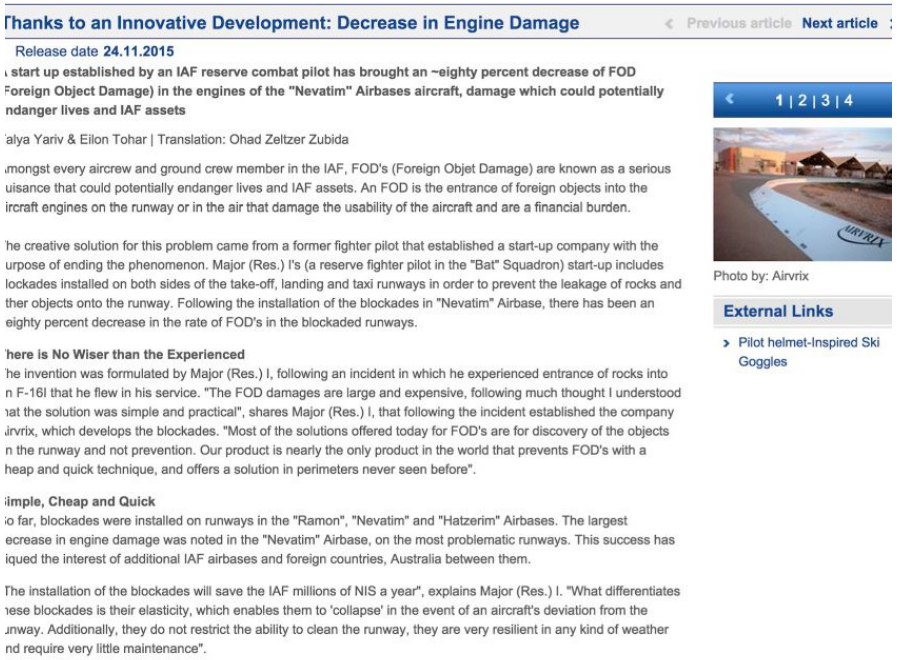
23%
Increase in aircraft availability

IX.COM

Collapsible barrier

The barrier prevents FODs entering the runway from jet blasts, gusts of wind and drainage.

IAF Success



Thanks to an Innovative Development: Decrease in Engine Damage

Previous article | Next article

Release date **24.11.2015**

a start up established by an IAF reserve combat pilot has brought an ~eighty percent decrease of FOD Foreign Object Damage) in the engines of the "Nevatim" Airbases aircraft, damage which could potentially ndanger lives and IAF assets

alya Yariv & Eilon Tohar | Translation: Ohad Zeltzer Zubida

mongst every aircrew and ground crew member in the IAF, FOD's (Foreign Objet Damage) are known as a serious uisance that could potentially endanger lives and IAF assets. An FOD is the entrance of foreign objects into the ircraft engines on the runway or in the air that damage the usability of the aircraft and are a financial burden.

he creative solution for this problem came from a former fighter pilot that established a start-up company with the urpose of ending the phenomenon. Major (Res.) I's (a reserve fighter pilot in the "Bat" Squadron) start-up includes lockades installed on both sides of the take-off, landing and taxi runways in order to prevent the leakage of rocks and ther objects onto the runway. Following the installation of the blockades in "Nevatim" Airbase, there has been an eighty percent decrease in the rate of FOD's in the blockaded runways.

here is No Wiser than the Experienced

he invention was formulated by Major (Res.) I, following an incident in which he experienced entrance of rocks into n F-16I that he flew in his service. "The FOD damages are large and expensive, following much thought I understood hat the solution was simple and practical", shares Major (Res.) I, that following the incident established the company irvrix, which develops the blockades. "Most of the solutions offered today for FOD's are for discovery of the objects n the runway and not prevention. Our product is nearly the only product in the world that prevents FOD's with a heap and quick technique, and offers a solution in perimeters never seen before".

imple, Cheap and Quick

o far, blockades were installed on runways in the "Ramon", "Nevatim" and "Hatzerim" Airbases. The largest ecrease in engine damage was noted in the "Nevatim" Airbase, on the most problematic runways. This success has iqued the interest of additional IAF airbases and foreign countries, Australia between them.

The installation of the blockades will save the IAF millions of NIS a year", explains Major (Res.) I. "What differentiates ese blockades is their elasticity, which enables them to 'collapse' in the event of an aircraft's deviation from the unway. Additionally, they do not restrict the ability to clean the runway, they are very resilient in any kind of weather nd require very little maintenance".

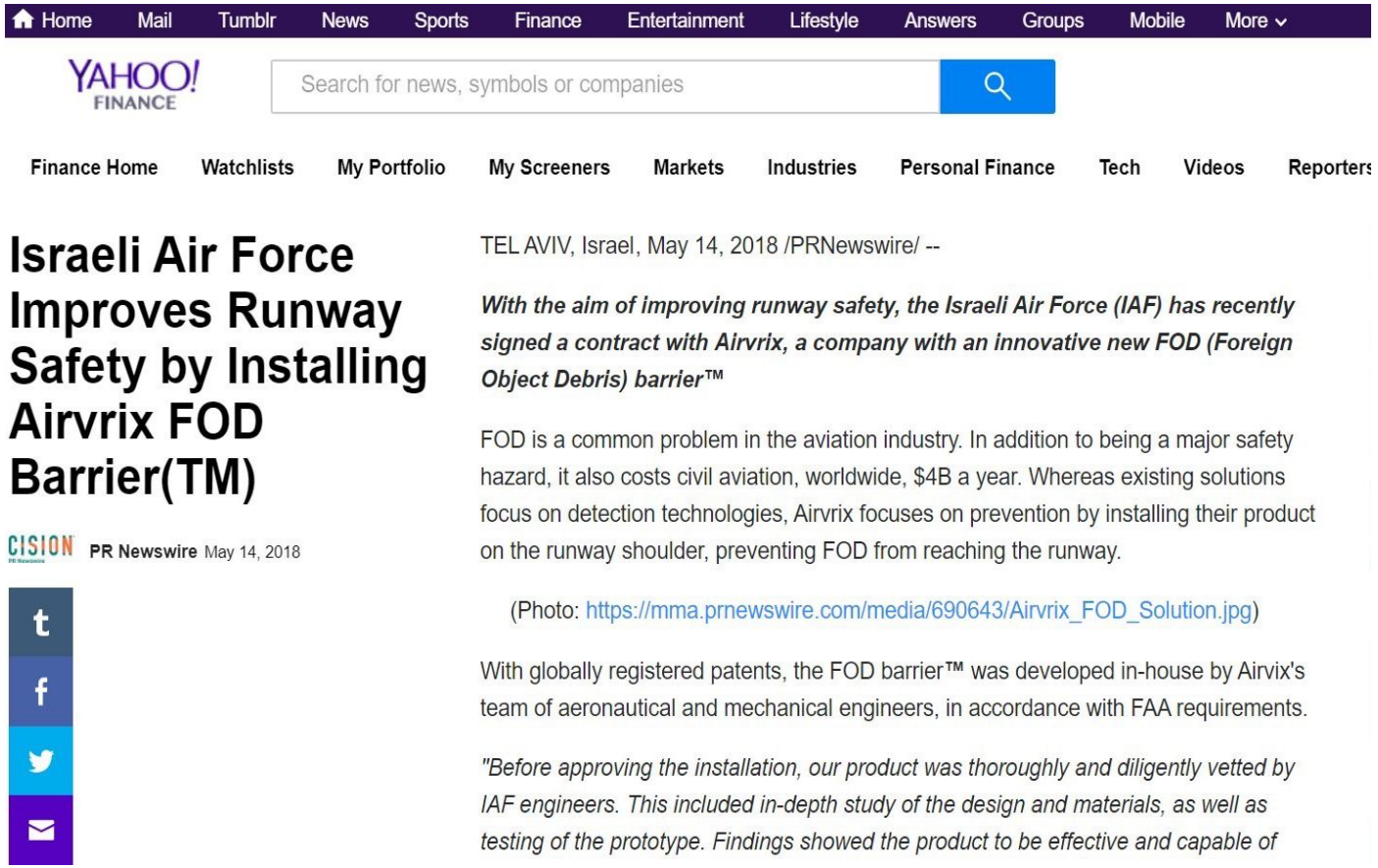
1 | 2 | 3 | 4

Photo by: Airvrix

External Links

› Pilot helmet-Inspired Ski Goggles

Israeli Air Force Official Website



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Israeli Air Force Improves Runway Safety by Installing Airvrix FOD Barrier(TM)

CISION **PR Newswire** May 14, 2018

TEL AVIV, Israel, May 14, 2018 /PRNewswire/ --

With the aim of improving runway safety, the Israeli Air Force (IAF) has recently signed a contract with Airvrix, a company with an innovative new FOD (Foreign Object Debris) barrier™

FOD is a common problem in the aviation industry. In addition to being a major safety hazard, it also costs civil aviation, worldwide, $4B a year. Whereas existing solutions focus on detection technologies, Airvrix focuses on prevention by installing their product on the runway shoulder, preventing FOD from reaching the runway.

(Photo: https://mma.prnewswire.com/media/690643/Airvrix_FOD_Solution.jpg)

With globally registered patents, the FOD barrier™ was developed in-house by Airvix's team of aeronautical and mechanical engineers, in accordance with FAA requirements.

"Before approving the installation, our product was thoroughly and diligently vetted by IAF engineers. This included in-depth study of the design and materials, as well as testing of the prototype. Findings showed the product to be effective and capable of

Yahoo Finance

Worldwide Patents

The World's Only Collapsible Barrier

US009284067B2

(12) **United States Patent**
Shapira

(10) **Patent No.: US 9,284,067 B2**
(45) **Date of Patent: Mar. 15, 2016**

(54) **FOREIGN OBJECT DEBRIS BARRIER FOR RUNWAYS**

(76) Inventor: **Ivry Shapira**, Oranit (IL)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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B64F 1/36 (2006.01)
B64F 1/00 (2006.01)

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CPC ***B64F 1/36*** (2013.01); ***B64F 1/00*** (2013.01)

(58) **Field of Classification Search**
USPC ..... 404/10; 244/114 R
IPC B64F 1/36; E01F 9/018,15/0423
See application file for complete search history.

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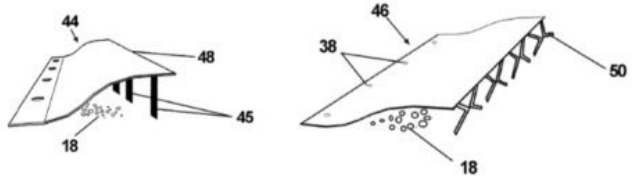
(74) *Attorney, Agent, or Firm* — Pearl Cohen Zedek Latzer Baratz LLP

(57) **ABSTRACT**

A collapsible runway side barrier for preventing foreign object debris (FOD) from entering a runway and taxiway is disclosed. The barrier may have an aerodynamic profile, one side of the bather profile may be convex and the other side of the barrier profile may be concave. The side barrier may further have ground attachment elements and may be constructed to collapse if the landing wheels of an aircraft impact the barrier.

6 Claims, 6 Drawing Sheets



The United States of America

The Director of the United States Patent and Trademark Office

Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America, and if the invention is a process, of the right to exclude others from using, offering for sale or selling throughout the United States of America, or importing into the United States of America, products made by that process, for the term set forth in 35 U.S.C. 154(a)(2) or (c)(1), subject to the payment of maintenance fees as provided by 35 U.S.C. 41(b). See the Maintenance Fee Notice on the inside of the cover.

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Filing Date	:NA

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(57) Abstract :
The invention relates to the safety of airport runways. The invention provides a side barrier preventing foreign object debris (FOD) from entering a runway and taxiway and endangering aircraft. The barrier having ground attachment means and being constructed to collapse if the landing wheels of an aircraft impact the barrier and thus allow the aircraft to safely continue landing/takeoff/taxiing.

Airport Analysis

Analysis of Airport Vulnerabilities / Sorted By Priorities

Trapped Debris

One Month After Installation

Trapped Debris


32-07

Sheremetyevo International Airport
Moscow

Sheremetyevo International Airport - Moscow


Typhoon

Tucson Arizona International Airport USA


AZ
AF 89 002
AZ
AF 90 708
AZ
AF 89 135
AZ
AF 89 012


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