

AFWERX Air-to-Air Refueling Mechanism (A2RM)

A New Aerial Refueling Standard
Vortex Flow Technology

Solution ID: 15085



AFWERX Air-to-Air Refueling Mechanism (A2RM)

System Agnostic fuel transfer hardware technology for both Boom and Probe equipped receivers

CHALLENGE

- FASTER, MORE EFFICIENT REFUELING
- MAINTAIN OPS SAFETY
- MAINTAIN OPS RELIABILITY & CONTROL
- SIMPLE RETROFIT TO LEGACY SYSTEMS
- FAST DEPLOYMENT
- LOW COST AND MINIMAL MAINTENANCE

HOW ?

- **NOVEL TECHNOLOGY**
- THOROUGHLY PROVEN & RELIABLE
- CONOPS COMPATIBLE
- PLATFORM AGNOSTIC
- DETAILED DATA TRACKING
- EW / CYBER IMMUNE

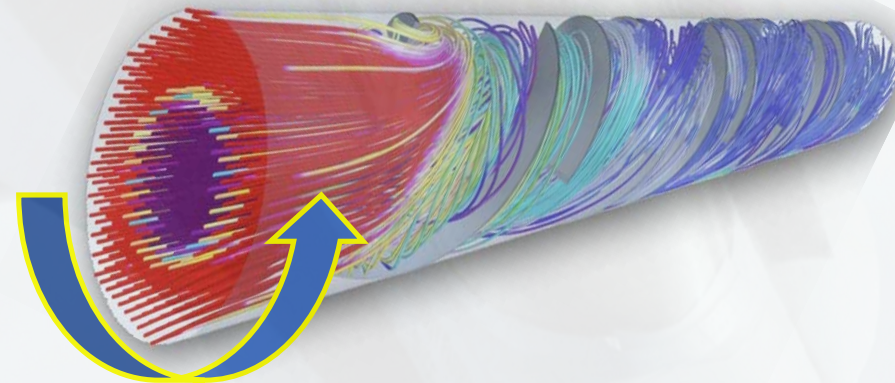
VORTEX TECHNICAL BREAKTHROUGH



PROBLEM

- *Laminar flow creates pipe wall and internal flowing drag*
- *Higher flow demands disproportionate power increases*
- *And/or larger pipes*
- Higher flow increases pipe pressures and operating risks

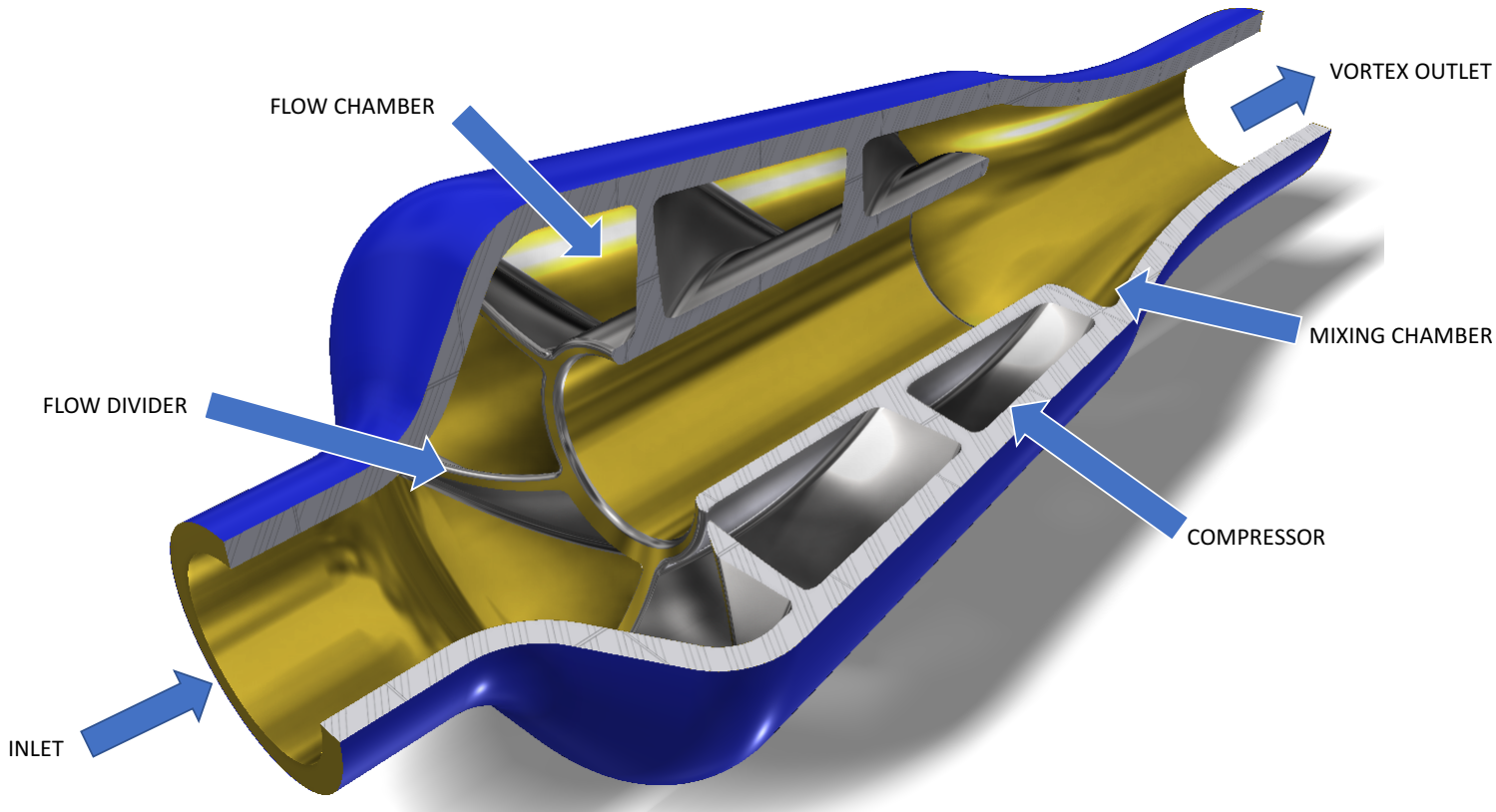
UNLIMITED FLOW PATHS OF LEAST RESISTANCE



SOLUTION

- VORTEX ROTATION REDUCES FRICTIONAL DRAG
- FULL PIPE VOLUMETRIC CAPACITY UTILISED
- HIGHER FLOW ENABLED IN EXISTING LINES
- NO PIPE-WALL PRESSURE INCREASE

VORTEX AMPLIFIER CROSS-SECTION



- ***No moving parts***
- ***No energy required***
- ***No maintenance***
- ***Installs easily in line***
- ***Rapid, cost-effective retrofit***

VORTEX FLOW ADVANTAGE

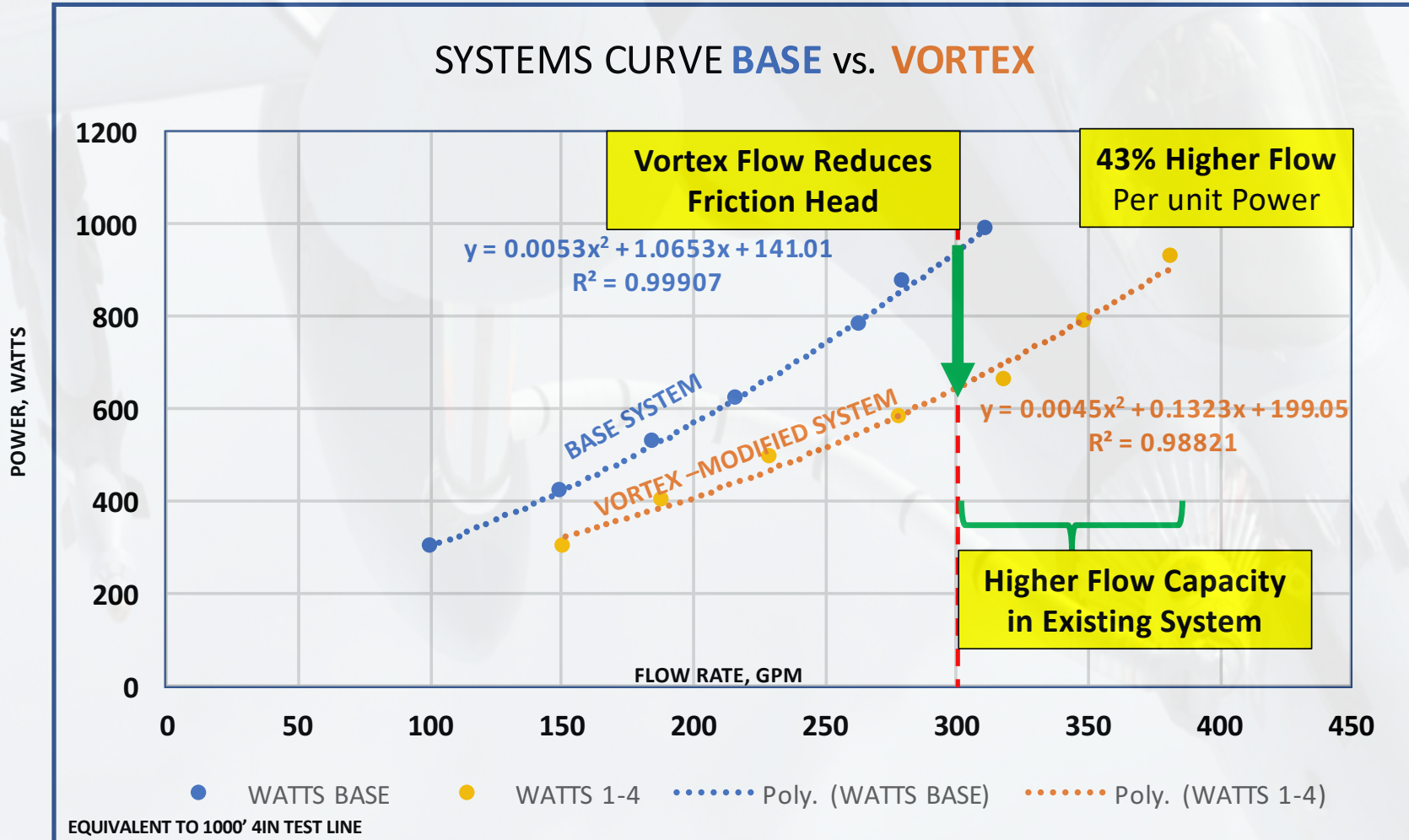
BASE FLOW, 4" LINE



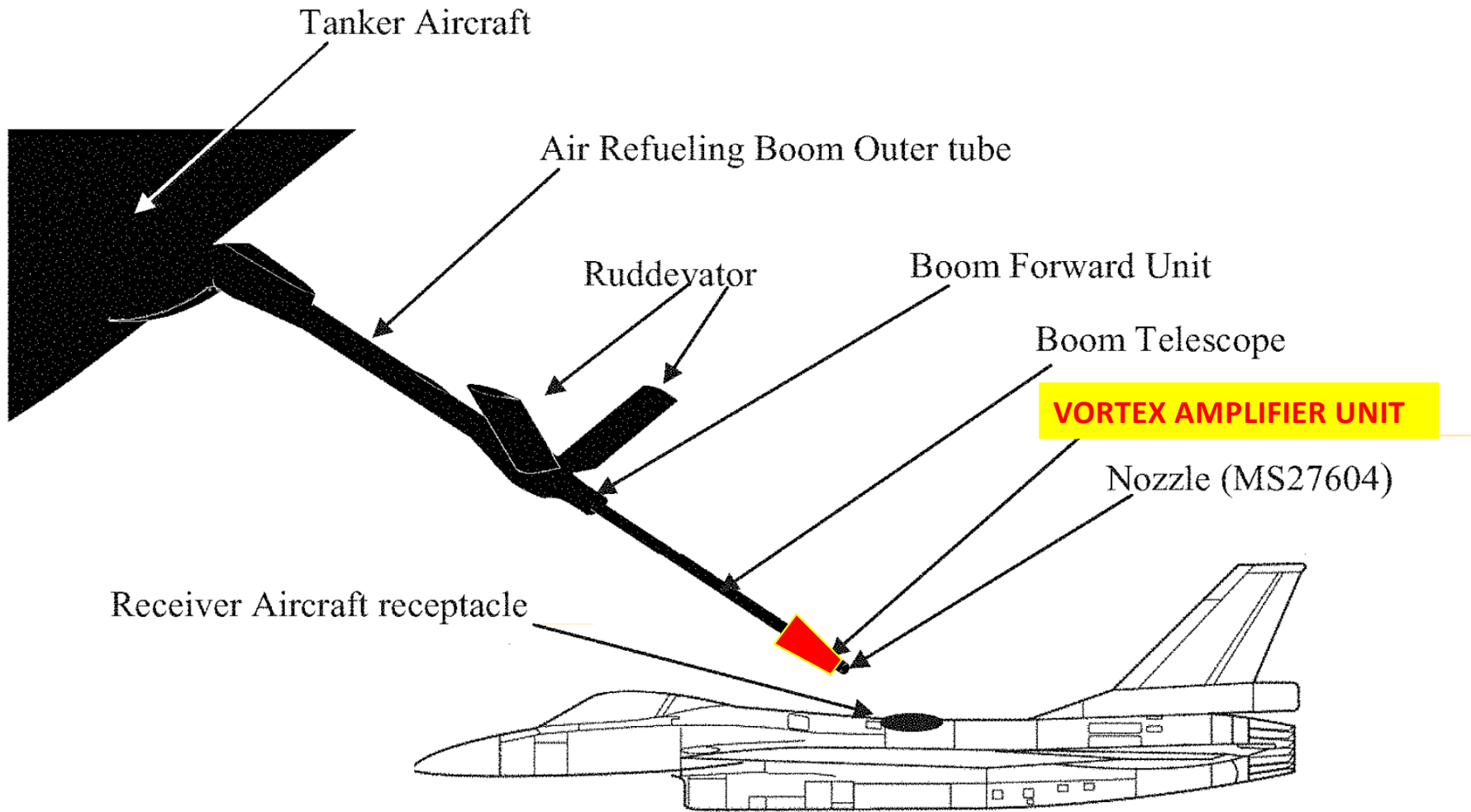
VORTEX FLOW, 4" LINE



VORTEX - SYSTEM CURVE TEST DATA

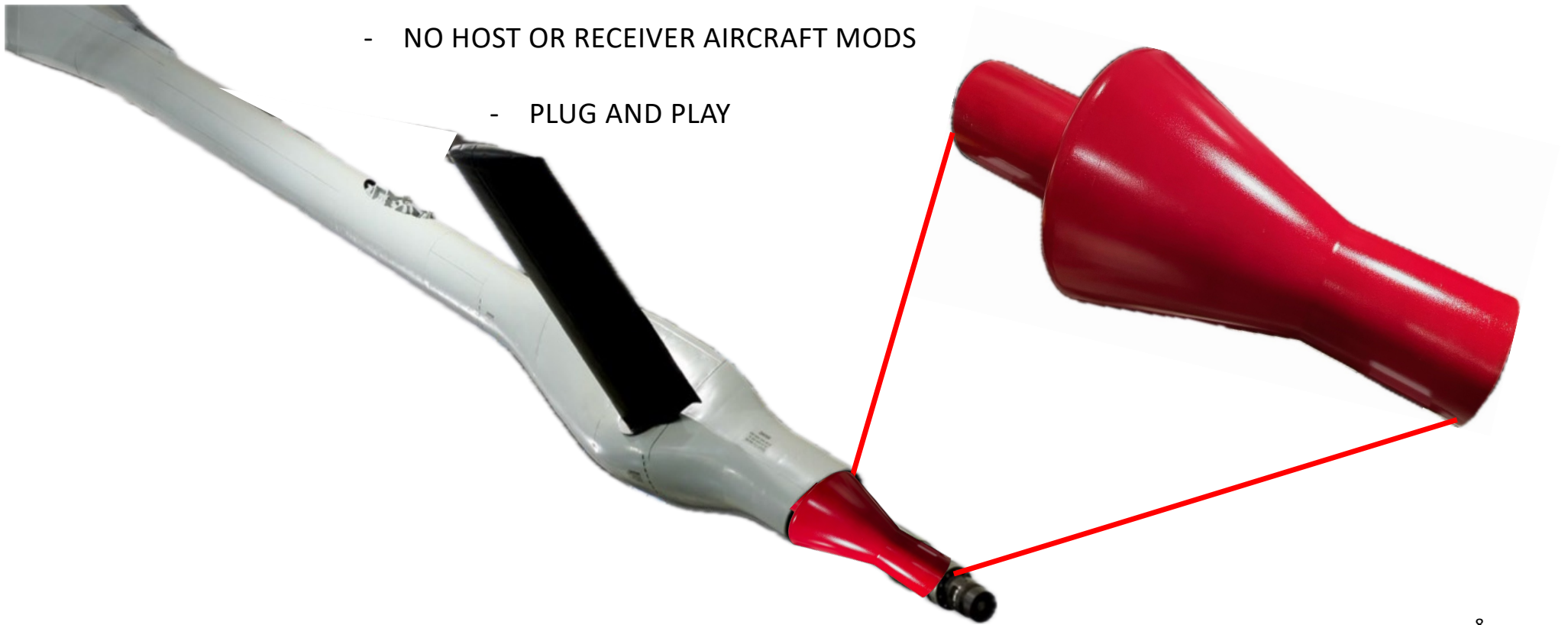


VORTEX AMPLIFIER FOR BOOM SYSTEMS

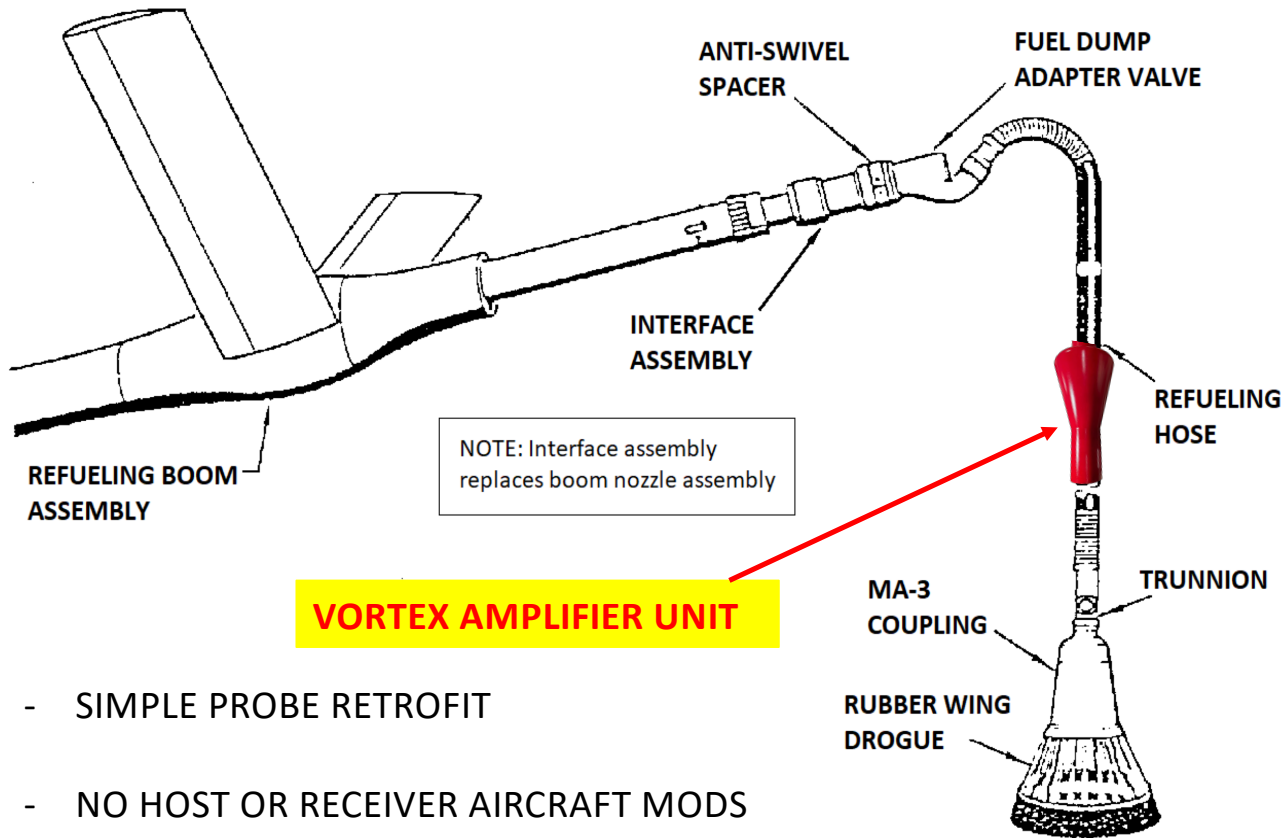


VORTEX AMPLIFIER FOR BOOM - DETAIL

- SIMPLE BOOM RETROFIT
- FULLY UARRSI COMPATIBLE
- NO HOST OR RECEIVER AIRCRAFT MODS
- PLUG AND PLAY



VORTEX AMPLIFIER FOR BOOM-DROGUE - DETAIL



- SIMPLE PROBE RETROFIT
- NO HOST OR RECEIVER AIRCRAFT MODS
- PLUG AND PLAY



VORTEX FULLY MEETS THE A2RM REFUELING CHALLENGE

- FASTER, MORE EFFICIENT REFUELING
- MAINTAIN OPS SAFETY
- MAINTAIN OPS RELIABILITY & CONTROL
- SIMPLE RETROFIT TO LEGACY SYSTEMS
- FAST DEPLOYMENT
- LOW COST
- MINIMAL MAINTENANCE



HOW ?

- **NOVEL VORTEX TECHNOLOGY**
- **THE NEW FLUID FLOW STANDARD**
- PROVEN & RELIABLE
- **PROVEN IN AG, OIL & GAS, WATER**
- CONOPS COMPATIBLE
- **COMPLEMENTS CURRENT PROCESSES**
- PLATFORM AGNOSTIC
- **FIT AND FORGET FOR ANY PLATFORM**
- DETAILED DATA TRACKING
- **DATA GATHERING SYSTEMS COMPATIBLE**
- **EW / CYBER IMMUNE**



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Thank you!

Questions?

gsvortex.com/mil

