



VORTEX INDUCED VIBRATION SUPPRESSION DEVICES

AIMS International, LLC is a world leader in offshore vortex induced vibration (VIV) suppression, engineered fiberglass structural systems, and platform dock fendering systems. Since 1982, AIMS has been the leader in supplying, engineering, and fabricating fiberglass grating and structural systems. AIMS supplies a full line of platforms, dock fenders, fiberglass signs, vortex breakers, VIV suppression products, blast panels, and mudmats. In addition, we are a leading supplier of fiberglass handrail and stair systems, as well as and other specialty fiberglass products.

AIMS prides itself on its ability to take the customer project from the initial design and engineering phase to the implementation and installation of the finished product.

In an effort to continually improve services, AIMS actively seeks expansion opportunities within the United States and in overseas markets. In 1993, we purchased Teledyne Monarch Rubber's platform fender product line, moved the product tooling to Houston, and began manufacturing and marketing a platform fender product line, i.e., energy cells, rubstrips, and barge bumpers. In 2017, AIMS began fabricating aluminum structures and handrails.

To market our products and services around the world, AIMS forms partnerships with local companies in various countries, including Malaysia, Australia, Korea, Singapore, India, United Arab Emirates, Nigeria, Brazil, and Mexico. Everywhere there is off-shore oil and gas, you will find AIMS International.



STRAKE DESIGN SPECIFICATIONS

AIMS has hydrodynamic test data on the following VIV Suppression Strakes:

- Fin Period of 15D, Fin Heights of 0.15D, 0.2D, and 0.25D
- Fin Period of 5D, Fin Height of 0.15D

VIV Suppression Efficiency

Stake Fin Period x Fin Height	VIV Suppression Efficiency	Cd. (avg.)
15D x 0.25D	95%	1.55
15D x 0.20D	95%	1.45
15D x 0.15D	93%	1.38
5D x 0.15D	80%	1.20

Attachment Hardware

Inconel 625 Banding (1.25" wide, 0.03" thick, assembled to length) is provided. Other available types include HCL Nylon Banding, Roblon Quick Strap, Roblon Multi Strap, AL6XN, and Super Duplex (Xeron).

CP and/or Thermal Issues

Upon request, AIMS will provide annular spacers, which are assembled into the strake at the shop to provide an annulus from 3/8" to 1" (or greater, if required).

Compliant Banding

AIMS can provide its patented Compliant Banding System. Compliant banding is needed when the diameter of the tubular varies after installation of the strakes.

Installation Time

Installation times are as low as 45 seconds per part (proven during offshore installations).



DUAL-FIN FLOW SPLITTER (ADFS OR FAIRING) DESIGN SPECIFICATIONS

Material

POLYETHYLENE SHELL (Other materials can be used upon request.)

ADFS Design Configuration (Fairing)

AIMS' ADFS has been developed and patented in the following shape configurations (based upon D, where D is the outside diameter of the ADFS body:

Aspect Ratio	Taper vs. Non-Taper	Minimum VIV Suppression Efficiency	Average Drag Coefficient
2.0D	Taper	95% or better	0.5
	Non-Taper	95% or better	0.55
1.75D	Taper	95% or better	0.45
	Non-Taper	95% or better	0.55
1.625D	Taper	95% or better	0.75
1.5D	Taper	95% or better	0.85

Aspect Ratio ($AR = L/D$) Taper



Attachment System

AIMS has developed and patented a very simple barbed male-female connection system. Using these male-female connectors, once latched, an ADFS cannot be removed unintentionally unless a separating force in excess of 1,000 lbs. is applied.

Thrust Collars

Our thrust collars are manufactured from either an olefin-based polyethylene or a base polyurethane and are held in place with banding similar to what is used for strakes. If large loads are needed to be supported, we recommend Roblon multi straps.

Installation Times

Using AIMS' patented, barbed, male-female connectors, the installation time for smaller OD ADFS can be completed by a crew in just a matter of seconds (10-30 seconds maximum).



ROV INSTALLABLE STRAKES

AIMS has developed and patented both ROV-friendly Vortex Strakes and ADFS for post in riser/pipeline installation applications. AIMS can also provide the ROV tooling required to complete the installation. This tooling can either be rented or purchased.

Installing the AIMS' ROV-friendly ADFS is a much simpler task than installing our ROV-friendly Strakes. With that said, our strakes and fairings are, by far, the fastest installable, post-installed strakes on the market. Once at the installation location on the pipe, it takes less than one minute to install the strakes.

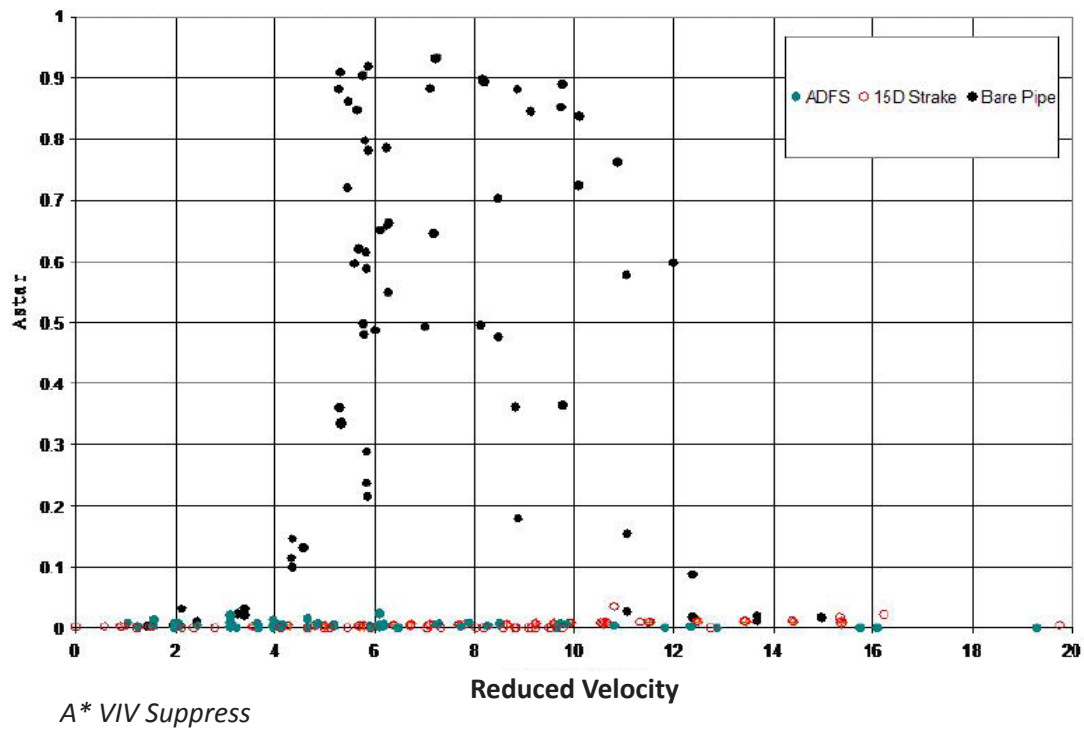
ROV Requirements

Both VIV devices require a work-class ROV with existing tooling to install the strakes and ADFS.

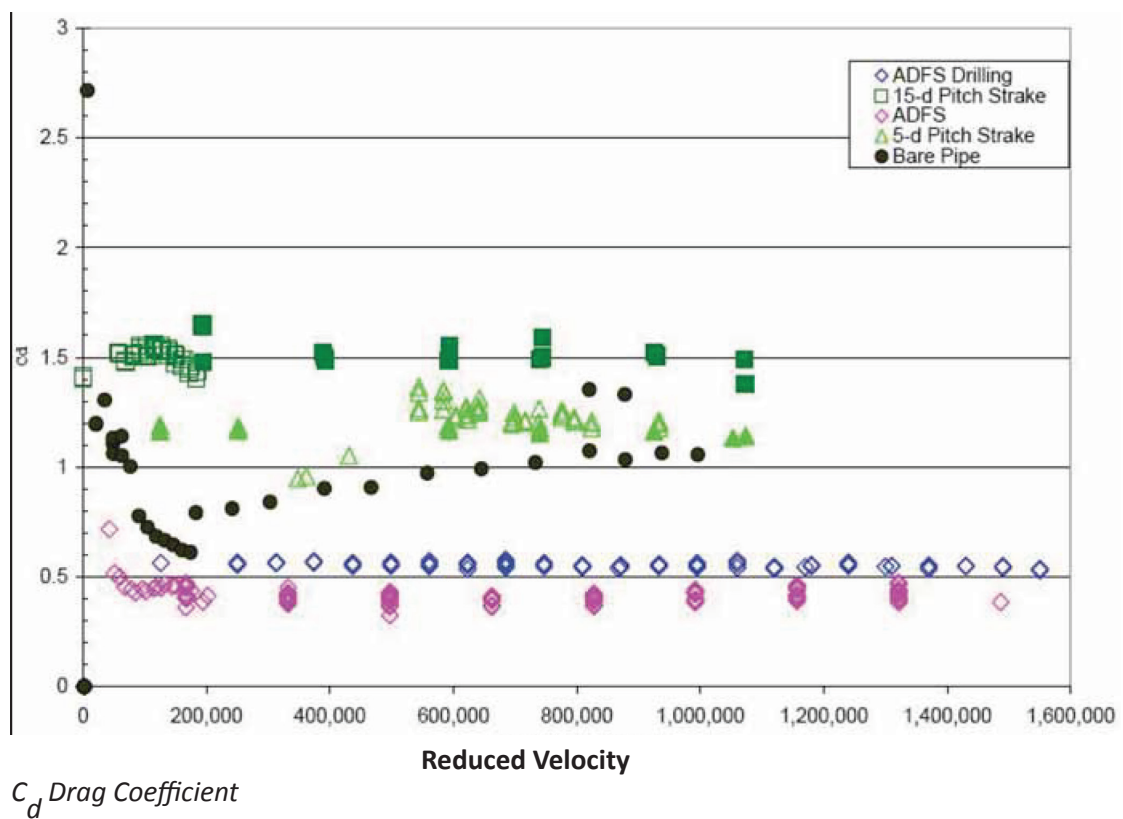


STRAKE AND ADFS QUALIFICATION TESTING

A^* vs. Reduced Velocity show the A^* and the C_d (Drag Coefficient) of both the ADFS and the AIMS Strakes.



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MARKET APPLICATIONS

AIMS' products and services have been successfully used in various applications in many different industries. Wherever there is value placed on safety, eliminating maintenance expenditures, ease of installation, and long service life, AIMS should be consulted. The following are industries and locations where our products are found:

OFFSHORE DRILLING & PRODUCTION FACILITIES

wellhead access platforms around wells & vessels, stair towers, grating systems, electrical cable trays, mudmats

PETROCHEMICAL PLANTS & REFINERIES

walkways & platforms around vessels and equipment, stair towers, trench grating

INDUSTRIAL & MUNICIPAL WASTEWATER FACILITIES

walkways & catwalks in and around clarifiers, settling basins, and platforms used as storage areas

PULP & PAPER MILLS

walkways & catwalks in and around their waste water plants, including bleaching and washing areas

METAL PLATING & MINING FACILITIES

platforms in processing areas, catwalks, stair towers, and storage areas

COMMERCIAL WAREHOUSES

grating systems for additional storage areas and mezzanines

BEVERAGE & FOOD PROCESSING PLANTS

grating systems & platforms in and around wash-down areas, access platforms, and storage areas

HI-TECH COMPUTER INDUSTRY FACILITIES

grating systems in clean rooms and etching areas

WATER PARK & RECREATIONAL FACILITIES

trench grating in and around pools, structural systems for flowing streams

COOLING TOWER INDUSTRY

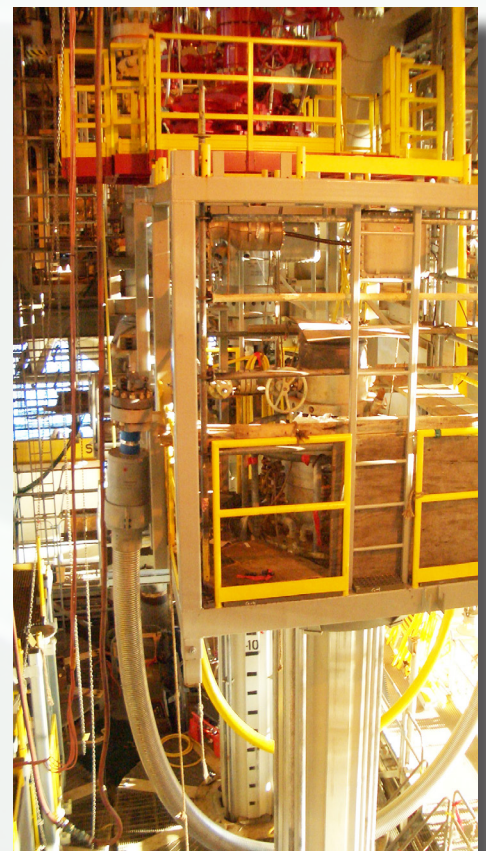
access walkways & towers, de-misters

FEDERAL & STATE PARKS

bridges & erosion control

Valuable features of AIMS' products for these and other industries include:

- Excellent corrosion resistance and elimination of maintenance
- Lightweight and ease of installation
- High strength-to-weight ratio
- Excellent non-skid characteristics, safety, and ergonomics
- Fire resistance
- Electrical and thermal non-conductivity
- Durability and long service life
- Great return on investment



AIMS International, LLC

... dedicated to customer service and support

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