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Commercial Jet Fuel Wing Stands

SUMMARY

A client required new fuel wing stands for their long-range commercial jets. They selected Spika to design and build work platforms with tremendous height adjustability in a minimized footprint.

Spika's client is a leader in commercial aviation. Their new long-range wide-body airliner, with a planned introduction in 2025, will be the world's largest and most efficient twin-engine jet.

In 2018, the client issued a design/build RFP for Fuel Wing Stands to be used during the process of refueling and fuel operation testing of the new aircraft and its predecessor.

When new aircraft are built, they go through extensive preparation and testing of the in-wing fuel tanks before they can be commissioned for flight. The height of the jet's fueling inlets, as well as the difficulty of moving the client's existing fueling stands, rendered their current stands obsolete.

The project's requirements included:

- A minimized total footprint
- Fast and simple height adjustability
- Hydraulic or pneumatic actuation
- Class I Division 1 compliance (explosion-proof)
- A mounted swivel arm to support and position the hose
- The ability to support three personnel during operation
- The ability to operate in an outdoor, marine environment
- The ability to be towed by a tug or transported via forklift.

Spika was the successful winner of this competition based on both price and the technical solution.

Following contract award, Spika personnel visited the client's facility and met with the fueling operators. They identified problems with the existing fueling stands and well as desired improvements to the new stands. All of their requirements and operational needs were incorporated into the new custom design.

Spika constructed the platform of aluminum with stainless steel hardware, suitable for the outdoor environment. They utilized an air-powered, synchronous hydraulic actuation system to achieve tremendous height adjustability in a minimized footprint. Large, semi-pneumatic casters supported easy towing over all types of terrain found on the flightline. The work platform included additional equipment to ensure worker efficiency, including toolboxes and hose storage systems.

After the delivery of the first set of systems, the client discovered that damage had occurred during shipment. They were up against an urgent timeline to use the stands but were uncomfortable using them in the current condition. Spika worked with their team to re-run the engineering analysis with the damage represented; the stands were proven to still be safe, and the client was able to use the equipment and maintain schedule. Shortly thereafter, a team from Spika traveled to the site and repaired the equipment to the original condition.

After the client used the first two units, they requested modifications for future stands. Spika incorporated the changes and delivered another set of platforms for the project.