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Highly Adjustable Work Platform for Aircraft Manufacturing

ADVANCED INTEGRATION TECHNOLOGIES | ALBANY ENGINEERED COMPOSITES

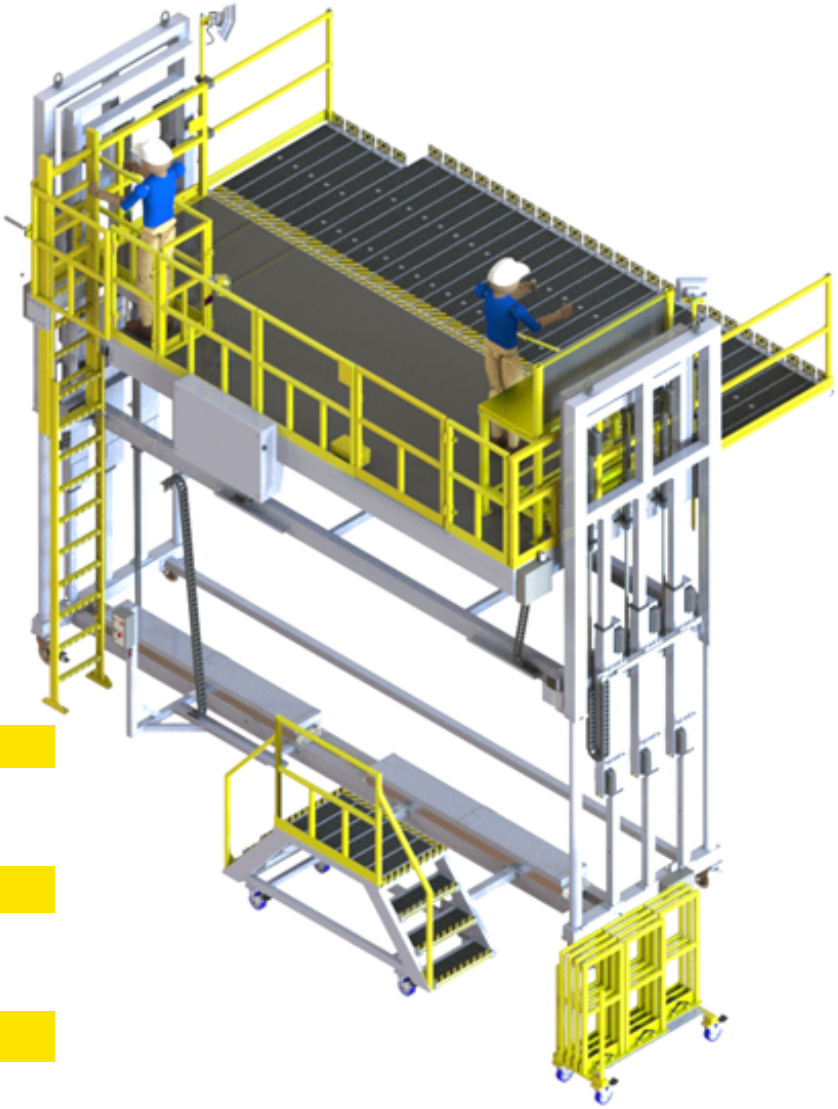
SUMMARY

Spika designed and manufactured a custom work platform to access a wing box of a fixed-wing aircraft. The design included 10' of height adjustability, 4' of cantilever, over 18' length of workspace, as well as integration into the client's safety and control system.

Advanced Integration Technologies (AIT) is a U.S.-based tooling and integration company with offices across the U.S. and Europe. They work across the auto, aviation, and space sectors, and are strongest in aviation tooling and assembly integration. Spika has a long-standing partnership with AIT for the delivery of specialized work platforms to support their projects.

Albany Engineered Composites is a leader in carbon fiber component builds. They provide carbon fiber components for all of the major aviation OEMs.

AIT and Albany faced a challenging work platform application. They had a unique requirement for accessing a wing box of a fixed-wing aircraft. They needed to lay composite material onto the frame to create the wing, and current options for access were not viable, as the wing was quite large and complex, and the platform system needed to be a little wider than the wing box, approximately 18' long. Existing solutions required too much handling and repositioning time to access all required areas.



The platform also needed to elevate from 3’ to 13’. With this range they could get from ground level to the top of the wing box while in the vertical position. Safety was a concern for a system with this height range. They needed the ability to control the height from both the ground and on top of the system. The ground level needed to have override capabilities in case something went wrong on top of the system. The large system needed to have an escape ladder in case of emergency instead of providing access only at ground level.

Other safety challenges included keeping personnel safe and away from the wing box when the stand traveled up or down and preventing the wing box from being rotated any time the stand was raised.

AIT and Albany worked directly with the Spika design team to iteratively evaluate and review the concept until all needs were met. The final product incorporated:

- 18 synchronized actuators to achieve 10’ of height adjustability. A unique configuration of the actuators accomplished double the actuation speed provided by default.
- 48” of cantilevered overreach, provided via independently adjustable 6” wide slider sections that securely locked in place using pneumatics.
- Full fall protection even when not all sliders were extended.
- A safety and control system that integrated into the client’s placement machine.
- An emergency exit at any height.
- On-deck electric and data supply, lighting, and a work bench and tool storage.