

Flying High with Better Wing Test Modeling



Problem

A major U.S. aircraft manufacturer wanted to reduce its overhead expenses for testing wings during design experiments

Solution

Alacer invented a new way to model wing quality that reduced the number of actual wings destroyed during tests

Results

Regular 1% yield in incremental improvements, with \$1.4 million savings for every wing not destroyed

Overview

Today's commercial aircraft is sleeker, faster and often larger than those built 50 years ago. The design improvements that have made flying smoother and safer are welcome – but testing prototypes is expensive. Engineers look at many facets of flight when designing wings, ranging from how new materials withstand the elements to how to improve airflow to increase an aircraft's lift. The only way to conduct quality tests on new wingspan designs is to actually destroy models, along with their expensive equipment. Faced with mounting costs tied to testing requirements, a U.S. aircraft manufacturer turned to Alacer to find a way to reduce its expenditures for developing new wing designs.

Challenges

The Federal Aviation Administration (FAA) requires all manufacturers to thoroughly test or to present data proving that new aircraft designs are ready for public take-off; additionally, the U.S.-based aircraft manufacturer held itself to a higher standard with its internal stringent guidelines. Its existing methodology for conducting wing tests required the destruction of multiple scale models and related equipment. In order to best achieve its goal, Alacer needed to develop a new way to model wing quality that destroyed fewer wings.

Results

The Alacer team created a modeling system that yielded regular 1% incremental improvements; every time a test was conducted, the engineers had a better chance for a breakthrough. As a result, for every wing that was not needed, the aircraft manufacturer saved approximately \$1.4 million. Overall, this minimally reduced testing costs by 15% each time the Alacer strategy was deployed.