

StallBox®

FAA Directive 2, EASA Issue 2
FSTD Update Solutions

Why StallBox?



Stall Models

Exemplar stall models provide realistic upset prevention and recovery training and meet regulatory requirements for stall modeling.



Instructor Displays

Bihrlé-developed Instructor Feedback Displays for UPRT are available for integration with an existing IOS or as add-on displays for Windows OS-based desktop or tablet devices.



No OEM Data Required

Bihrlé-developed stall models based on predictive and empirical data & validated by Subject Matter Experts (SMEs) are available in the absence of OEM data.



Easy Installation

Typical installations can be accomplished in a couple of days with minimal impact to training schedules.



Optional Models & Scenarios

Bihrlé offers additional models including in-flight icing, crosswind gusts & bounced landing models as well as instructor control options such as pitch-up, pitch-down, and bank upset scenarios.



Low Computational Load

Since enhanced models are executed on the STALLBOX hardware, minimal additional computational load is placed on the existing simulator.



Fail Safe Design

In the event that the STALLBOX is taken off-line, the simulator automatically and seamlessly reverts to the baseline flight model.

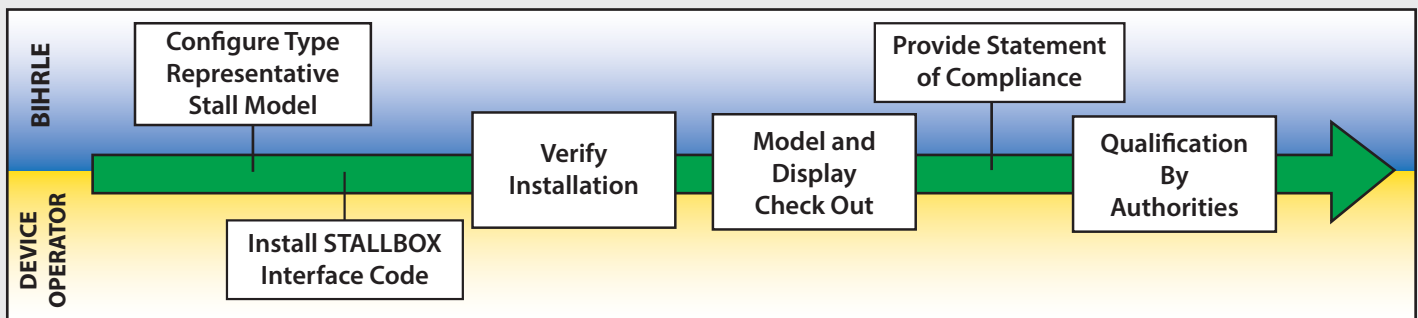


Future Expansion

The STALLBOX platform provides the ability to easily incorporate additional models for future training enhancements.

More information available at www.stallbox.com

The STALLBOX Process



Common Questions

Which directives under 14 CFR Part 60 does your solution address?

STALLBOX solutions provide stall model enhancements for full-stall training and instructor feedback displays under 14 CFR Part 60 Change 2, Directive 2. Consulting and engineering services to address UPRT scenarios, airframe icing, crosswind gusts, and bounced landing are also available.

Does your solution meet EASA CS-FSTD(A) Issue 2 requirements for UPRT and Stall Modeling?

Yes, the STALLBOX solution meets EASA requirements for instructor feedback as well as optional stall modeling.

Has your solution been installed and qualified by the FAA?

Yes. On April 28 2016, Alaska Airlines' B737-800 simulator became the first Part 121 training device qualified by the FAA for Full Stall Training under Part 60 Change 2, Directive 2. Since then, STALLBOX solutions have been part of over 25 FAA qualifications. Airplane types include: B737-400, B737-700, B737-800, B757-200, B767-200, A330, A320, A300, A310, MD/DC-9, MD/DC-10, SAAB 340, ATR 42, ATR 72, and Q400. Full stall models for other configurations can be developed by BAR upon customer request.

How much simulator down time is required for installation?

For typical installations, the STALLBOX team will require approximately two to four, 4-hour simulator sessions.

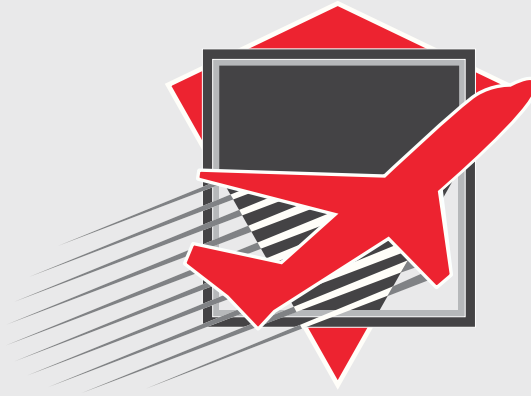
Can you provide a Subject Matter Expert (SME)?

Yes. We maintain a network of qualified stall-modeling Subject Matter Experts (SMEs).

Why Bihrlle?

Since 1973, Bihrlle Applied Research Inc has established its reputation as the industry leader in data acquisition, analysis and modeling of the most complex flight behaviors. Beginning with ground breaking work in the acquisition and application of dynamic test data for the prediction of aircraft spins, BAR has guided the commercial and military aircraft communities in the application of these data in high-fidelity, physically representative simulations of aircraft stall and post-stall behavior.

| | |
|--|--|
| <p>STALLBOX Meets Industry Needs 2019 ↑</p> <ul style="list-style-type: none"> • Bihrlle works with airlines and training centers to meet FAA's 2019 UPRT training deadline • Bihrlle supports numerous additional aircraft types • Bihrlle enhances UPRT instructor displays | <p>2016 STALLBOX is Industry-Proven Solution for Military & Commercial Applications</p> <ul style="list-style-type: none"> • Bihrlle B737NG STALLBOX installed on Alaska Airlines B737-800, receives first FAA qualification under Part 60 Dir 2 • Bihrlle P-8A STALLBOX solution installed on P-8A training device and accepted by the US NAVY • Bihrlle A320 stall model implemented and demonstrated at FAA center in Oklahoma City |
| <p>FAA Publishes Final Rule on UPRT & Full Stall Training (14 CFR Part 60 Change 2) 2016</p> | <p>2015 STALLBOX Demonstrations</p> <ul style="list-style-type: none"> • Bihrlle A330 STALLBOX solution installed & demonstrated at FAA center in Oklahoma City • Bihrlle G450 Stall Model Demonstrated |
| <p>Bihrlle Introduces STALLBOX Simulator Update Solution 2014</p> <ul style="list-style-type: none"> • Bihrlle B737NG STALLBOX solution installed at FAA center in Oklahoma City • P-8A STALLBOX solution demonstrated on P-8 trainer | <p>2013 Bihrlle Continues Full Stall Research</p> <ul style="list-style-type: none"> • Bihrlle participates in FAA study of aerodynamics models for full stall training • Bihrlle awarded FAA BAA research contract to investigate the development of "Type Representative Models" for commercial full stall training |
| <p>14 CRF Part 121 Change Requiring UPRT and Full Stall Training 2013</p> | <p>2010 Congress Mandates UPRT & Stall Training</p> <p>Public Law 111-216, Airline Safety and FAA Act of 2010 – Mandates UPRT and Stall Training for Part 121</p> |
| <p>FAA Selects Bihrlle for Stall Research 2011</p> <p>Bihrlle selected by FAA to investigate development of a type representative stall model for the B737NG</p>  | <p>2009 RAeS Silver Award Winner</p> <p>Bihrlle presents award-winning paper "Aerodynamics Modeling for Training on the Edge of the Envelope"</p>  |
| <p>Bihrlle Demonstrates Full Stall Model to the FAA 2010</p> <p>Bihrlle demonstrates full stall model on a B737 full-flight simulator at the FAA Mike Monroney Aeronautical Center</p> | <p>2008 Navy Selects Bihrlle for Research Contract</p> <p>"Total Envelope Modeling Application for Transport Aircraft"</p> |
| <p>ICATEE is Formed Bihrlle is an Original Member 2009</p> | <p>1995 Navy Selects Bihrlle for Research Contract</p> <p>"Dynamic Wind Tunnel Testing and Modeling of Non-linear Unsteady Aerodynamics"</p> |
| <p>Air France, Colgan Air Accidents 2009</p> | <p>1980s/90s Pioneering Aeronautical Research & Development</p> <p>Bihrlle Leads Industry in High Angle-of-Attack Modeling R&D for Military Applications</p> <p>Bihrlle develops high angle-of-attack aerodynamics databases, facilitates engineering and pilot training simulation applications for over 150 aircraft configurations.</p>  |
| <p>Navy Selects Bihrlle for Research Contract 2001</p> <p>"A System for Modeling the Effects of Unsteady Aerodynamics in Flight Simulations"</p> | |
| <p>High Angle-of-Attack 90s/2000s</p> <p>Bihrlle Develops High Angle-of-Attack Models for Use in Military Flight Training</p> | |
| <p>Pioneering Aeronautical Research & Development 1970s/80s</p> <p>William Bihrlle Leads Rotary Balance and Spin Analysis Research -- Military and Commercial</p> <p>Ultimately leads to the development of a wind tunnel test capability that provides insight into the driving aerodynamic forces and moments that produce the stall and post-stall behaviors.</p> <p>Bihrlle Applied Research Inc. was founded in 1973</p> | |



STALLBOX[®]

Features & Capabilities

- Compliant stall model solutions for full-stall recovery training
- UPRT tools including instructor displays
- Minimally intrusive implementation
- Easily incorporate future add-on models/updates

✉ info@bihrle.com

☎ +1 757.766.2416

📍 81 Research Drive | Hampton VA | 23666

🌐 www.bihrle.com

Bihlrle
APPLIED RESEARCH INC