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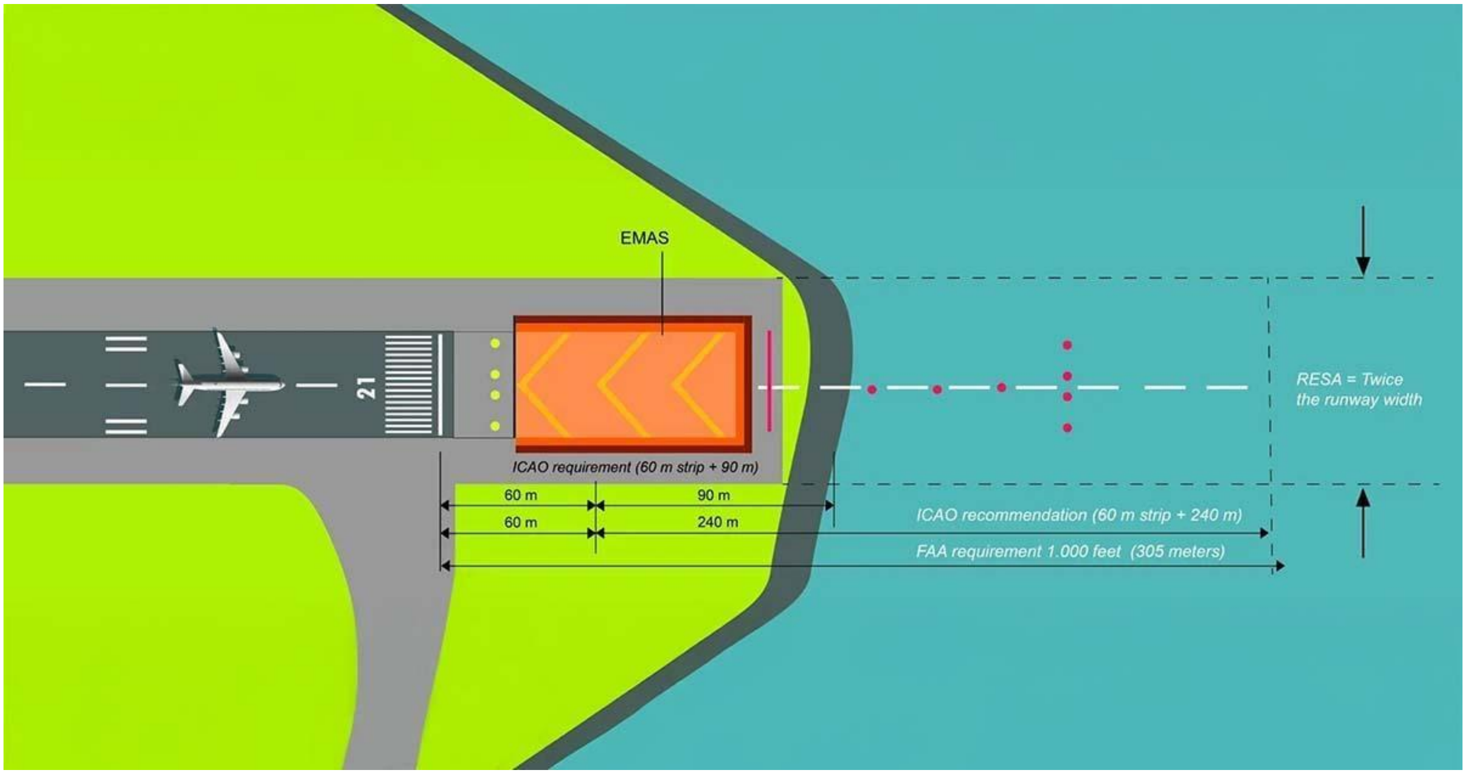
SAFETYWIRE

AINsight: The Dangers of a High-energy Approach – Two aircraft overshot runways but were saved by an engineered materials arresting system
(**Source:** Stuart “Kipp” Lau, AIN, September 19, 2025)



Earlier this month, on September 3, two aircraft at two different airports overshot runways only to be saved by an engineered materials arresting system (EMAS). One incident occurred in Illinois, while the other took place in Florida; there were no serious injuries.

The following day, the FAA celebrated EMAS as an important technology that “enhances aviation safety by preventing potentially catastrophic runway overruns.” A far better strategy is to keep the aircraft on the runway.

FAA Administrator Bryan Bedford said these “incidents in Chicago and Boca Raton clearly demonstrate the lifesaving value of EMAS technology. These two systems did exactly what they’re designed to do—stop aircraft safely when they go off the runway. This technology is making a real difference in preventing serious accidents.”

EMAS is a bed of lightweight, crushable material installed at the end of a runway to slow down aircraft that overshoot, undershoot, or veer off the runway. Currently, 122 EMAS are installed at 70 airports in the U.S., according to the FAA.

Agreed, EMAS is an amazing invention. Other than luck, EMAS is the last line of defense during a runway excursion that, if installed, prevents almost certain damage or destruction when an aircraft departs a runway.

September Saves

In the first incident, a Gulfstream G150 overran Runway 34 at Chicago Executive Airport (KPWK) and stopped beyond the end of the runway, penetrating an airport perimeter fence. At the time of the event, according to ATC, there was light rain falling, and the runway surface was 100% wet. Reports from ATC suggest that the aircraft touched down about halfway down the 5,000-foot-long runway but failed to stop before reaching the end of the runway.

According to records, the recent G150 runway excursion was the third EMAS “save” at KPWK. EMAS was installed at the airport in 2014 at the ends of Runway 34 and Runway 16.

In 2016, a Dassault Falcon 20 overran Runway 16 during an early morning landing attempt. Five years later, a Dassault Falcon 900EX, attempting to land in gusty winds and snow, departed the end of Runway 16 and came to a stop on the EMAS bed.

Another KPWK runway excursion occurred, in 2020, when a Bombardier Learjet 60—on a visual approach to Runway 34—landed on the much shorter (LDA 3725 feet) Runway 30. Runway 30 does not have EMAS installed, and the aircraft impacted the airport perimeter fence.

The second runway excursion incident this month occurred at the Boca Raton airport (KBCT), where a Bombardier Challenger 300 overran Runway 05 (5,580 feet landing distance beyond the threshold) and came to a stop in the EMAS bed near a busy roadway. Reports indicate that the aircraft entered EMAS at a groundspeed of 50 knots, as recorded by ADS-B.

Swiss Cheese, Meet Velveeta

James Reason’s Swiss Cheese model of accident causation is often used in risk analysis and risk assessments. This model has layers of Swiss cheese lined up, each with various holes—with different placement and sizes—representing the defenses that are used to prevent an accident.

In theory, when the holes align, weaknesses and lapses are exposed in each defense that ultimately contribute to an accident. Traditionally, each slice of cheese represents human, technical, environmental, or organizational domains.

In the context of a runway excursion, the slices of cheese may represent a pilot’s physical (fatigue) or psychological state (decision making, time pressure), aircraft system status (brakes, ground spoilers), runway condition assessments, landing distance calculations, airspeed computations, or other safeguards such as policies and procedures. A lapse or weakness in these factors results in a runway excursion.

EMAS is a defense that accounts for (and sometimes masks) these mistakes or failures. In essence, EMAS is a solid block of Velveeta—that delicious gooey "pasteurized prepared cheese product"—sitting at the end of the runway that will potentially save your life.

[Note: There are many accident causation models, but none emphasize a point by crafting (not Kraft) a cheesy blog.]

Final Approach Speed

According to the Flight Safety Foundation (FSF), its Approach and Landing Accident Reduction (ALAR) toolkit states, "Assuring that a safe landing can be conducted requires achieving a balanced distribution of safety margins between: (1) the computed final approach speed (also called the target threshold speed); and (2) the resulting landing distance."

The FSF ALAR Task Force found that these high-energy approaches were a factor in 30% of the 76 approach and landing accidents and incidents analyzed. Another FSF study found that 30% of 329 worldwide approach and landing accidents were related to "fast approaches and/or touchdowns."

Final approach speed is the airspeed that is maintained down to 50 feet above the runway threshold if the calculated aircraft performance is to be achieved.

Vref is defined as 1.3 times the stalling speed in the stated landing configuration and at the prevailing aircraft weight. Final approach speed (Vapp) is defined as Vref + corrections.

Final approach speed computation is typically based on gross weight, wind, certified landing flap configuration, aircraft system status (abnormal configurations), icing conditions, and the use of automation (autothrottles or autoland).

Final approach speed provides the best compromise between handling qualities (stall margin and controllability) and landing distance. It's important to note that airspeed corrections to final approach speed are not cumulative, and only the highest airspeed correction is typically added to Vref.

Common Approved Final Approach Speed Additives

Wind corrections provide additional stall margin for airspeed excursions caused by turbulence or wind shear and gusts. Manufacturers use different methods to determine wind corrections.

These corrections are usually a combination of one-half or one-third the steady wind state plus the entire gust value up to a maximum value of 20 knots. These methods vary by aircraft manufacturer; use only the method recommended in the aircraft AOM/FCOM (or POH).

Typically, there are no wind corrections for crosswind or tailwind conditions (other than limitations such as maximum demonstrated crosswinds or tailwind limitations).

Flap configuration adjustments are based on certified landing flap settings. Aircraft with multiple certified landing flap configurations will use the full flap Vref plus a correction for a reduced flap setting (such as Vref plus XX knots) or a specific Vref for each approved flap setting (Vref F.30 vs. Vref F.20).

Abnormal configuration corrections account for single or multiple system malfunctions. These corrections are used to ensure a safe stall margin and controllability. Typically, a lookup table is included in the aircraft quick reference handbook (QRH) that lists airspeed and landing field length adjustments (Example: A slat malfunction may add 30 knots to Vref, and the landing field length would be increased by 40%.)

Some aircraft manufacturers include final approach speed adjustments for the use of automation such as autothrottles or autoland capabilities. A common example is an additional 5-knot adjustment to the final approach speed (Vref + 5 knots) to maintain the target final approach speed when using autothrottles.

Ice accretion (severe) in-flight may require an airspeed correction due to the possibility of ice forming on unheated surfaces of the aircraft and on the wing surfaces above and below the fuel tanks.

Wind shear should be avoided by either delaying the approach or diverting to an alternate airport. However, if an approach is conducted in wind shear conditions, an airspeed correction (usually 15 to 20 knots) and a reduced flap landing (if certified) is recommended.

Advice To Keep the Aircraft on the Runway

Following the early September EMAS saves, there were several online discussions related to final approach speeds. Some provided sound guidance based on the FAA Airplane Flying Handbook or manufacturer's AOM/FCOM procedures, while others were wrong based on personal technique or aviation lore.

In one example, several pilots of a large business jet model—with "global" capabilities—suggested adding an additional 10 to 15 knots to Vref to improve controllability during landings. Another group of pilots promoted adding extra speed as "money in the bank" or "10 additional knots for Momma."

According to the FSF data presented, excessive energy is a factor in nearly one-third of all approach and landing accidents. Excessive airspeed during approach may cause the actual landing distance to exceed the available runway.

Let's be clear: the only acceptable method to adjust the final approach speed is the guidance contained in the approved aircraft operating manual. Each approved adjustment to the final approach speed has a corresponding landing distance (performance) value. Additional airspeed corrections arbitrarily added by the flight crew negate the approved aircraft landing performance figures.

The opinions expressed in this column are those of the author and are not necessarily endorsed by AIN Media Group.

Why We're Failing at Communication – and What It's Costing Us

(**Source:** Timothy Wade, Bombardier Safety Standdown, May 8, 2025)

Let me be clear; we're not suffering from a lack of communication—we're drowning in it. Every day, billions of messages are sent, posted, and emailed, yet in critical environments like aviation, people are still hesitant to speak up. And it's costing us—financially, operationally, and most importantly, in terms of safety.

Why Is Communication So Difficult?

We often assume communication is easy. But it's not. Three key elements make it difficult:

- The Environment- organizational structures, physical settings, and reporting systems often hinder real communication.
- The Audience- generational differences, company culture, and societal pressure influence how people receive messages.
- The Speaker- whether it's fear, embarrassment, or lack of experience, many are simply afraid or unsure of what to say.

Communication is the Causal Factor, but to what problem?

In a study I took part in that analyzed over 3,300 aviation incidents, there is one clear factor:

- 84% of them—2,795 to be exact, were due to human error.
- Of those, 65% involved communication failure.

Why the Silence?

There's a lot of noise, but when it comes to critical moments, there's silence. Why?

- Access to reporting systems is often cumbersome.
- We say we believe in a Just Culture, but do we actually implement it?
- Fear of reprisal or being ignored prevents people from reporting.
- Cancel culture, generational divides, and past bad experiences silence voices before they even speak.

Understanding the Environment, Audience, and Speaker Environment

People are hesitant to report because:

- They've been ignored or penalized in the past.
- We confuse digital convenience with emotional accessibility.

Audience

With over 100 major social media platforms and billions of users, we are saturated with content—but lacking connection. Culture, rank, and internal politics add to the disconnect.

A truly "safe" organization isn't just one with the best metrics—it's one where:

- Breakrooms are loud (yes, really—it means people feel safe talking).
- Mentorship feels like parenting, not policing.

Speaker

Aviation is full of unique personalities:

- Ramp and ground crews tend to be introverted.
- Pilots are often extroverted.
- Industry Veterans carry years of mistrust or past trauma.

If a person feels they'll be punished, ignored, or humiliated, they won't speak up. Safety Teams must realize that they are not productive because they are a department of processes enforced by regulations. Safety is productive because Trust is the key component. It takes years to fully develop a trustworthy safety program, and one mishandled incident can cause it all to collapse. Remember, trust is gained in drops and lost in buckets.

What Do We Do About It?

We need to break the silence, not with more noise, but with intention. Here's what I believe we must focus on:

- Ask the hard questions. Get uncomfortable. Don't shy away from challenging the status quo.
- Control what we can: our systems, our culture, our responses.
- Embedded a Just Culture that rewards honesty, not perfection.
- Empower leaders to serve. Leadership isn't control; it's responsibility. Leaders must be accessible and serve rather than rule.

Every Action Counts

To quote the author of Atomic Habits, James Clear, "every choice we make is a vote for the kind of person [—and organization—] we want to be."

No single action defines us, but the sum of our actions does. If we want a culture of safety and trust, we must build it deliberately.

Communication isn't a checkbox in a form—it's the foundation of everything we do in aviation. And when it's missing, it echoes like silence in a hangar.

Let's change that—together.

Timothy Wade

Corporate Director of Environmental, Health & Safety - OneSky Flight
Flexjet

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FAA Safety Alert Underscores Li-ion Battery Threat - Thermal runway in personal devices represents a serious danger to aircraft

(**Source:** Gordon Gilbert, AIN, September 17, 2025)

A demonstration of thermal runaway in a laptop computer under controlled conditions shows the threat these ubiquitous devices can pose to aircraft. According to the FAA, they require vigilance and an understanding of how to extinguish their fires compared to normal burns. © Curt Epstein/AIN

A new FAA Safety Alerts for Operators (SAFO 25002) highlights the continuing fire risks associated with the carriage of lithium batteries—and the devices that operate off them—in aircraft passenger and crew compartments.

In addition, the alert emphasizes the importance of identifying all potential hazards and implementing risk mitigation strategies to manage thermal runaway events, which are self-sustaining, uncontrolled increases in pressure and temperature.

Recent FAA data shows a number of safety events involving lithium batteries. “Lithium batteries stored in passenger overhead bins and/or in carry-on baggage may be obscured, difficult to access, or not readily monitored by passengers or crew members,” notes the alert. “Because of this, detection of thermal runaway and firefighting measures may be delayed in flight, increasing the risk to safety.”

The FAA warns that traditional firefighting methods may not work. “Use of Halon extinguishers can briefly suppress open flames; however, they do not halt the thermal runaway process. The primary response involves using large amounts of water to cool the battery and suppress flames. Cooling the device with water is essential to prevent the reaction from continuing until all cells have discharged their energy.”

Since lithium batteries have become common power sources in personal devices, the FAA, the EU Aviation Safety Agency (EASA), and other authorities have issued a number of advisories to emphasize the risks and mitigation measures.

SAFETY MANAGER'S CORNER

Safety Performance Indicators (SPIs)

An aviation operation with no accidents and no fatal injuries since inception. An enviable statement and one many operations share, but is it a definitive measure of safety? "We didn't have any accidents or workplace injuries so we must be safe" is a declaration with questionable accuracy. Are no accidents and injuries desirable? Of course, but does that reliably measure performance, and additionally reflect future probability? Unfortunately, not. This is where safety performance indicators assist and guide.

ICAO Annex 19 defines safety performance as "a service provider's safety achievement as defined by its safety performance targets and safety performance indicators." Safety performance must not rely upon macro level measurements such as high consequence negative events; their low frequency creates an unreliable impression. If effective safety management cannot be achieved without effective measurement, what should be measured? The non-specific answer is that you need to measure a broad set of indicators related to key aspects of your operation.

Before determining more definition and examining examples of specific performance indicators potentially useful to your organization let's review two important concepts:

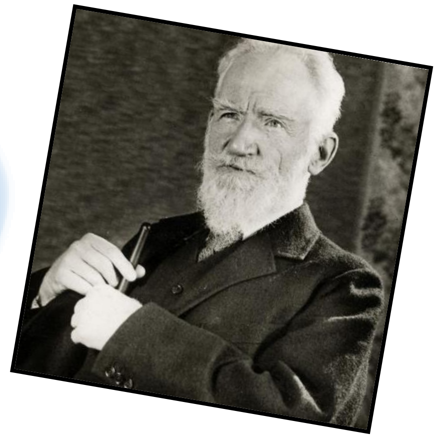
- Lagging indicator: measurement of events that have already occurred, typically the negative outcomes the operation is trying to prevent. Example: the number of runway incursions per 500 taxi cycles.
- Leading indicator: measurement of both negative (potential to contribute to a future negative outcome) and positive (things that contribute to safety) indicators. Leading indicators can be thought of in a monitoring concept. Example: Number of FMS entry errors detected by crew member validation.

Specific safety performance indicators rely upon the specifics of an operation, therefore, are not always directly transferable. Some examples for consideration follow:

1. Internal audit/evaluation- Number of non-compliance findings per cycle.
2. Management commitment– number of management walk-arounds per month/quarter/year.
3. SMS effectiveness– turnover rate of key safety personnel.
4. Management of change– number of organizational changes for which a formal risk assessment was performed per month/quarter//year.
5. Air operations– number of unstabilized approaches per 1000 landings.
6. Air operations– number of GPWS alerts per 1000 landings.

Safety Performance Indicators can be tracked within PRISM SMS. For more information on how to set-up and track SPI's in PRISM SMS, please contact PRISM Support (prism@argus.aero).

Quote of the Month



The single biggest problem in communication is the illusion that it has taken place.

BY: George Bernard Shaw

Communication is too important to let yourself be fooled into thinking it's all good. It's not just about talking. In fact, there are four types of communication: interpersonal, non-verbal, written, and oral. All of those paths of transmission make it seem like nothing can be missed, that miscommunication is impossible. Well, we all know better than that. Communication really isn't the problem at all, it's the assumptions surrounding it that create the biggest problems. "I thought that's what you told me," and "You didn't say anything, so I thought it was OK" are often preceded by some really undesirable occurrence. Of course, it's soothing to figure out what was miscommunicated, but it doesn't turn back the clock and undo the event. A much better approach: proactively ensure accurate and effective communication.

On Short Final…

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