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SAFE-RWSLs

Low-cost, automated runway light system improving safety and reducing incursions at small airports.

Researchers at Purdue University have developed a simplified runway status light system to prevent runway incursion incidents. Currently, technologies to prevent these incidents are usually limited to large airports due to the high cost of radar-based detection systems. Small airports are generally reliant on air traffic controllers or in some cases, simple "see-and-avoid" approaches. By using a combination of automatic dependent surveillance-broadcast (ADS-B) data and computer vision modeling, lights can be activated in real-time to indicate runway status to pilots, vehicle operators and pedestrians. ADS-B is already mandated for most aircraft in U.S. airspace, making it widely available to systems of this type. As a result, this system is a low-cost and easy to integrate option for airports of varying capacities to improve runway communications and reduce risks of incidents. This technology is well suited to small airports looking to reduce the risk of runway incursion through a low-cost approach to automated runway status light control.

Advantages:

Reductions of runway incursion incidents

Automated communication of runway status

Improved visibility for pilots, vehicle operators, and pedestrians

Low cost makes it accessible to all sizes of airports

Applications:

Runway safety

Airports

Air traffic control

Technology Validation:

Technology ID
2023-MOTT-70016

Category
Aerospace & Defense/Aviation/Components

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This technology is in the conceptual stages. The concept has been validated based on the capability of ADS-B and existing hardware, as well as economic feasibility projections.

TRL: 2

Intellectual Property:

Provisional-Patent, 2023-04-25, United States

Utility Patent, 2024-04-23, United States

Keywords: runway safety system,ADS B integration,airport lighting automation,low cost runway status lights,air traffic control support,automated runway communication,airport safety technology,incursion prevention system,small airport safety solution,aviation safety systems