Runway Friction Laboratory Building 288

The FAA's regulatory obligation (49 USC Sec 47105(b)3) includes operation and maintenance of the massive airport system. Surface traction is a fundamental element in this respect.

Loss of braking ability and directional control continues to be a problem for a small but significant number of aircraft operations. Previous research has led to the use of runway friction measuring equipment in maintaining airport pavements in proper condition. But additional work is needed in order to use this equipment to provide operational information to pilots. The following precision measuring equipment is housed in Building 288 located in the Safety Research and Development area at the FAA William J. Hughes Technical Center and supports a variety of research programs where the measurement of microtexture on a runway surface must be considered.

Surface Friction Tester (SFT)

The SFT is a front wheel drive, self-contained, continuous friction measurement device. Mounted inside the rear of a Saab 900 (shown on the right) is a hydraulically controlled fifth wheel with a chain connection to the rear axle. A slip ratio of 10%-12% is produced. A torque measurement is used to compute friction values versus distance traveled. The calculated friction values are printed on a strip chart and can be downloaded to a laptop computer for further analysis.

Mu-Meter

The Mu-Meter is a side-force measuring trailer marketed by Bison Industries. Two of the three wheels on the trailer unit are positioned at 7.5° from the center axis of the trailer. This produces an apparent slip ratio of 13.5°. The third wheel is for distance measurement. The computer equipment produces a strip chart with continuous friction values versus distance traveled.

Skidometer BV-11

The Skidometer is a trailed vehicle, equipped with a friction measuring wheel designed to operate at a fixed slip rate between 15 and 17 percent. Airport Equipment Co. markets the trailer device. A torque measurement is processed by the computer and recorded on a strip chart as a continuous plot of friction values over the distance traveled.

Swenson Solid Chemical Spreader

This equipment mounts in the bed of a pickup truck and is used for dispersing solid chemicals at precise application rates. The solid chemicals are usually runway deicers and anti-icers, but sand and salt can also be dispersed. The advantage of this particular piece of equipment lies in the computer control and monitoring capabilities, which were specifically designed to produce minute applications of solid chemicals for research projects.

Runway Friction Tester (RFT)

The RFT is a front wheel drive, self-contained, continuous friction measuring device. The friction equipment is mounted inside a Dodge Caravan (shown above) and was manufactured by K. J. Law Engineers, Inc. This device uses a two-axis force transducer that measures vertical and drag loads. The friction measuring wheel is connected to the rear axle by a gear drive that produces a fixed 13% slip. The computer calculates friction coefficient values for each foot of distance traveled and can plot this data directly to a digital printer installed in the van. The data can also be downloaded to a laptop computer for further analysis.

Batts Liquid Chemical Sprayers

This equipment also mounts in the bed of a pickup truck or on a trailer. It is a small-scale version of common chemical dispersal equipment used on highways as well as airports. The control box is specifically manufactured for the precise application of runway deicers and anti-icers but has also been used for spraying aircraft deicing fluids as well as water.

To find out more about the Runway Friction Laboratory, contact:

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