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Self-Calibrating Automatic Controller To Determine The End Of Cycle In Clothes Dryers

Tech ID: 24482 / UC Case 2014-692-0

ABSTRACT

Researcher at the University of California, Davis has developed a self-calibrating dryer controller which effectively determines the optimal shut-off point of the dryer. The controller improves performance of the dryer by ensuring that clothes are dry and improves energy efficiency by shutting off the dryer as soon as possible.

FULL DESCRIPTION

There are two types of existing dryer sensors used to determine dryer cycle endpoint. One method uses a single temperature sensor on the exhaust outlet. Unfortunately, exhaust temperatures are not necessarily a good indication of dryness because exhaust temperatures are greatly affected by the inlet air temperatures, which may vary widely for dryers located in unconditioned spaces such as garages. Furthermore, accuracy of the temperature sensor may drift with time. The second method utilizes moisture sensors located inside the dryer drum. Unfortunately these sensors may lose accuracy with time as they are exposed to water and fabric softener. Furthermore, even a functional sensor may work inaccurately for mixed loads, where heavier fabrics may still be wet but the sensor detects dry materials on the perimeter of the load.

Researcher at the University of California, Davis has developed a novel controller that monitors the differential temperature of the dryer exhaust air compared to the heated inlet air to determine when the moisture has been removed from the contents. When the load is dry, this differential reading is near zero (because moisture cools the exhaust air). This novel controller self-calibrates to ensure long-term accuracy and is not dependent on factors such as air inlet temperature, load characteristics, and drift of the sensors over time.

APPLICATIONS

- ▶ Gas and electric dryers

FEATURES/BENEFITS

- ▶ Long-term accuracy and functionality
- ▶ Simple and inexpensive
- ▶ Saves Energy
- ▶ Improves performance

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,472,761	11/12/2019	2014-692

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- ▶ [Tracer Gas Airflow Measurement System with High Turndown Ratio](#)
- ▶ [Predictive Controller that Optimizes Energy and Water Used to Cool Livestock](#)

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OTHER INFORMATION

CATEGORIZED AS

- ▶ **Energy**
- ▶ Other

RELATED CASES

2014-692-0

