

Optimizing Water Consumption of a Washer-Dryer Which Contains Water Condensation Technology under a Constraint of Energy Consumption and Drying Performance

Authors : Aysegul Sarac

Abstract : Washer-dryers are the machines which can either wash the laundries or can dry them. In other words, we can define a washer-dryer as a washing machine and a dryer in one machine. Washing machines are characterized by the loading capacity, cabinet depth and spin speed. Dryers are characterized by the drying technology. On the other hand, energy efficiency, water consumption, and noise levels are main characteristics that influence customer decisions to buy washers. Water condensation technology is the most common drying technology existing in the washer-dryer market. Water condensation technology uses water to dry the laundry inside the machine. Thus, in this type of the drying technology water consumption is at high levels comparing other technologies. Water condensation technology sprays cold water in the drum to condense the humidity of hot weather in order to dry the laundry inside. Thus, water consumption influences the drying performance. The scope of this study is to optimize water consumption during drying process under a constraint of energy consumption and drying performance. We are using 6-Sigma methodology to find the optimum water consumption by comparing drying performances of different drying algorithms.

Keywords : optimization, 6-Sigma methodology, washer-dryers, water condensation technology

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