The present subject matter provides a dryer appliance and a method for operating a dryer appliance. The method includes monitoring a first temperature sensor of the dryer appliance in order to determine a number of cycles of the first temperature sensor. If the number of cycles of the heating element exceeds a threshold number, a temperature set point of a second temperature sensor of the dryer appliance is reduced. The method can assist with reducing or avoiding excessive cycling of the first temperature sensor.
FIG. 3
Operate a dryer appliance in order to dry articles within a drum of the dryer appliance.

Monitor a first temperature sensor of the dryer appliance in order to determine a number of cycles of the first temperature sensor.

Does number of cycles exceed a threshold number?

Reduce a temperature set point of a second temperature sensor of the dryer appliance.

Finish

FIG. 4
operate a dryer appliance in order to dry articles within a drum of the dryer appliance.

set a temperature set point of a second temperature sensor of the dryer appliance to a first temperature set point.

is an operating condition of the dryer appliance a restricted condition?

if yes, adjust the temperature set point of the second temperature sensor to a second temperature set point.

monitor a first temperature sensor of the dryer appliance in order to determine a number of cycles of the first temperature sensor.

does number of cycles exceed a threshold number?

if yes, change the temperature set point of the second temperature sensor to a third temperature set point.

finish.

FIG. 5
DRYER APPLIANCE AND A METHOD FOR OPERATING THE SAME

FIELD OF THE INVENTION

[0001] The present subject matter relates generally to dryer appliances and methods for operating dryer appliances.

BACKGROUND OF THE INVENTION

[0002] Certain dryer appliances include a cabinet with a drum rotatably mounted therein. A heating assembly, such as an electric resistance heating element or a gas burner, can supply heated air to a chamber of the drum. For example, certain dryer appliances include a duct mounted to a back wall of the drum. The duct can direct heated air from the heating assembly into the chamber of the drum during operation of the dryer appliance. The duct generally includes an inlet that receives heated air from the heating assembly and a plurality of outlets for directing such heated air into the chamber of the drum. Such heated air can assist with drying articles located within the drum’s chamber.

[0003] Heated air exiting the duct’s outlets is preferably maintained below a certain threshold temperature, e.g., to avoid damaging articles that are drying within the chamber of the drum and other overheating problems. Certain dryer appliances are equipped with temperature sensors for monitoring the temperature of heated air entering the drum’s chamber. If the temperature sensor detects overly hot air entering the drum’s chamber, the heating assembly can be deactivated or cycled.

[0004] To further assist with regulating operation of the heating assembly, certain dryer appliances include a thermostat mounted to the heating assembly. The thermostat is configured for cycling at a threshold temperature. When the thermostat cycles, the heating assembly can be deactivated. Thermostats generally have an expected lifetime defined by a number of cycles the thermostats can be expected to perform. Thus, cycling of the thermostat is preferably limited to avoid approaching the expected lifetime of the thermostat. However, certain dryer conditions can cause the thermostat to trip frequently, such as when dryer appliances are operating in a restricted condition.

[0005] Accordingly, a dryer appliance with features for limiting cycling of a thermostat of the dryer appliance would be useful. In particular, a dryer appliance with features for limiting cycling of a thermostat of the dryer appliance when the dryer appliance is operating in a restricted condition would be useful.

BRIEF DESCRIPTION OF THE INVENTION

[0006] The present subject matter provides a dryer appliance and a method for operating a dryer appliance. The method includes monitoring a first temperature sensor of the dryer appliance in order to determine a number of cycles of the first temperature sensor. If the number of cycles of the heating element exceeds a threshold number, a temperature set point of a second temperature sensor of the dryer appliance is reduced. The method can assist with reducing or avoiding excessive cycling of the first temperature sensor. Additional aspects and advantages of the invention will be set forth in part in the following description, or may be apparent from the description, or may be learned through practice of the invention.

[0007] In a first exemplary embodiment, a method for operating a dryer appliance is provided. The method includes operating the dryer appliance in order to dry articles within a drum of the dryer appliance, monitoring a first temperature sensor of the dryer appliance in order to determine a number of cycles of the first temperature sensor during the step of operating, reducing a temperature set point of a second temperature sensor of the dryer appliance if the number of cycles of the first temperature sensor exceeds a threshold number during the step of monitoring.

[0008] In a second exemplary embodiment, a dryer appliance is provided. The dryer appliance includes a cabinet and a drum rotatably mounted within the cabinet. The drum defines a chamber for receipt of articles for drying. A motor is configured for selectively rotating the drum within the cabinet. A heating assembly is configured for directing a flow of heated fluid into the chamber of the drum. The heating assembly includes a housing, a heating element disposed within the housing, and a duct extending between the housing and the drum. The drum has an outlet positioned at the chamber of the drum. A first temperature sensor is positioned at the housing. A second temperature sensor is positioned at the outlet of the drum. A controller is in communication with the motor, the heating element and the first and second temperature sensors. The controller is configured for setting a temperature set point of the second temperature sensor to a first temperature set point, determining if an operating condition of the dryer appliance is a restricted condition, adjusting the temperature set point of the second temperature sensor to a second temperature set point if the operating condition is the restricted condition at the step of determining, monitoring the first temperature sensor in order to determine a number of cycles of the first temperature sensor, and changing the temperature set point of the second temperature sensor to a third temperature set point if the number of cycles of the first temperature sensor exceeds a threshold number during the step of monitoring.

[0009] In a third exemplary embodiment, a method for operating a dryer appliance is provided. The method includes setting a temperature set point of a thermostat of the dryer appliance to a first temperature set point, determining if an operating condition of the dryer appliance is a restricted condition, adjusting the temperature set point of the thermostat to a second temperature set point if the operating condition is the restricted condition at the step of determining, monitoring a thermostat of the dryer appliance in order to determine a number of cycles of the thermostat, and changing the temperature set point of the thermostat to a third temperature set point if the number of cycles of the thermostat exceeds a threshold number during the step of monitoring.

[0010] These and other features, aspects and advantages of the present invention will become better understood with reference to the following description and appended claims. The accompanying drawings, which are incorporated in and constitute a part of this specification, illustrate embodiments of the invention and, together with the description, serve to explain the principles of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] A full and enabling disclosure of the present invention, including the best mode thereof, directed to one of ordinary skill in the art, is set forth in the specification, which makes reference to the appended figures.
FIG. 1 provides a perspective view of a dryer appliance according to an exemplary embodiment of the present subject matter.

FIG. 2 provides a perspective view of the exemplary dryer appliance of FIG. 1 with portions of a cabinet of the exemplary dryer appliance removed to reveal certain components of the exemplary dryer appliance.

FIG. 3 provides a schematic view of certain components of the exemplary dryer appliance of FIG. 1.

FIG. 4 illustrates a method for operating a dryer appliance according to an exemplary embodiment of the present subject matter.

FIG. 5 illustrates a method for operating a dryer appliance according to an additional exemplary embodiment of the present subject matter.

FIGS. 6 and 7 illustrate plots of time versus exemplary temperature measurements of a temperature sensor.

DETAILED DESCRIPTION

Reference now will be made in detail to embodiments of the invention, one or more examples of which are illustrated in the drawings. Each example is provided by way of explanation of the invention, not limitation of the invention. In fact, it will be apparent to those skilled in the art that various modifications and variations can be made in the present invention without departing from the scope or spirit of the invention. For instance, features illustrated or described as part of one embodiment can be used with another embodiment to yield a still further embodiment. Thus, it is intended that the present invention covers such modifications and variations as come within the scope of the appended claims and their equivalents.

FIG. 1 illustrates a dryer appliance 10 according to an exemplary embodiment of the present subject matter. FIG. 2 provides another perspective view of dryer appliance 10 with a portion of a cabinet or housing 12 of dryer appliance 10 removed in order to show certain components of dryer appliance 10. While described in the context of a specific embodiment of dryer appliance 10, using the teachings disclosed herein it will be understood that dryer appliance 10 is provided by way of example only. Other dryer appliances having different appearances and different features may also be utilized with the present subject matter as well. Dryer appliance 10 defines a vertical direction V, a lateral direction L, and a transverse direction T. The vertical direction V, lateral direction L, and transverse direction T are mutually perpendicular and form an orthogonal direction system.

Cabinet 12 includes a front panel 14, a rear panel 16, a pair of side panels 18 and 20 spaced apart from each other by front and rear panels 14 and 16, a bottom panel 22, and a top cover 24. Within cabinet 12 is a drum or container 26 mounted for rotation about a substantially horizontal axis, e.g., that is parallel or substantially parallel to the lateral direction L. Drum 26 defines a chamber 25 for receipt of articles, e.g., clothing, linens, etc., for drying. Drum 26 extends between a front portion 27 and a back portion 28, e.g., along the lateral direction L.

A motor 31 is configured for rotating drum 26 about the horizontal axis, e.g., via a pulley and a belt (not shown). Drum 26 is generally cylindrical in shape, having an outer cylindrical wall or cylinder 28 and a front flange or wall 30 that defines an entry 32 of drum 26, e.g., at front portion 37 of drum 26, for loading and unloading of articles into and out of chamber 25 of drum 26. A plurality of tumbling ribs 27 are provided within chamber 25 of drum 26 to lift articles therein and then allow such articles to tumble back to a bottom of drum 26 as drum 26 rotates. Drum 26 also includes a back or rear wall 34, e.g., at back portion 38 of drum 26. Cylinder 28 is rotatable on rear wall 34 as will be understood by those skilled in the art.

A duct 41 is mounted to rear wall 34 and receives heated air that has been heated by a heating assembly or system 40. Duct 41 extends between heating assembly 40 and drum 26. Duct 41 is configured for directing a flow of heated air from heating assembly 40 into chamber 25 of drum 26 and has an outlet 82 positioned at chamber 25 of drum 26. Heated air flows out of duct 41 into chamber 25 of drum 26 at outlet 82.

Motor 31 is also in mechanical communication with an air handler 48 such that motor 31 rotates a fan 49, e.g., a centrifugal fan, of air handler 48. Air handler 48 is configured for drawing air through chamber 25 of drum 26, e.g., in order to dry articles located therein as discussed in greater detail below. In alternative exemplary embodiments, dryer appliance 10 may include an additional motor (not shown) for rotating fan 49 of air handler 48 independently of drum 26.

Drum 26 is configured to receive heated air that has been heated by a heating assembly 40, e.g., in order to dry damp articles disposed within chamber 25 of drum 26. Heating assembly 40 includes a heating element 42 (FIG. 3), such as a gas burner or an electrical resistance heating element, for heating air. Heating element 42 is positioned within a housing 44 of heating assembly 40 in cabinet 12. As discussed above, during operation of dryer appliance 10, motor 31 rotates drum 26 and fan 49 of air handler 48 such that air handler 48 draws air through chamber 25 of drum 26 when motor 31 rotates fan 49. In particular, ambient air enters heating assembly 40 via an entrance 51 due to air handler 48 urging such ambient air into entrance 51. Such ambient air is heated within heating assembly 40 by heating element 42 and exits heating assembly 40 as heated air. Air handler 48 draws such heated air through duct 41 to drum 26. The heated air enters drum 26 at outlet 82 of duct 41 positioned at rear wall 34 of drum 26.

Within chamber 25, the heated air can accumulate moisture, e.g., from damp articles disposed within chamber 25. In turn, air handler 48 draws moisture saturated air through a screen filter (not shown) which traps lint particles. Such moisture saturated air then enters an exit conduit 46 and is passed through air handler 48 to an exhaust conduit 52. From exhaust conduit 52, such moisture saturated air passes out of dryer appliance 10 through a vent 53 defined by cabinet 12. After the clothing articles have been dried, they are removed from the drum 26 via entry 32. A door 33 provides for closing or accessing drum 26 through entry 32.

A cycle selector knob 70 is mounted on a cabinet backsplash 71 and is in communication with a processing device or controller 56. Signals generated in controller 56 operate motor 31 and heating assembly 40 in response to the position of selector knobs 70. Alternatively, a touch screen type interface, knobs, sliders, buttons, speech recognition, etc., mounted to cabinet backsplash 71 can permit a user to input control commands for dryer appliance 10 and/or controller 56.

Controller 56 may include memory and one or more processing devices such as microprocessors, CPUs, or the like, such as general or special purpose microprocessors operable to execute programming instructions or micro-control code associated with operation of dryer appliance 10. The memory can represent random access memory such as
DRAM, or read only memory such as ROM or FLASH. The processor executes programming instructions stored in the memory. The memory may be a separate component from the processor or may be included onboard within the processor. Alternatively, controller 56 may be constructed without using a microprocessor, e.g., using a combination of discrete analog and/or digital logic circuitry (such as switches, amplifiers, integrators, comparators, flip-flops, AND gates, and the like) to perform control functionality instead of relying upon software.

[0028] FIG. 3 provides a schematic view of certain components of dryer appliance 10. As may be seen in FIG. 3, controller 56 is in operative communication with various components of dryer appliance 10. In particular, controller 56 is in operative communication with motor 31 and heating assembly 40. Thus, upon receiving an activation signal from cycle selector knob 70, controller 56 can activate motor 31 to rotate drum 26 and fan 49 of air handler 48. Controller 56 can also activate heating assembly 40 in order to generate heated air for drum 26, e.g., in the manner described above.

[0029] Controller 56 is also in communication with a first temperature sensor 90 and a second temperature sensor 92. First temperature sensor 90 is positioned at or adjacent heating assembly 40, e.g., on housing 44 of heating assembly 40. Thus, first temperature sensor 90 may be configured for measuring or detecting a temperature of housing 44 of heating assembly 40 or heated air within housing 44 of heating assembly 40. In response to the temperature of housing 44 measured by first temperature sensor 90 exceeding a maximum permitted temperature, heating assembly 40 or any other component of dryer appliance 10 can be deactivated in order to reduce the temperature of heated air within heating assembly 40 and duct 41. First temperature sensor 90 can be any suitable sensor. For example, first temperature sensor 90 may be a thermostat, such as a bimetallic switch.

[0030] Second temperature sensor 92 is configured for measuring a temperature of heated air within duct 41. Second temperature sensor 92 can be positioned at any suitable location within dryer appliance 10. For example, second temperature sensor 92 may be positioned within or on duct 41, such as at outlet 82 of duct 41. Controller 56 can receive a signal from second temperature sensor 92 that corresponds to a temperature measurement of heated air within duct 41, e.g., a temperature measurement of heated air exiting duct 41 at outlet 82. Second temperature sensor 92 can be any suitable sensor. For example, second temperature sensor 92 may be a thermistor or a thermocouple.

[0031] Dryer appliance 10 also includes features for improving performance of dryer appliance 10. In particular, dryer appliance 10 includes features for limiting cycling of first temperature sensor 90 of dryer appliance 10. Such features are discussed in greater detail below.

[0032] As will be understood by those skilled in the art, dryer appliance 10 can be installed at various locations. The particular arrangement and setup of dryer appliance 10 at such locations can affect performance of dryer appliance 10. For example, a conduit (not shown) can be attached to vent 53 (FIG. 2) of dryer appliance 10 and receive moisture saturated air therefrom. The conduit can direct such moisture saturated air out of a building housing dryer appliance 10. Thus, the conduit assists dryer appliance 10 with drying articles. However, the length of conduit can affect performance of dryer appliance 10. For example, if the conduit is relatively long, it can be more difficult for air handler 48 to urge air out of vent 53 and through the conduit. Conversely, it can be relatively easier for air handler 48 to urge air out of vent 53 and through the conduit if the conduit is relatively short. The length of the conduit can vary depending upon the location of dryer appliance 10 within building. Thus, if dryer appliance 10 is located near an exterior wall, the conduit can be relatively short. Conversely, the conduit can be relatively long if dryer appliance 10 is distant from the exterior wall.

[0033] In a similar manner, lint and other debris within the conduit can also affect performance of dryer appliance 10. For example, if the conduit has a relatively large volume of debris therein, it can be more difficult for air handler 48 to urge air out of vent 53 and through the conduit. Conversely, it can be relatively easier for air handler 48 to urge air out of vent 53 and through the conduit if the conduit has a relatively small volume of debris therein.

[0034] Accordingly, the length of the conduit, the volume of debris within the conduit, and other factors can affect performance of dryer appliance 10. When such factors negatively affect performance of dryer appliance 10 to a significant degree, dryer appliance 10 is operating in a restricted condition. Conversely, dryer appliance 10 is operating in an unrestricted condition when such factors do not affect performance of dryer appliance 10 to a significant degree. As an example, when the conduit is relatively long and/or the conduit contains a relatively large volume of debris, dryer appliance 10 is operating in the restricted condition. Conversely, dryer appliance 10 is operating in the unrestricted condition when the conduit is relatively short and/or the conduit contains a relatively small volume of debris.

[0035] In the unrestricted condition, a volume of heated air flowing out of duct 41 can be relatively high, and a temperature of the heated air can be relatively low. Conversely, in the restricted condition, the volume of heated air flowing out of duct 41 can be relatively low, and the temperature of the heated air flowing out of duct 41 can be relatively high. Due to the increased temperature of heated air in duct 41 and housing 44 of heating assembly in the restricted condition, first temperature sensor 90 can trip or cycle and deactivate heating assembly 40. First temperature sensor 90 has an expected life time defined by a number of trips or cycles performed by first temperature sensor 90. Dryer appliance 10 includes features for limiting or reducing cycling of first temperature sensor 90 in order to preserve first temperature sensor 90. In particular, dryer appliance 10 includes features for avoiding unnecessary or excessive cycling of first temperature sensor 90 when dryer appliance 10 is operating in the restricted condition.

[0036] FIG. 4 illustrates a method 400 for operating a dryer appliance according to an exemplary embodiment of the present subject matter. Method 400 can be used to operate any suitable dryer appliance. For example, method 400 may be used to operate dryer appliance 10 (FIG. 1). In particular, controller 56 (FIG. 3) may be programmed to implement method 400.

[0037] At step 410, dryer appliance 10 is operated in order to dry articles within drum 26. As an example, a user can utilize knobs 70 to activate dryer appliance 10. In response to the user actuating knobs 70, controller 56 can operate motor 31 to spin drum 26 and fan 49 of air handler 48 at step 410. Controller 56 can also activate heating element 42 of heating assembly 40 to supply heated air to chamber 25 of drum 26 at step 410.
At step 420, first temperature sensor 90 is monitored in order to determine a number of cycles of first temperature sensor 90 during step 410. As an example, controller 56 can receive a signal from first temperature sensor 90 each time first temperature sensor 90 cycles, and controller 56 can tally or sum the number of cycles of first temperature sensor 90 during step 410 in order to determine the number of cycles of first temperature sensor 90 at step 420. As another example, controller 56 can detect heating element 42 of heating assembly 40 deactivating during step 410. It can be inferred that first temperature sensor 90 has cycled when heating element 42 of heating assembly 40 deactivates during step 410 if controller 56 has not yet deactuated heating assembly 40. Thus, each time heating element 42 of heating assembly 40 deactivates during step 410, controller 56 can infer that first temperature sensor 90 has cycled, and controller 56 can tally or sum the number of times heating element 42 of heating assembly 40 deactivates during step 410 in order to determine the number of cycles of first temperature sensor 90 at step 420.

At step 430, controller 56 determines if the number of cycles of first temperature sensor 90 from step 420 exceeds a threshold number. As an example, at step 420, controller 56 can compare the number of cycles of first temperature sensor 90 from step 420 to the threshold number. If the number of cycles of first temperature sensor 90 does not exceed the threshold number at step 430, controller 56 can continue to monitor first temperature sensor 90 at step 420. Conversely, controller 56 reduces a temperature set point of second temperature sensor 92 at step 440 if the number of cycles of the first temperature sensor 90 exceeds the threshold number at step 430.

The threshold number can be any suitable number. For example, the threshold number may be greater than fifteen. As another example, the threshold number may be about twenty. The threshold number may be selected in order to avoid excessive cycling of first temperature sensor 90 and premature failure of first temperature sensor 90. In particular, by monitoring the number of cycles of first temperature sensor 90 and reducing the temperature set point of second temperature sensor 92 at step 440 if the number of cycles of first temperature sensor 90 exceeds the threshold number, method 400 can assist in limiting or preventing cycling of first temperature sensor 90 after step 440 and prevent overcycling of first temperature sensor 90 during step 410.

For example, after reducing or adjusting the temperature set point of second temperature sensor 92 at step 440, controller 56 can regulate the temperature of heated air flowing through duct 41 with second temperature sensor 92 rather than first temperature sensor 90. Thus, the temperature set point of second temperature sensor 92 at step 440 can be selected such that cycling of first temperature sensor 90 is limited or prevented. For example, the temperature set point of second temperature sensor 92 at step 440 can be less than a tripping or cycling temperature of first temperature sensor 90. In such a manner, method 400 limits usage of first temperature sensor 90 during step 410 and can prevent first temperature sensor 90 from approaching its estimated life time earlier than expected. Method 400 can particularly assist with hindering overuse or overcycling of first temperature sensor 90 when dryer appliance 10 is operating in the restricted condition.

In method 400, controller 56 can also select an operating temperature of dryer appliance 10 based at least in part on the operating condition of dryer appliance 10. For example, controller 56 can select the operating temperature of dryer appliance 10 from a first temperature set point and a second temperature set point. The first and second temperature set points are different from each other. The first temperature set point can correspond to the maximum operating temperature of dryer appliance 10 in the unrestricted condition. Conversely, the second temperature set point can correspond to a maximum operating temperature of dryer appliance 10 in the restricted condition. Thus, controller 56 selects the second temperature set point if the operating condition of dryer appliance 10 is the restricted condition, and controller 56 selects the first temperature set point if the operating condition of dryer appliance 10 is the unrestricted condition. By selecting the maximum operating temperature of dryer appliance 10 based upon the operating condition of dryer appliance 10, performance of dryer appliance 10 can be improved.

The first and second temperature set points can be established in any suitable manner at step 410. For example, the first and second temperature set points may be selected by a user of dryer appliance 10. As another example, the first and second temperature set points may be selected by a manufacturer of dryer appliance 10, e.g., during assembly or manufacture of dryer appliance 10.

FIG. 5 illustrates a method 500 for operating a dryer appliance according to another exemplary embodiment of the present subject matter. Method 500 can be used to operate any suitable dryer appliance. For example, method 500 may be used to operate dryer appliance 10 (FIG. 1). In particular, controller 56 (FIG. 3) may be programmed to implement method 500.

At step 510, dryer appliance 10 is operated in order to dry articles within drum 26. As an example, a user can utilize knobs 70 to activate dryer appliance 10. In response to the user actuating knobs 70, controller 56 can operate motor 31 to spin drum 26 and fan 49 of air handler 48 at step 510. Controller 56 can also activate heating element 42 of heating assembly 40 to supply heated air to chamber 25 of drum 26 at step 510.

At step 520, a temperature set point of second temperature sensor 92 is set to a first temperature set point. As an example, controller 56 can set the temperature set point of second temperature sensor 92 to the first temperature set point at step 510. With the temperature set point of second temperature sensor 92 set to the first temperature set point, controller 56 can deactivate or cycle heating assembly 40 when a temperature measurement of second temperature sensor 92 exceeds the first temperature set point during step 510.

At step 530, controller 56 determines if an operating condition of dryer appliance 10 is a restricted condition. If the operating condition of dryer appliance 10 is not the restricted condition at step 530, controller 56 can continue to monitor temperature measurements of second temperature sensor 92 with second temperature sensor 92 set to the first temperature set point during step 510. Conversely, controller 56 adjusts or reduces the temperature set point of second temperature sensor 92 to a second temperature set point at step 540 if the operating condition of dryer appliance 10 is the restricted condition at step 530.

With the temperature set point of second temperature sensor 92 set to the second temperature set point, controller 56 can deactivate or cycle heating assembly 40 when the temperature measurement of second temperature sensor 92 exceeds the second temperature set point during step 510.
The first and second temperature set points can be any suitable temperatures. For example, the first temperature set point may be greater than the second temperature set point. Thus, in the unrestricted condition, controller 56 can operate dryer appliance 10 such that the temperature set point of first temperature sensor 92 is the first temperature set point, and controller 56 can operate dryer appliance 10 such that the temperature set point of second temperature sensor 92 is the second temperature set point in the restricted condition. When the first temperature set point is greater than the second temperature set point, articles within drum 26 can dry more quickly if controller 56 operates dryer appliance 10 such that the temperature set point of second temperature sensor 92 is the first temperature set point, e.g., due to controller 56 permitting heated air exiting outlet 82 to have a higher temperature relative to the second temperature set point.

[0049] It is to be appreciated that one ordinarily skilled in the art will realize that well-known methods may be applied or mechanisms used to determine or establish the operating condition of dryer appliance 10 at step 530. As an example, a user can utilize knobs 70 to indicate the operating condition of dryer appliance 10. As another example, the operating condition of dryer appliance 10 may be established in accordance with methods described in U.S. patent application Ser. No. 13/787,183 to Ionelina Silvia Praisescu et al. filed on Mar. 6, 2013, the disclosure of which is incorporated by reference herein. Such methods are discussed in greater detail below.

[0050] To assist with improving performance of dryer appliance 10, controller 56 can determine an operating condition of dryer appliance 10 at step 530. In particular, controller 56 can determine if the operating condition of dryer appliance 10 is the restricted condition or the unrestricted condition. For example, controller 56 can calculate a temperature change for heated air within duct 41 between a first time and a second, e.g., later, time. Controller 56 can determine that dryer appliance 10 is operating in the restricted condition or the unrestricted condition based at least in part on the temperature change for the heated air between the first and second times. In particular, controller 56 can determine that dryer appliance 10 is operating in the restricted condition if the temperature change for the heated air is greater than a threshold value between the first and second times. Conversely, controller 56 can determine that dryer appliance 10 is operating in the unrestricted condition if the temperature change for the heated air is less than the threshold value between the first and second times.

[0051] At step 550, first temperature sensor 90 is monitored in order to determine a number of cycles of first temperature sensor 90, e.g., during step 510. As an example, controller 56 can receive a signal from first temperature sensor 90 each time first temperature sensor 90 cycles during step 510, and controller 56 can tally or sum the number of cycles of first temperature sensor 90 during step 510 in order to determine the number of cycles of first temperature sensor 90 at step 550. As another example, controller 56 can detect heating element 42 of heating assembly 40 deactivating during step 550. It can be inferred that first temperature sensor 90 has cycled when heating element 42 of heating assembly 40 deactivates during step 510 if controller 56 has not expressly deactivated heating assembly 40. Thus, each time heating element 42 of heating assembly 40 deactivates during step 510, controller 56 can infer that first temperature sensor 90 has cycled, and controller 56 can tally or sum the number of times heating element 42 of heating assembly 40 deactivates during step 510 in order to determine the number of cycles of first temperature sensor 90 at step 550.

[0052] At step 560, controller 56 determines if the number of cycles of first temperature sensor 90 from step 550 exceeds a threshold number. As an example, at step 560, controller 56 can compare the number of cycles of first temperature sensor 90 from step 550 to the threshold number. If the number of cycles of first temperature sensor 90 does not exceed the threshold number at step 560, controller 56 can continue to monitor first temperature sensor 90 at step 550. Conversely, controller 56 changes or reduces the temperature set point of second temperature sensor 92 to a third temperature set point at step 570 if the number of cycles of first temperature sensor 90 exceeds the threshold number at step 560.

[0053] The threshold number can be any suitable number. For example, the threshold number may be greater than fifteen. As another example, the threshold number may be about twenty. The threshold number may be selected in order to avoid excessive cycling of first temperature sensor 90. In particular, by monitoring the number of cycles of first temperature sensor 90 and changing the temperature set point of second temperature sensor 92 to the third temperature set point at step 570 if the number of cycles of first temperature sensor 90 exceeds the threshold number, method 500 can assist with limiting or preventing cycling of first temperature sensor 90 after step 570.

[0054] For example, after changing or reducing the temperature set point of second temperature sensor 92 to the third temperature set point at step 570, controller 56 can regulate the temperature of heated air flowing through duct 41 with second temperature sensor 92 rather than first temperature sensor 90. Thus, the third temperature set point of second temperature sensor 92 can be selected such that cycling of first temperature sensor 90 is limited or prevented. For example, the third temperature set point of second temperature sensor 92 at step 570 can be less than a tripping or cycling temperature of first temperature sensor 90. In such a manner, method 500 limits usage of first temperature sensor 90 during step 510 and can prevent first temperature sensor 90 from approaching its estimated life time earlier than expected. Method 500 can particularly assist with hindering overuse or overcycling of first temperature sensor 90 when dryer appliance 10 is operating in the restricted condition.

[0055] FIGS. 6 and 7 illustrate plots of time versus exemplary temperature measurements of second temperature sensor 92. In FIG. 6, the operating condition of dryer appliance 10 is determined to be the unrestricted condition at step 530. Thus, controller 56 monitors temperature measurements of second temperature sensor 92 with second temperature sensor 92 set to the first temperature set point after detecting the unrestricted condition in FIG. 6. Conversely, the operating condition of dryer appliance 10 is determined to be the restricted condition at step 530 in FIG. 7. Thus, in FIG. 7, controller 56 monitors temperature measurements of second temperature sensor 92 with second temperature sensor 92 set to the second temperature set point after detecting the restricted condition.

[0056] As may be seen in FIG. 7, during an initial portion (indicated with bracket 1) of a time interval of the drying operation, a slope or first derivative of temperature measurements from second temperature sensor 92 with respect to time increases rapidly when heating assembly 40 is activated. The restricted condition may correspond to the condition of dryer appliance 10 when the slope or first derivative of temperature
measurements from second temperature sensor 92 with respect to time exceeds a threshold value. Thus, the restricted condition can be detected at step 530 due to a magnitude of the slope or first derivative of temperature measurements from second temperature sensor 92 during the initial portion I of the time interval.

[0057] In FIGS. 6 and 7, first temperature sensor 90 cycles twenty times during operation of the dryer appliance 10 (indicated with bracket N). After first temperature sensor 90 has cycled twenty times, controller 56 changes or reduces the temperature set point of second temperature sensor 92 to the third temperature set point at step 570, e.g., such that first temperature sensor 90 does not cycle for a remainder of the drying operation. Thus, in FIGS. 6 and 7, controller 56 utilizes second temperature sensor 92 to regulate the temperature of heated air exiting duct 41 after first temperature sensor 90 has cycled twenty times because the temperature set point of second temperature sensor 92 has been reduced to the third temperature set point.

[0058] The first, second and third temperature set points of second temperature sensor 92 can be established in any suitable manner. For example, the first, second and third temperature set points of second temperature sensor 92 may be selected by a user of dryer appliance 10. As another example, first, second and third temperature set points of second temperature sensor 92 may be selected by a manufacturer of dryer appliance 10, e.g., during assembly or manufacture of dryer appliance 10.

[0059] The first, second and third temperature set points of second temperature sensor 92 can be any suitable temperatures. In certain exemplary embodiments, the first temperature set point of second temperature sensor 92 may be greater than the second temperature set point of second temperature sensor 92. Similarly, the second temperature set point of second temperature sensor 92 may be greater than the third temperature set point of second temperature sensor 92. As an example, the third temperature set point of second temperature sensor 92 may be less than about three hundred degrees Fahrenheit, such as about two hundred and forty degrees Fahrenheit.

[0060] This written description uses examples to disclose the invention, including the best mode, and also to enable any person skilled in the art to practice the invention, including making and using any devices or systems and performing any incorporated methods. The patentable scope of the invention is defined by the claims, and may include other examples that occur to those skilled in the art. Such other examples are intended to be within the scope of the claims if they include structural elements that do not differ from the literal language of the claims, or if they include equivalent structural elements with insubstantial differences from the literal languages of the claims.

What is claimed is:

1. A method for operating a dryer appliance, comprising:
   - initiating a drying cycle of the dryer appliance in order to dry articles within a drum of the dryer appliance;
   - monitoring a first temperature sensor of the dryer appliance in order to determine a number of cycles of the first temperature sensor during the drying cycle of the dryer appliance;
   - reducing a temperature set point of a second temperature sensor of the dryer appliance if the number of cycles of the first temperature sensor exceeds a threshold number during said step of monitoring.

2. The method of claim 1, wherein the first temperature sensor comprises a bimetallic switch.

3. The method of claim 1, wherein the second temperature sensor comprises a thermistor.

4. The method of claim 1, wherein the threshold number is greater than fifteen.

5. The method of claim 4, wherein the threshold number is about twenty.

6. A dryer appliance, comprising:
   - a cabinet;
   - a drum rotatably mounted within the cabinet, the drum defining a chamber for receipt of articles for drying;
   - a motor configured for selectively rotating the drum within the cabinet;
   - a heating assembly configured for directing a flow of heated fluid into the chamber of the drum, the heating assembly comprising:
     - a housing;
     - a heating element disposed within the housing;
     - a duct extending between the housing of the heating assembly and the drum, the duct having an outlet positioned at the chamber of the drum;
     - a first temperature sensor positioned at the housing and a second temperature sensor positioned at the outlet of the duct;
     - a controller in communication with the motor, the heating element and the first and second temperature sensors, the controller configured for setting a temperature set point of the second temperature sensor to a first temperature set point; determining if an operating condition of the dryer appliance is a restricted condition; adjusting the temperature set point of the second temperature sensor to a second temperature set point if the operating condition is the restricted condition at said step of determining:
       - monitoring the first temperature sensor in order to determine a number of cycles of the first temperature sensor; and
       - changing the temperature set point of the second temperature sensor to a third temperature set point if the number of cycles of the first temperature sensor exceeds a threshold number during said step of monitoring.

7. The appliance of claim 6, wherein the first temperature sensor comprises a bimetallic switch.

8. The appliance of claim 6, wherein the second temperature sensor comprises a thermistor.

9. The appliance of claim 6, wherein the first temperature set point is greater than the second temperature set point.

10. The appliance of claim 9, wherein the second temperature set point is greater than the third temperature set point.

11. The appliance of claim 6, wherein the third temperature set point is selected to avoid cycling the first temperature sensor after said step of changing.

12. The appliance of claim 11, wherein the third temperature set point is less than about three hundred degrees Fahrenheit.

13. The appliance of claim 11, wherein the third temperature set point is about two hundred and forty degrees Fahrenheit.

14. The appliance of claim 6, wherein the threshold number is greater than fifteen.
15. The appliance of claim 14, wherein the threshold number is about twenty.

16. The appliance of claim 6, wherein said step of determining comprises establishing a first derivative of temperature measurements from the second temperature sensor, the restricted condition corresponding to the condition of the dryer appliance when the first derivative of temperature measurements from the second temperature sensor exceeds a threshold value.

17. A method for operating a dryer appliance, comprising:
   setting a temperature set point of a thermistor of the dryer appliance to a first temperature set point;
   determining if an operating condition of the dryer appliance is a restricted condition;
   adjusting the temperature set point of the thermistor to a second temperature set point if the operating condition is the restricted condition at said step of determining;
   monitoring a thermostat of the dryer appliance in order to determine a number of cycles of the thermostat; and
   changing the temperature set point of the thermistor to a third temperature set point if the number of cycles of the thermostat exceeds a threshold number during said step of monitoring.

18. The method of claim 17, wherein the threshold number is greater than fifteen.

19. The method of claim 17, wherein the third temperature set point is selected to avoid cycling the thermostat after said step of changing.

20. The method of claim 17, wherein the first temperature set point is greater than the second temperature set point, and the second temperature set point is greater than the third temperature set point.