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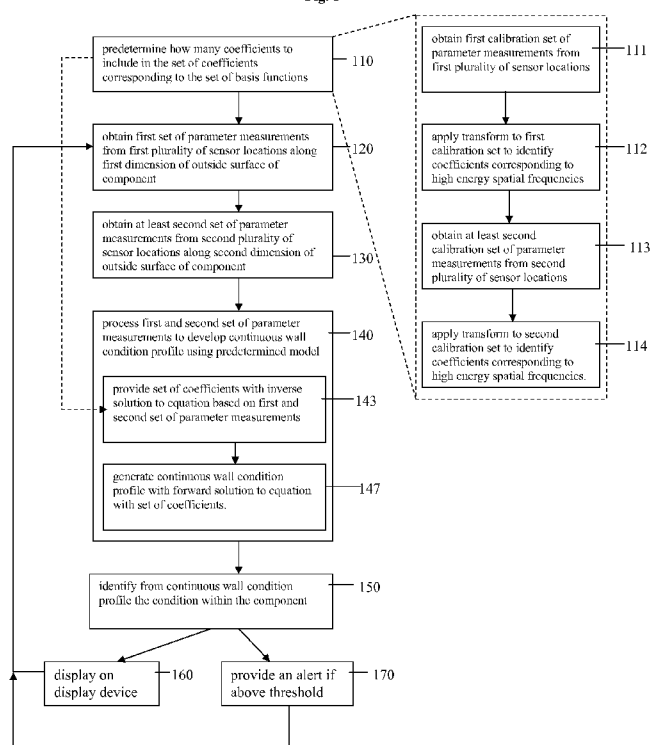
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(54) Title: SENSOR NETWORK DESIGN AND INVERSE MODELING FOR REACTOR CONDITION MONITORING

Fig. 1



(57) Abstract: Methods and systems for detecting a condition within a component of a process plant, including obtaining a first and second set of parameter measurements from a first and second plurality of sensor locations along a first dimension of an outside surface of a component, processing the first and second set of parameter measurements to develop a continuous surface condition profile of the component using a predetermined model. The predetermined model includes a forward solution to an equation describing the condition and is linearly separable in at least two dimensions corresponding to the first and second dimension. The model includes an inverse solution to the equation to provide a set of coefficients corresponding to a set of basis functions of the forward solution based on the first and second set of parameter measurements.

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