ENGINEERING

Premium Edit

~~This paper presents method to detect air leakage of an air conditioning compressor using image processing techniques.~~ To ensure the performance of an~~Quality of~~ air conditioning compressor, air leakages must be prevented ~~should not have air leakage~~. Conventionally, air leaks are detected by~~To test an air conditioning compressor leak,~~ pumping the compressor with air ~~is pumped into a compressor~~ and then submerg~~inged~~ it in~~to the~~ a water tank~~.~~ to observe ~~If~~ air bubbles ~~occurs~~ from~~at~~ the surface of the ~~air conditioning~~ compressor~~, that leakage compressor must be returned for maintenance~~. ~~In t~~This work proposes a new method that employs image processing techniques to detect air leakage and search for the leakage point with high accuracy, ~~fast~~speed, and precision~~e processes was proposed~~. In ~~a~~the preprocessing ~~procedure~~ stage~~to detect the air bubbles~~, threshold and median filter techniques ~~have been~~are used. The ~~C~~connected-component labeling technique is used to detect ~~the~~ air bubbles, while blob analysis is employed as the search~~ing~~ technique to analyze a group of ~~the~~ air bubbles in sequential images. The performance of the proposed algorithm was tested in experiments ~~are tested with proposed algorithm to determine the leakage point of an air conditioning compressor~~,~~.~~ where ~~T~~the location of the leakage point was represented as a coordinate~~d~~ point. The results demonstrated that the proposed method could accurately detect the leakage point during the process ~~could be accurately detected~~. The error in the estimated~~ion~~ leakage point compared to the actual leakage point ~~had error~~ was less than 5% ~~compared to the real leakage point~~.

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Comment [A1]: For a logical flow of ideas, the study background should be provided before presenting what the study did. Therefore, I have incorporated this information later in the abstract.

Comment [A2]: The original wording of "quality of... compressor" was not clear. I have suggested using "performance" instead. Please review. You may alternatively consider using "efficiency".

Comment [A3]: I have removed this information because it does not provide any useful detail about the detection method itself.

Comment [A4]: The transition to this sentence is quite abrupt. To put your method into context, it is necessary to mention the limitations of using the conventional method. Please consider providing these details.

Comment [A5]: The use of the word "processes" was not clear in this sentence. If you meant that the method employs certain processes, then I suggest revising the sentence to "This work proposes a new method that employs highly accurate, fast, and precise image processing techniques to detect..."

Comment [A6]: I have removed this information as it is self-evident in the context of the abstract.