TITLE: USE OF ARTIFICIAL INTELLIGENCE IN BEARING INDUSTRY.

1. PREDICTION OF LIFE AND MAINTAINANCE

Every mechanical component has its expected life initially, but after dealing with the load conditions in industries the life of components does not meet the expectations. So the life is based on the basis of designed load.

So in our project we are dealing with the major factors ie,

* Temperature
* Vibrations

And after doing the analysis of live data collected of all these factors we use a supervised machine learning approach to predict the reliability of mechanical components obtained from real industry.

Here we are making a prototype too with the help of nodemcu(inbuilt wifi micro controller) and various sensitive sensors which collect the data of components and provide it for automation which predict the reliability of load conditions and can be used to give various directions like warning to the machinery components and maintenance reminders.

This device can be very advantageous at mass production units as it can help identify the span or tenure of the machine or used for maintenance purposes.

As during the long working hours of machine it inspects and indicates as to when the machine needs attention avoid excessive wear and tear and any other technical issues that may rise.

The device not only does analysis on daily basis but with the help of an application synced with the technology known as Machine Learning , it sends the consumer or the owner of the machine a report of the temperature & vibration of the machine during that specific month and compares it with the past data and gives a clear vision about the performance of the machine and an exact idea whether the performance has decreased i.e has it become progressively worse or has it improved , which can also thereby help the owner to calculate future expenses and investment in machinery .

Also it indicates the owner as to when the machine has reached its peak and needs to be shut and when can it be used again i.e the device calculates the span for which the machine shouldn’t be used and inform us about the same.

1. PREDICTION OF QUALITY OF OIL AND COOLENT.

--> Coolant condition monitoring tests include: -

pH(on a daily basis)

(1) A high pH (8.5+) promotes good protection from corrosion and microorganisms.

(2) Low pH promotes the metal corrosion & rusting of steel and steel alloys.

(3) Low pH causes the skin related issues.

For this daily monitoring of pH of coolant, labor requirement is compulsory and chance of human error increases as there is human involvement.

Through our prototype we are making this monitoring digital by using pH sensor which will send continous pH values of the coolant and can make it very easier for the industry to deal with issues related to it.

Another point is that we can decide when to increase or decrease the level of pH(in a way quality of coolant) for different purposes like less metal corrosion (low pH problem) and good washing property (high pH advantage).

Coolants provide an excellent environment for the growth and reproduction of microorganisms. Common microorganisms consist of bacteria and fungi (yeast and molds). Microorganisms disturb the chemical structure of coolant due to which the coolant makes emulsion with the tramp oil. Microorganisms digest helpful ingredients and produce foul odors. Microbes during their metabolic process produce the metabolic acid, which cause the decrease in pH of coolant.

This decrease can also be detected immediately giving an indication of growth of microorganisms.

--> Another type of MWF is straight oils and neat oils for the selection of both of them various points come into play ie:

Health and safety

Waste management

Bio-treatment etc

These MWFs are made for working in conditions of low temperature but as soon as the temperature rises they secrete dangerous gases like SO2, CO2 etc. These secretions are very harmful for the people working there as well as for the quality of the oil.

By dealing with this property we can handle waste management of the industrial environment and can also deal with the quality of the oils.

As the temperature rises the sensor kept near the environment of oil will sense the amount of SO2 and comparative assessment can be done.

TECHNOLOGIES USED:-

* AI
* I.O.T (internet of things)

TOOLS USED:-

* Nodemcu
* Machine Learning
* Sensors

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