# Save Energy by Condition Monitoring your Assets

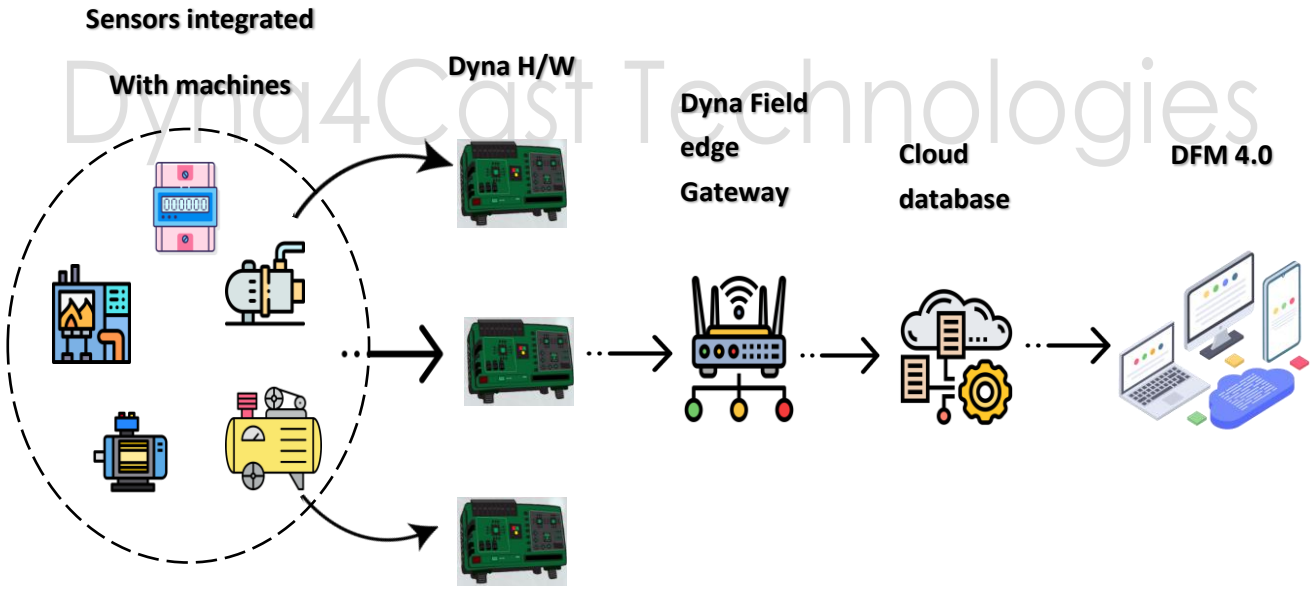
## What is condition monitoring?



Condition-based monitoring is an advanced maintenance approach with which one can monitor the performing assets in an industry on a real-time basis. With sensors integrated with the machines, it will transmit data such as vibrations, speed, acoustics, temperature, lubricant level, and other parameters of some unique machines. The collected data is given as an input to an AI/ML model, which will trace out anomalies in the performance of the machine by comparing the acquired patterns of the parameters. If it discovers that the analysed result is below or above the threshold levels, it will consider it abnormal and notify the user. The entire process is guided by algorithms defined by humans. By mapping the patterns, it will show how much energy is consumed by the asset over different time periods and the reasons for its varied energy consumption. Energy consumption can be reduced by recognising the problem and performing the necessary maintenance activities, which will be beneficial to customers during energy audits.

## Why is CBM a need of the hour?

Let us take a foundry or a diecasting plant, for example. Reports say that in a foundry, it takes about 1100 KWh for a furnace to heat a tonne of metal. Only 600–800 KWh are used by the furnace, with the rest consumed by its subsystems and losses. Subsystem in the sense that utilities like air compressors, motors, pumps, coolant water systems, heat exchangers, etc. contribute to the melting process along with the furnace. Furthermore, the cooling system accounts for 20-25% of all losses. When all these are covered by condition monitoring, one can monitor the energy consumed by the assets and take necessary action when consumption patterns are abnormal.






## How it helps in energy saving?

Here, the cooling water system accounts for 20–22% of all losses. This is due to insufficient water flow, faulty cooling towers, varying temperature and pressure, and a lack of proper heat exchange. So, by integrating our hardware, i.e., temperature, speed, flow, and pressure sensors on the utilities in the cooling

water system, we can fetch its real-time operating data. With this data, our AI will perform a deep analysis and notify the user if any abnormal results are found. By addressing the issue, the utility's performance is restored, which increases the performance of the cooling system. This results in efficient exchange of heat from the furnace, thus increasing the furnace's lifespan, which in fact saves the energy consumed by the furnace and reduces all losses.

## Conclusion

By implementing condition monitoring on your production line, you can see an immense change in your productivity and maintenance activities as well. It ensures high ROI by saving the energy consumed by faulty machines.



## *References*

[1] *Caroline Eisner, "Condition-Based vs. Predictive Maintenance," Maintain X, 12 april 2022. [Online]. Available: https://www.getmaintainx.com/learning-center/condition-based-vs-predictive-maintenance/.*

[2] *Er. Ashok Sethuraman, "condition based monitoring towards energy conservation in the induction furnace based foundry and utilities," 2021.*

[3] *TWI, "What is condition monitoring? Everything you needd to know.," [Online]. Available: https://www.twi-global.com/technical-knowledge/faqs/what-is-condition-monitoring.*