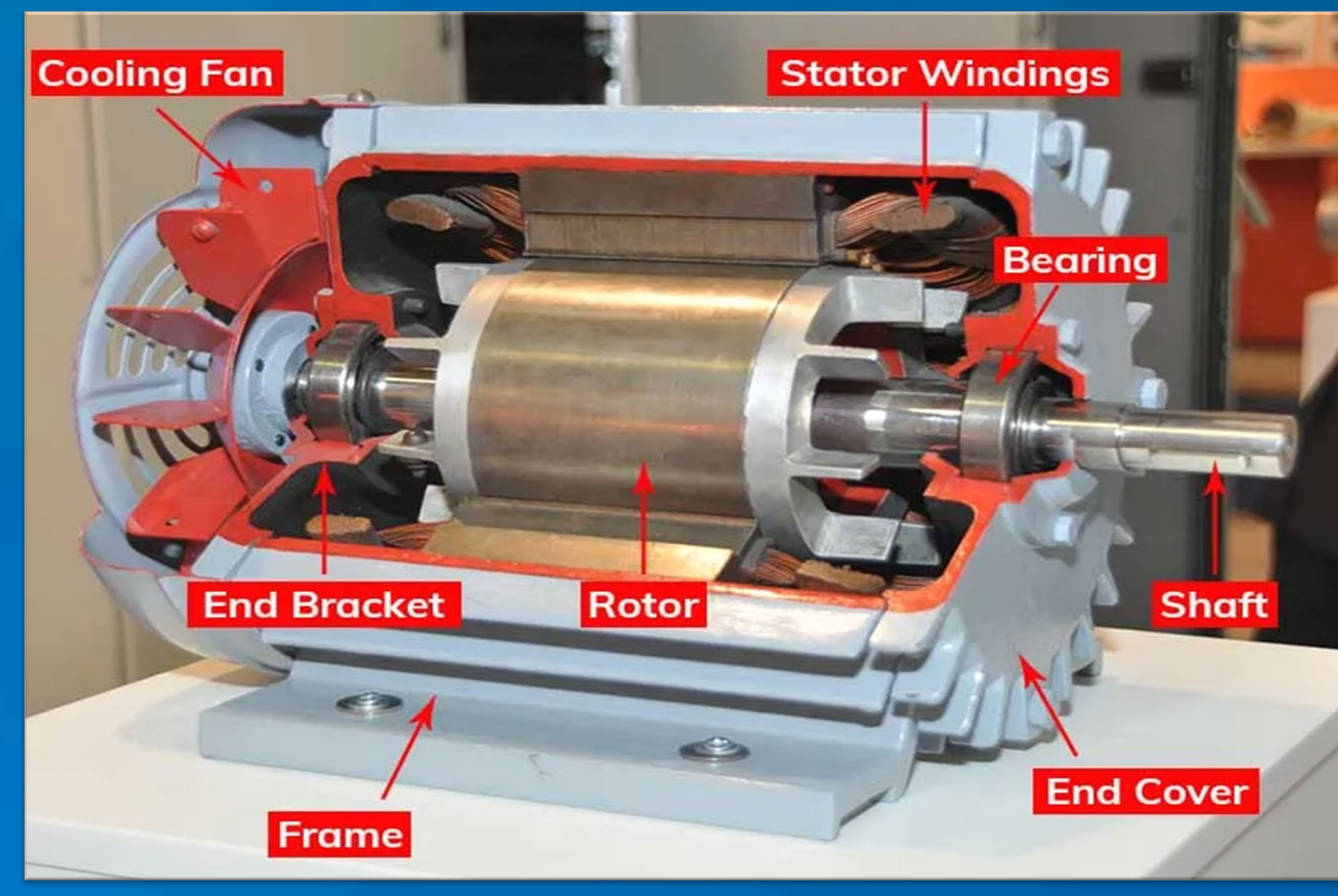
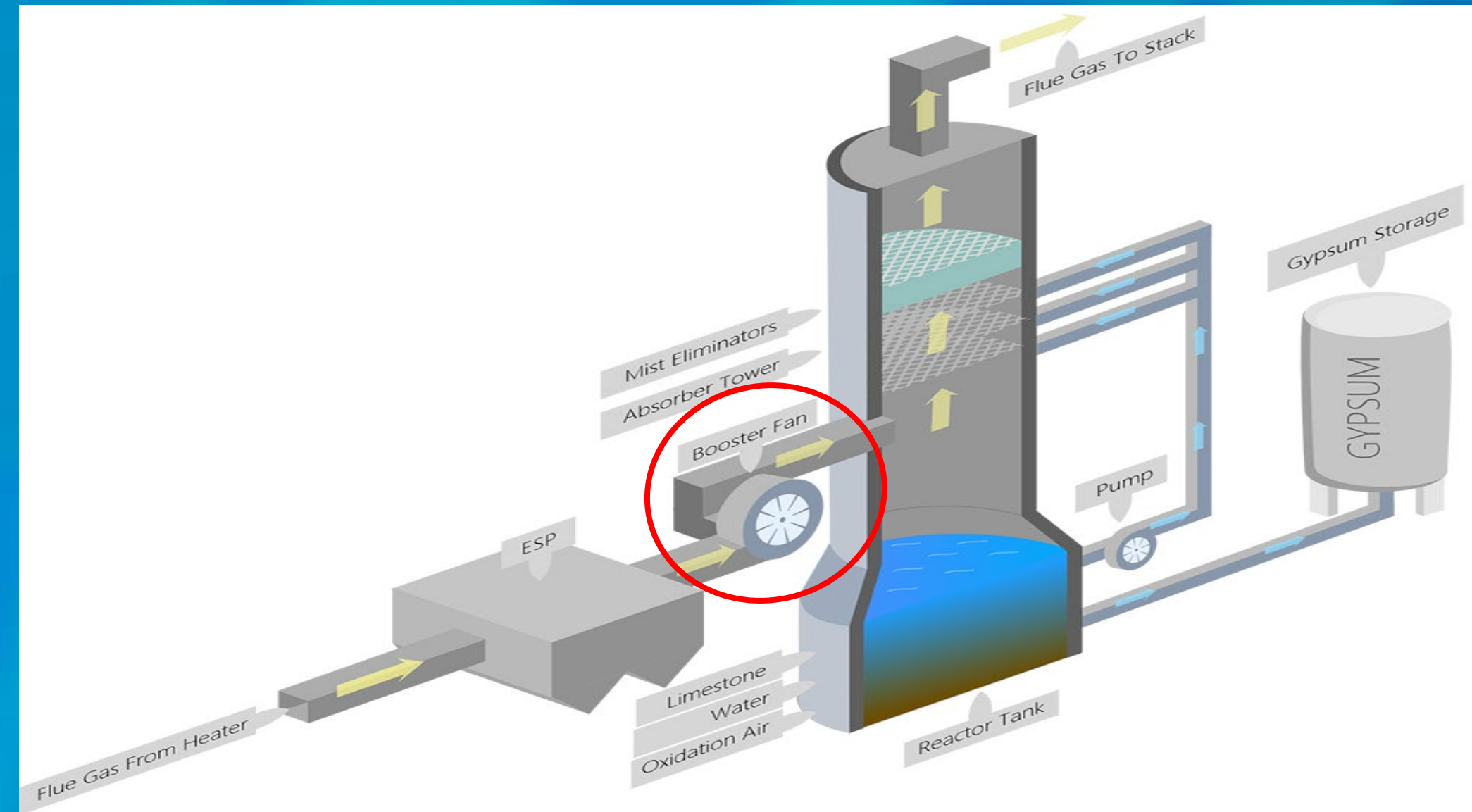


Inventors: Dr. BU Siqi, Dr. LEE Hiu Hung, HUANG Chao, Howard CHAN Chun Hung

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Problem:

- Flue gas desulfurization (FGD) system excludes sulphide generated during coal combustion in the power industry.
- The anomalies of the FGD motor will lead to the failure of the booster fan, leading to the direct emission of pollutants into the air.

Desired Mitigation:

- Perform diagnostics of FGD motor.
- Predict the remaining useful life of the FGD motors through suitable data-driven AI modelling and training.
- Provide a motor health monitoring system which,
 - Show motor operation status,
 - Detect, diagnose, and give warnings, and,
 - Classify anomalies.

Achieved Outcomes:

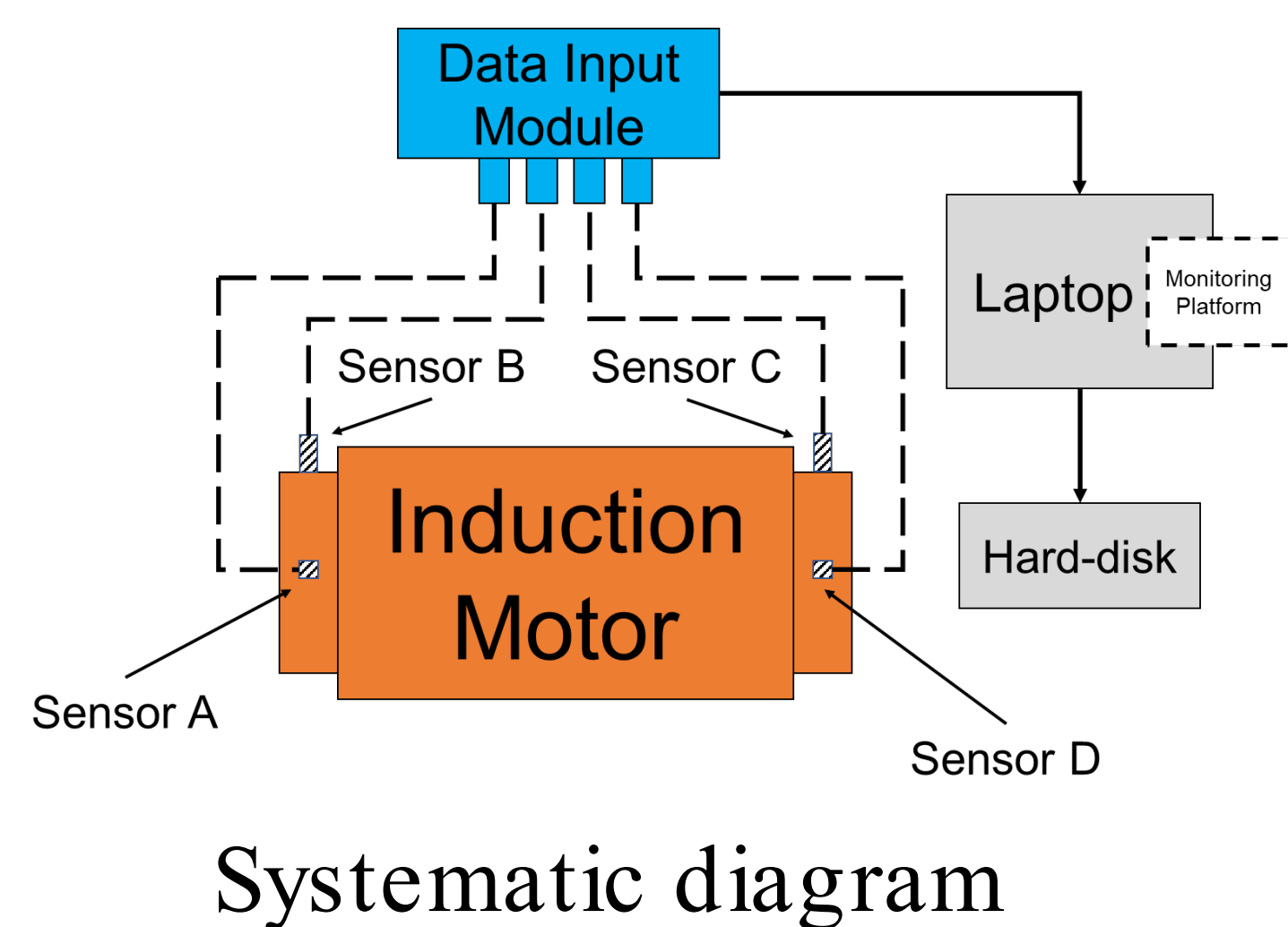
- Model accuracy $\geq 90\%$ (F1-score).
- Automate the diagnosis process and eliminate human error
- Fault diagnostic times reduced by over 80%.
- Highly compatible with other industries that utilize induction motors (IMs)

Solution and Novelty:

Data Acquisition System

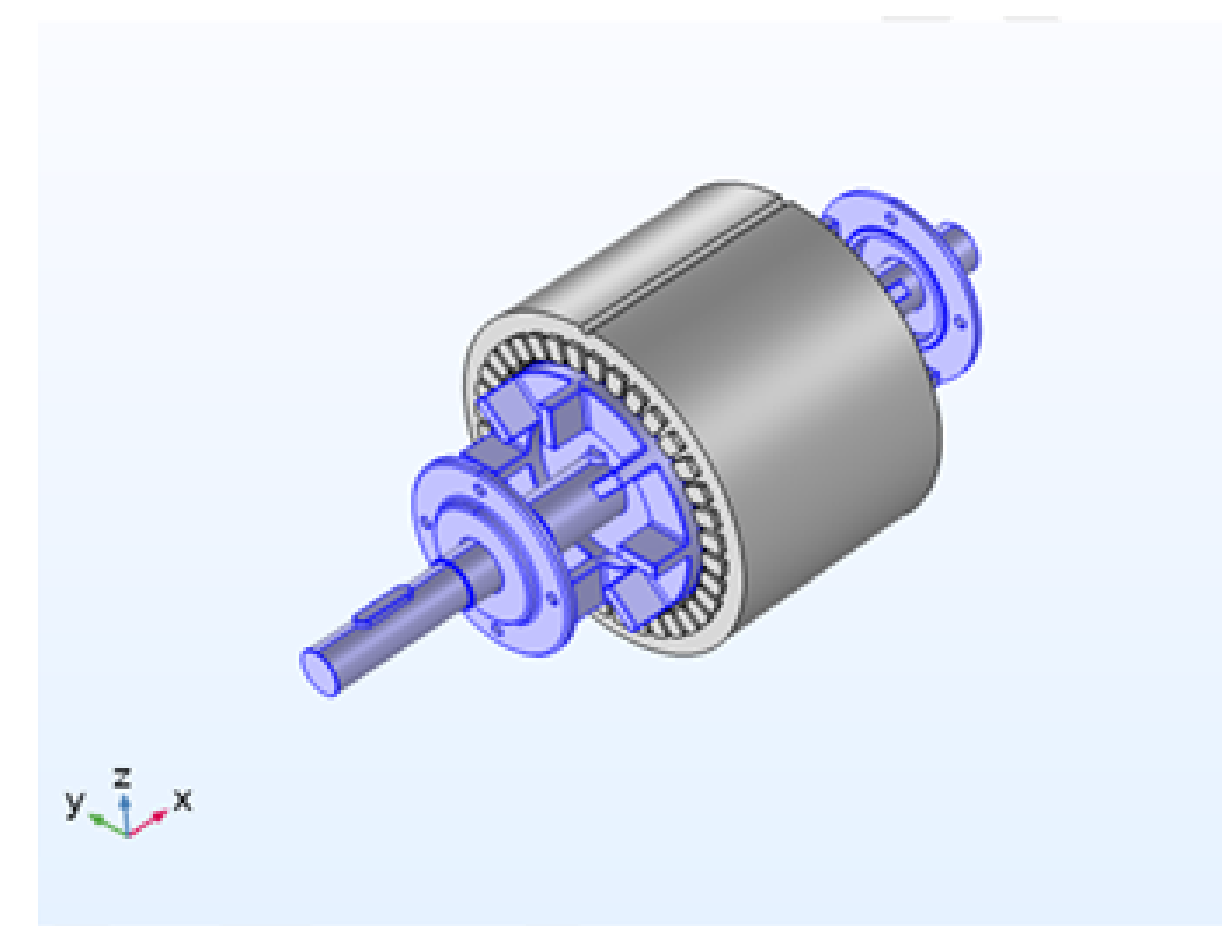


FGD Booster Fan Motor

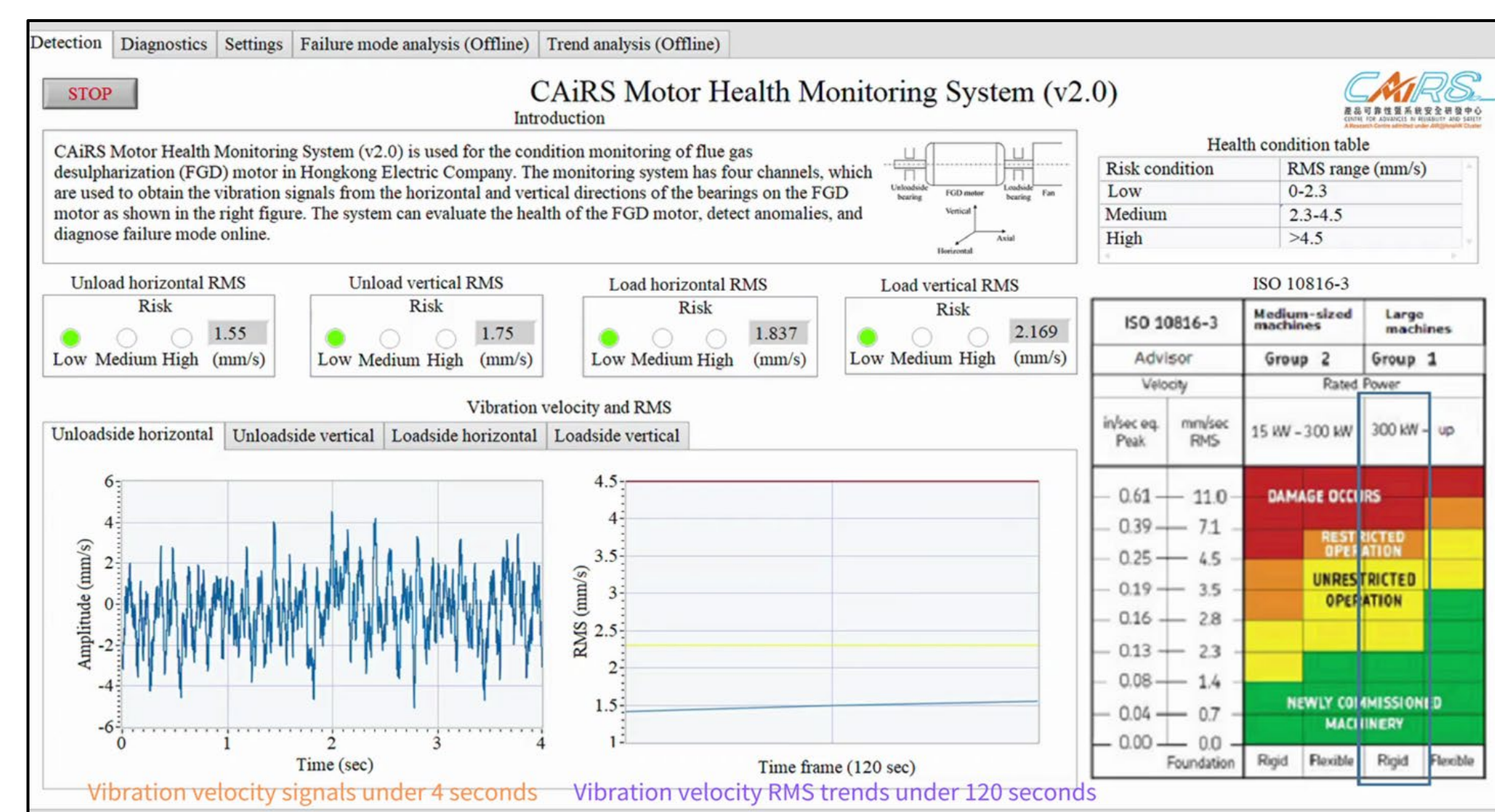
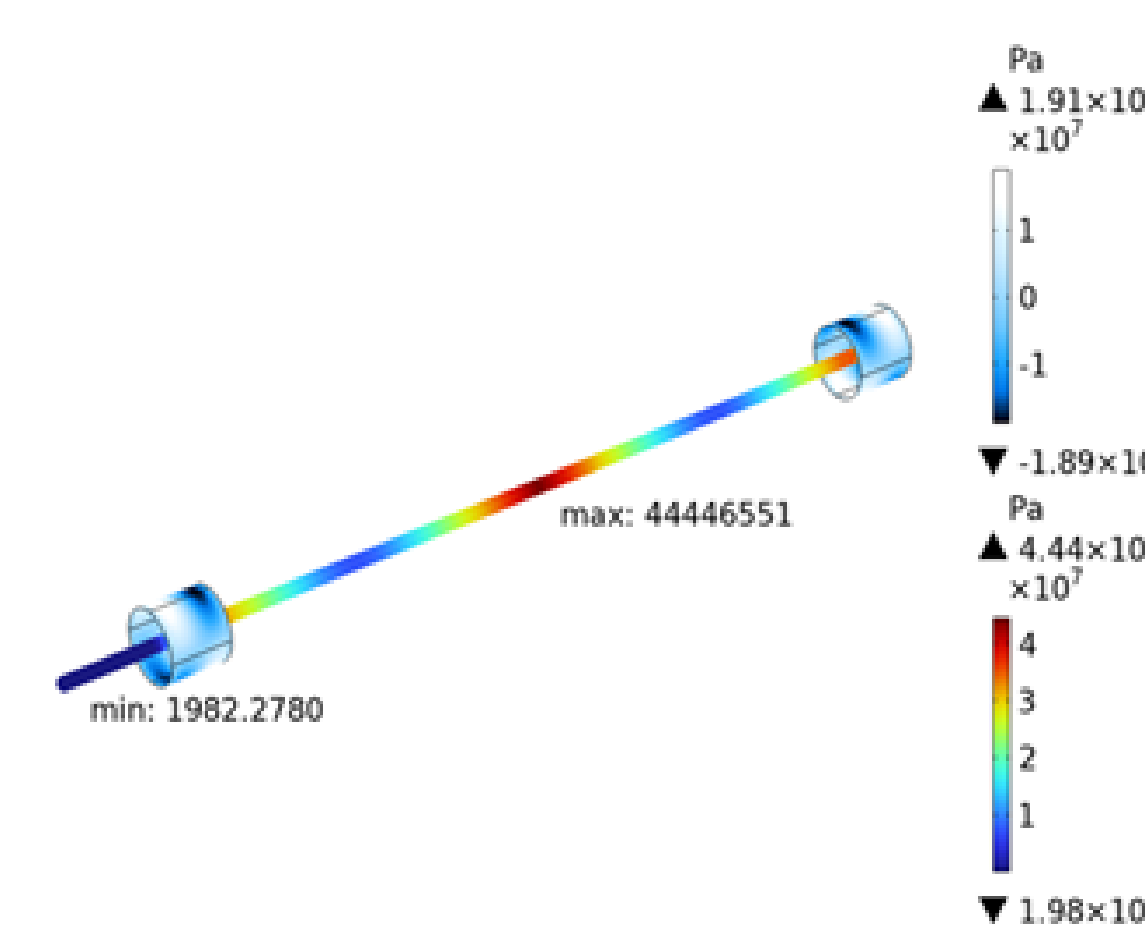


Systematic diagram

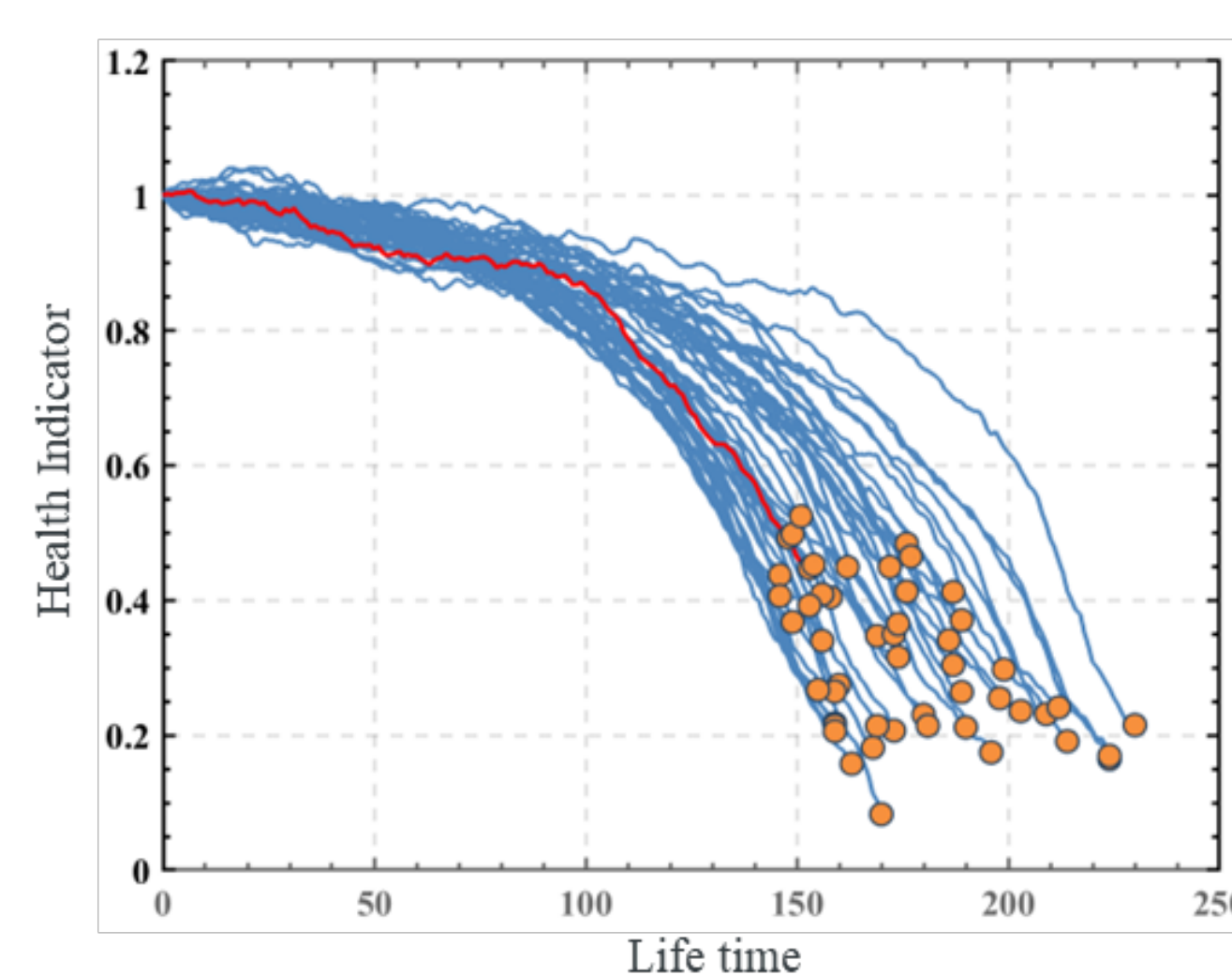
Remaining Useful Life (RUL) Prediction



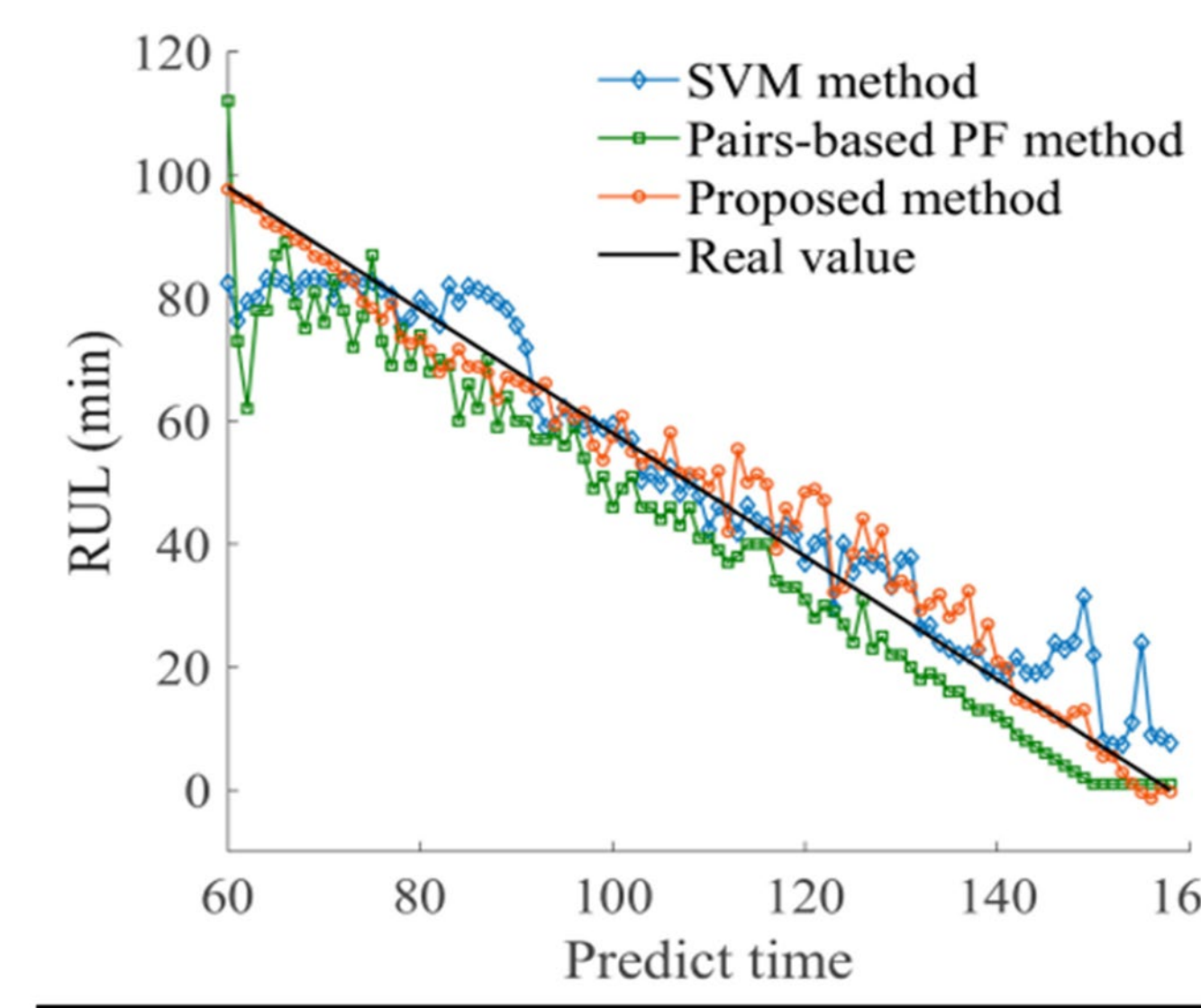
Motor shaft simulation



User interface of motor monitor system



AI training result



| Method | Prediction RMSE |
|-----------------|-----------------|
| SVM | 45.597 |
| Pair-based PF | 38.748 |
| Proposed method | 6.759 |

Automatically diagnose anomalies in IMs

Compatible with other industries that utilize IMs

Over 90% Accuracy, Reduce 80% Fault diagnostic times

Patent

Title: System and Method for Condition Monitoring of an Induction Motor.

Registered region and date: Hong Kong, 18/10/23

Patent No: HK30094379

Contact Information



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