

# Smart Railways

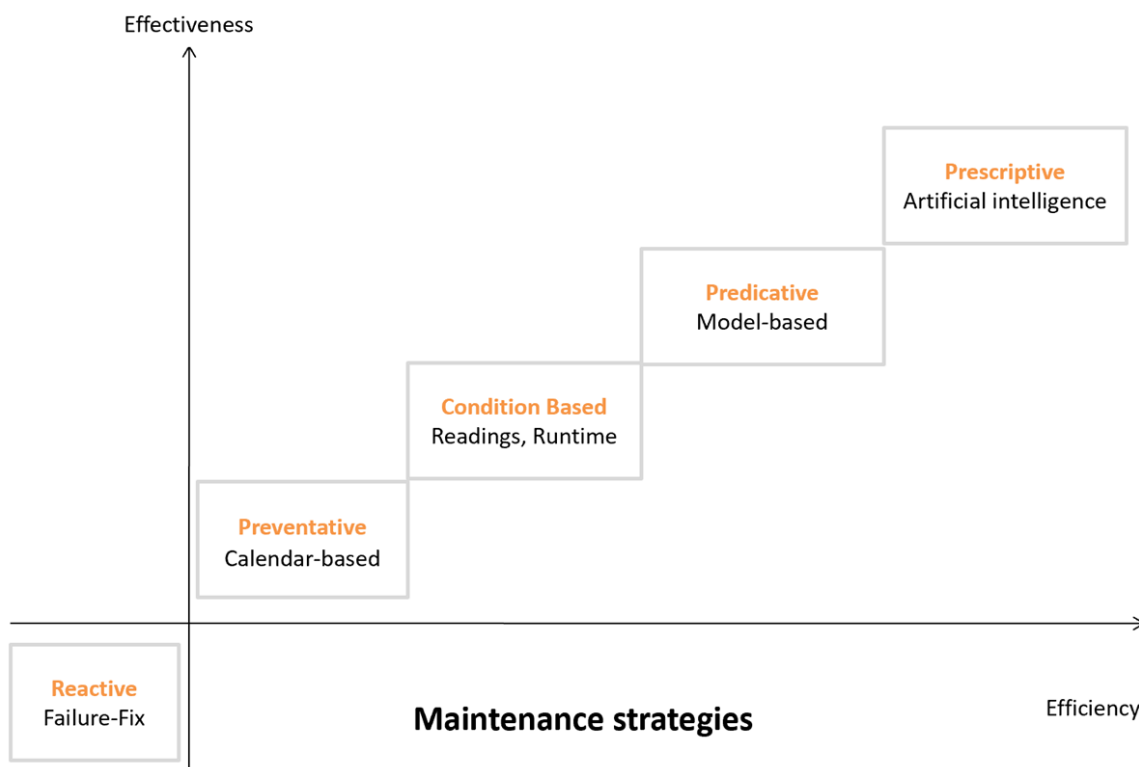
Predicative Maintenance of  
Door Subsystem

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Large assets in Railways require frequent health monitoring. These assets can be either train borne or along the tracks. Sensors and IoT technologies that are implemented together with integrated security, asset management, and predictive maintenance are improving timely decision-making for issues like safety, scheduling, and system capacity.

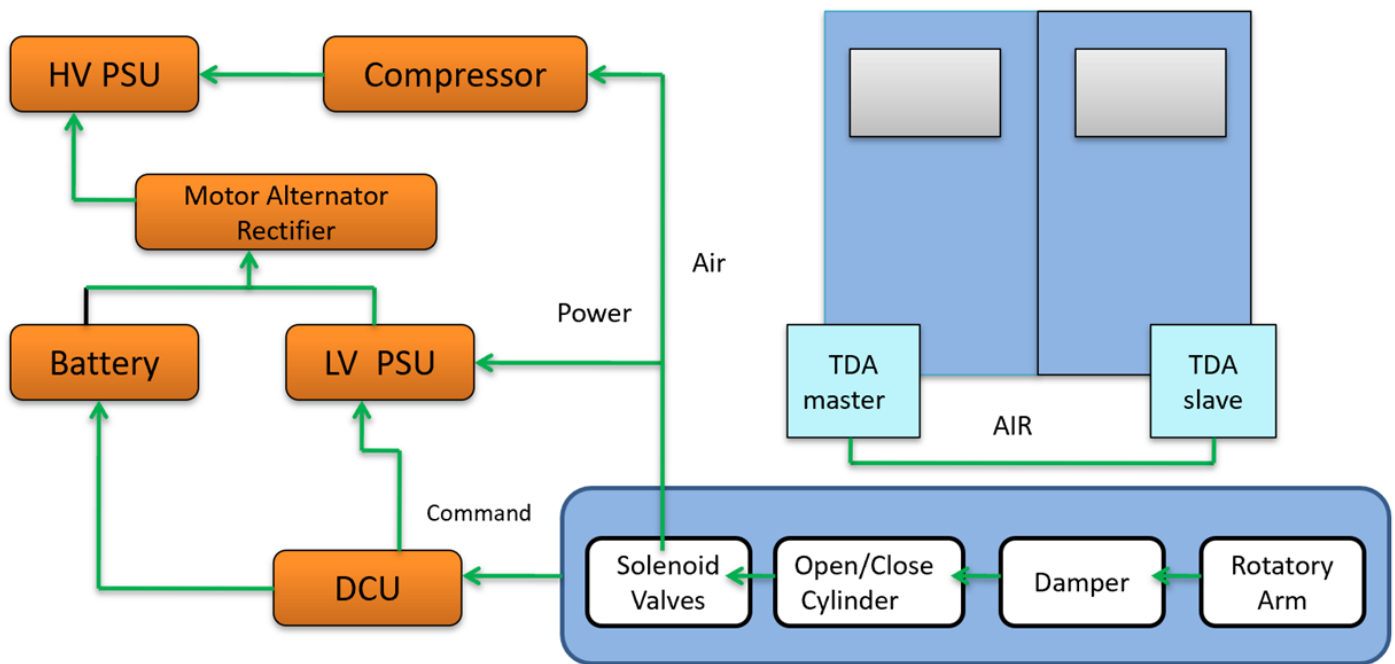
Door failure is a major cause of service disruption, repair costs and passenger complaints for railway transportation systems. Various approaches ranging from Reactive to Prescriptive maintenance strategies are deployed to maintain the assets.



A totally reactive maintenance approaches turn out to be expensive to implement and lowers the quality of service perceived by passengers when waiting until repairing is necessary. Avoiding long out of service periods for trains is essential in operating a reliable, punctual railway. Railway companies are moving to predictive / prescriptive maintenance approach where they can schedule interventions as needed, ideally just before a fault occurs to optimize the cost/benefit ratio.

The train doors are operated by actuators mainly using air pressure power injected in appropriate cylinders.

The opening/closing action is electrically remote controlled by the vehicle on board computer of the Train Management System. Considering pneumatic doors for example, the main components and their relationships have been outlined by various technical papers is outlined below:



Measuring the right parameters around the Train Door Actuator (TDA), the Door Control Unit (DCU) and the Power Supply Units (PSU) and then applying the right models can lead to deploy predictive maintenance strategies for the railway doors. The typical measured parameters are voltages, currents, air pressure, and velocity etc. from the different sensors.

Innovative sensors, new communication technologies allied to cloud-based platforms have made it easy to implement predictive maintenance. Continuously monitoring trains and trackside infrastructure with the sensors and cloud-based platforms allow for predictive maintenance and improved operational efficiency.

Our IoT Platform is managing 6+ million devices connected to 200+ command centers generating 22+ million records per day for Railways. The platform works seamlessly to integrate within existing day-to-day processes, offering advanced failure prediction while processing data in an automatic, scalable way and storing it in a secure cloud environment.

For all enquiries, please contact at : [corp@acnsol.com](mailto:corp@acnsol.com) , Tel : +1(877)-849-5838

Visit us at : [www.acnsol.com](http://www.acnsol.com)

**USA**  
Head Office  
3350 Scott Blvd, Bldg 34  
Santa Clara, CA 95054

**South Africa**  
609 Lanseria Corporate Estate,  
Falcon Lane, Lanseria,  
Gauteng

**Chile**  
Galvarino Gallardo 1638,  
Providencia,  
Santiago

**India**  
Development Centre  
102A, HARTRON, Electronics City,  
Gurgaon

