**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

**IBM – LITERATURE SURVEY**

**PROJECT TITLE**

# SMART SOLUTIONS FOR RAILWAYS

(2022-2023)

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**SUBMITTED BY**


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| SNO | Title of theproject | Advantages | Disadvantages | Technologyused |
|---|---|---|---|---|
| 1 | Electrical power distribution design & voltage profile improvement for metro railway station | 1.Electrical distribution for chemical plant, industrial office, commercial buldings.<br>2.Designed and analyzed new 33kv electrical distribution | 1. Any interruption in power supply it went be fail to drive the locomotive | ETAP Software (Electrical Transient Analyzer program) |
| 2 | Analysis of experiment railway point electric heating system | 1.Simplicity<br><br>2.Efficiency | 1.Not reduce cleaning efficiency<br><br>2.Required manual for switching on electric heating | Pulse Width modulation |
| 3 | The IDex case study on the safety measures of IOT-Based railways infrastructures | 1.Reliablity<br>2.Availability<br>3.Safety<br>4.Security | 1.Required Time constraints | Artificial intelligence of things |
| 4 | Simulation – Based evaluation of handover mechanism in high speed railway control and communication system | Feasibility of LTE cellular network for high speed railway train to ground network especially in handover process | 1.It cause unnecessary Ping-Pong handover events<br><br>2.packet loss rate of communication | Cellular network |

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| 5 | Failure management strategies for IOT based railway system | 1.Reliability<br>2.security<br>3.Solution to failure in communication network | 1.Failure probability of communication channel and its duration | Internet of Things |
| 6 | Automated level crossing A- Futuristic solution enabling smart city infrastructure | 1.GPS based automated Lc will present accidents<br>2.Human errors will be avoided | 1.signal from satellite not received at a time.It will lead to accidents | 1.Global positioning system (GPS)<br>2.Programmable logic controller (PLC) |
| 7 | Interference control for railways wireless communication system | 1.Reduce interference<br>2.Smart monitoring system<br>3.Smart antennas to cancel out interference | 1.position aware assisted handover<br><br>2.Required Co-ordinated multiple points transmission | Wireless communication |
| 8 | Milimeter -Wave communication for smart Rail mobility from channel modelling to prototyping | 1.Very fast adaptive beam forming<br>2.Communication Robustness is efficiently | 1.Longer link configuration time at TH2<br>2.Communications and more practical to enable basic version | 1.Wave communication<br>2.Line of sight |

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| 9 | Improved modelling for wind turbines on trains | 1.Effecctive energy storage system<br>2.Potential for grid connection from a savonics wind turbine based generator | 1.Unpredictability<br>2.Enhanced vertical mixing due to turblance generated by wind turbine | Permanent magnet synchronous generator(PMSG) |
| 10 | Internet of things of smart railway feasibility and applications | 1.low power compsumption<br>2.High reliability | 1.Required various transmission and reception schemes to enhance the reliability of data transfer in multipath | IOT and longrange radio |