

TECH SCAN

NEUTRAL SECTION TECHNOLOGY IN RAILWAYS



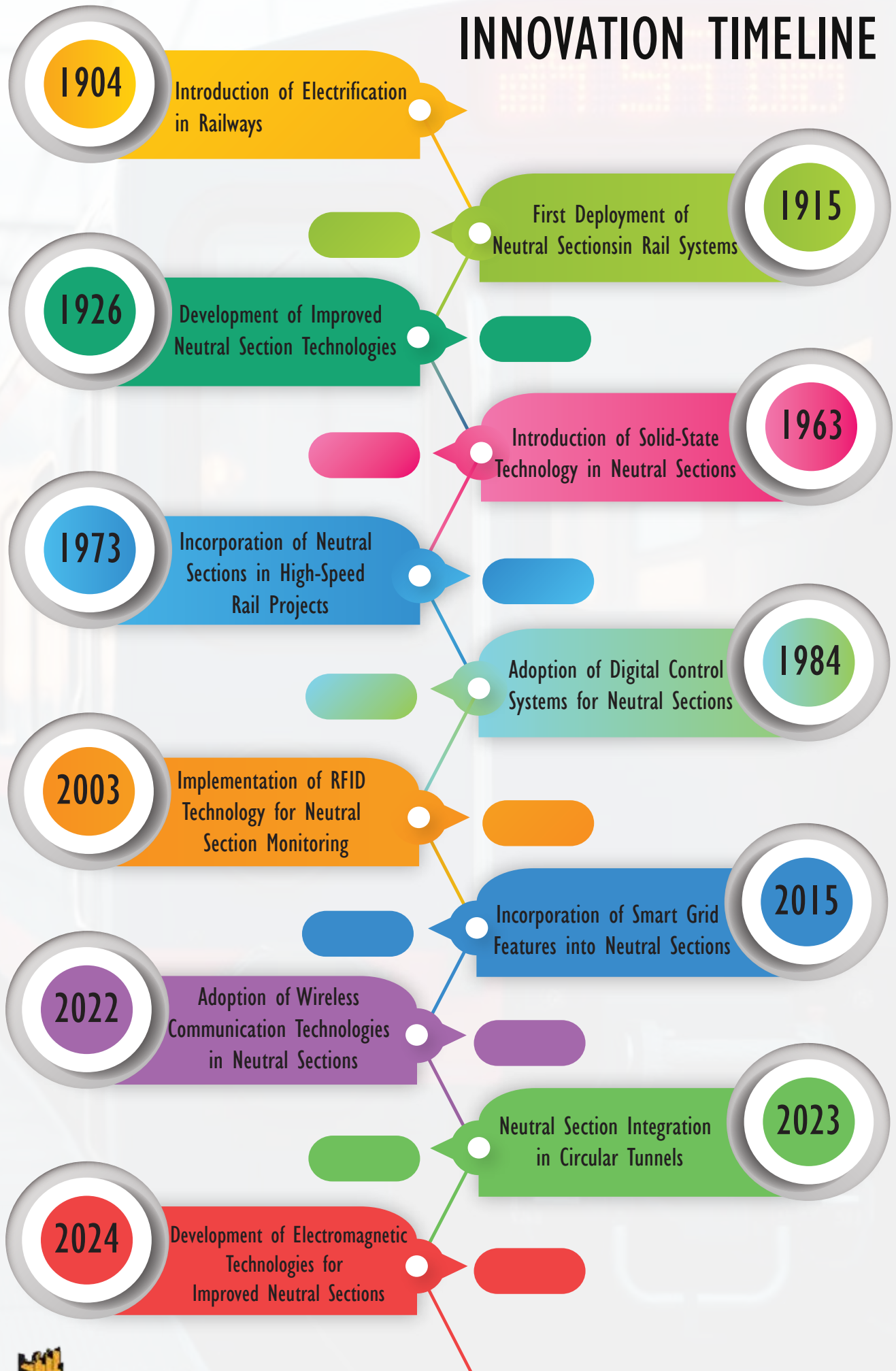
Neutral sections in railways have become a crucial component for ensuring smooth and efficient electrified train operations. These sections, typically short insulated segments in the electrification system, serve as a buffer zone between different electrical phases. Introduced to eliminate power supply interruptions during track crossovers or interconnecting different power sources, neutral sections enhance safety and system reliability.

The evolution of neutral sections in railways has seen advancements in materials and design to meet the demands of modern rail networks. Innovations focus on minimizing energy losses, improving compatibility with high-speed trains, and enhancing the overall durability of the electrification infrastructure. As the rail industry continues to embrace electrification for sustainability, ongoing research and development in neutral section technology play a vital role in shaping the future of railway electrification.

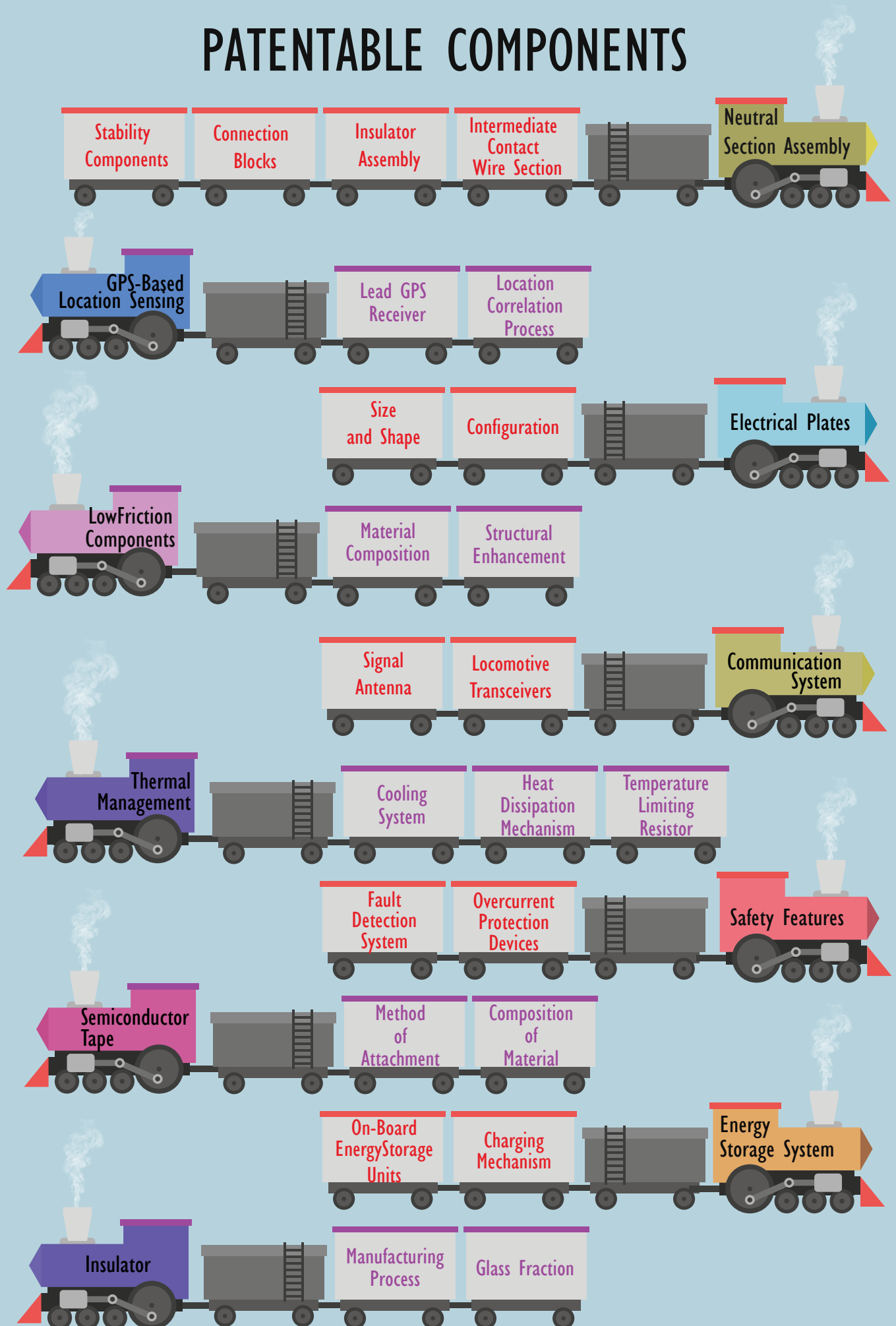
Patents related to neutral sections highlight the industry's commitment to technological progress and intellectual property protection. Innovators strive to secure patents for novel designs, materials, and integration methods, fostering a competitive landscape that drives continual improvement in railway electrification. As the demand for efficient and eco-friendly transportation solutions grows, the role of neutral sections in railways is poised to become even more critical, driving further innovation in the field.



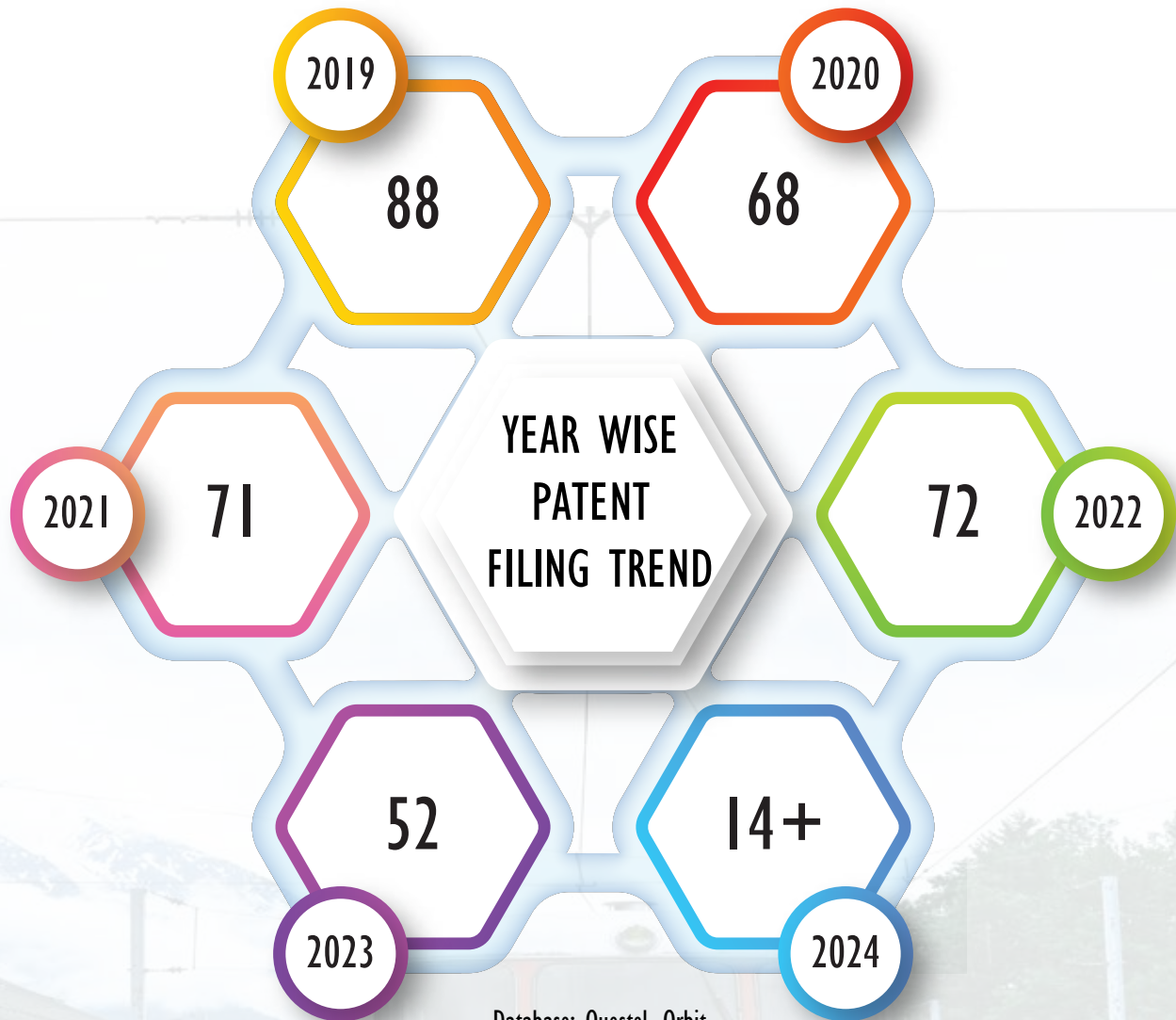
INNOVATION TIMELINE



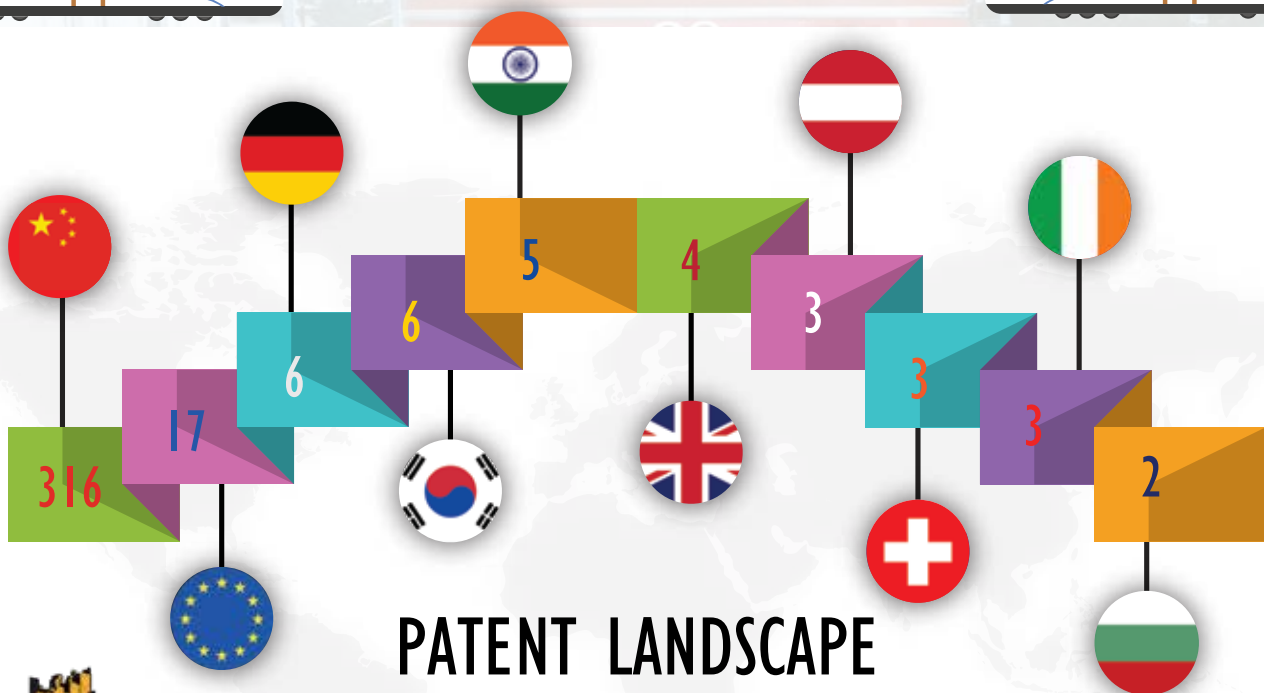
PATENTABLE COMPONENTS



PATENT STATISTICS



Database: Questel, Orbit
Date Range: 01/01/2019-06/09/2024



TOP APPLICANTS

Zhuzhou CRRC
Times Electric

Southwest Jiaotong
University

43

25

Chengdu Shanghua
Electric

12

CRRC
Zhuzhou Locomotive

11

Institute of Science &
Technology China Railway
Xian Bureau

11

China Railway
Eryuan Engineering

9

China Railway First
Survey & Design
Institute

9

CNR Dalian

9

China Academy
of Railway Sciences

8

CRRC
Qingdao Sifang

8

Database: Questel, Orbit
Date Range: 01/01/2019-03/09/2024

NOTABLE INNOVATIONS

Patent Application	Priority Date	Title	Assignee
GB191406977	19.03.1914	Improvements in Connection with Overhead Trolley Wires and the Like Systems of Electric Traction	Glyn Guy Godfrey
GB220736	31.05.1923	Improved Method of and Means for Supplying Electrical Power to Railways and Tramways	Philip Dawson Frederick William Fawdry
GB945071	18.10.1961	Improvements in or Relating to Electric Traction Equipment Control	Gen Electric Co Ltd
US4029182	31.12.1974	Overhead Electric Traction Systems	BICC Limited
FR2496335	16.12.1980	Neutral-sectioning Circuit Breaker - has Disengageable Locking Device Acting on Magnetic Cut-out and Engagement and Release Lever	Legrand SA
US20050240322	18.03.2005	Automatic Neutral Section Control System	General Electric Company
CA2585393	13.09.2005	Pantograph Control Via GPS	New York Air Brake Corporation
CN101364727	11.06.2008	Overvoltage Inhibiting Apparatus for Traction Power-supply System in Process of Vehicle Passing through Phase Breaking	Southwest Jiaotong University
IN201711016863	13.05.2017	Neutral Section in a Round/Bored Tunnel	Delhi Metro Rail Corporation Ltd.
CN113619649	05.08.2021	Heavy Haul Train Neutral Section Passing Control Method and System	CASCO Signal Ltd.

WHITE SPACE

Continuous
Signal for Triodes
or Transistors

Renewable
Energy
Integration

Arrangement
and
Control Systems

Lighting Device
Reflector Arrays

Method
for Automatic
Neutral Section
Passage

Magnet Drive
Locomotive
Power System

Geomagnetic
Detection
for Inspection

Vehicle-Mounted
Flexible Control
for Neutral
Section Passage

Smart Grid
Solutions

System
for Traction
Power Supply

If you would like to learn more about any of these areas or have specific questions, we're here to provide further information and insights. Our team is dedicated to driving progress and staying at the forefront of Neutral Section Technology in Railways.

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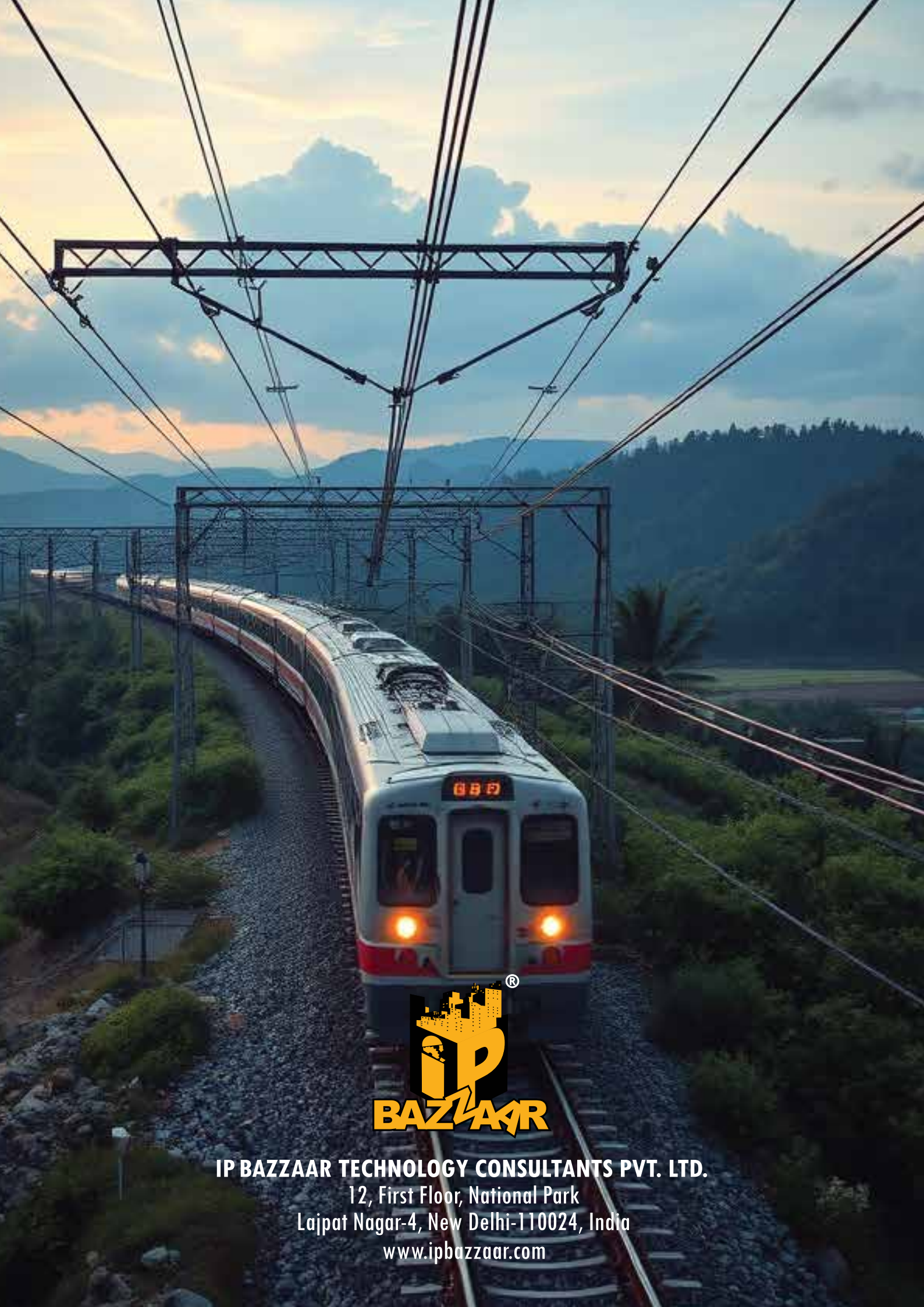
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