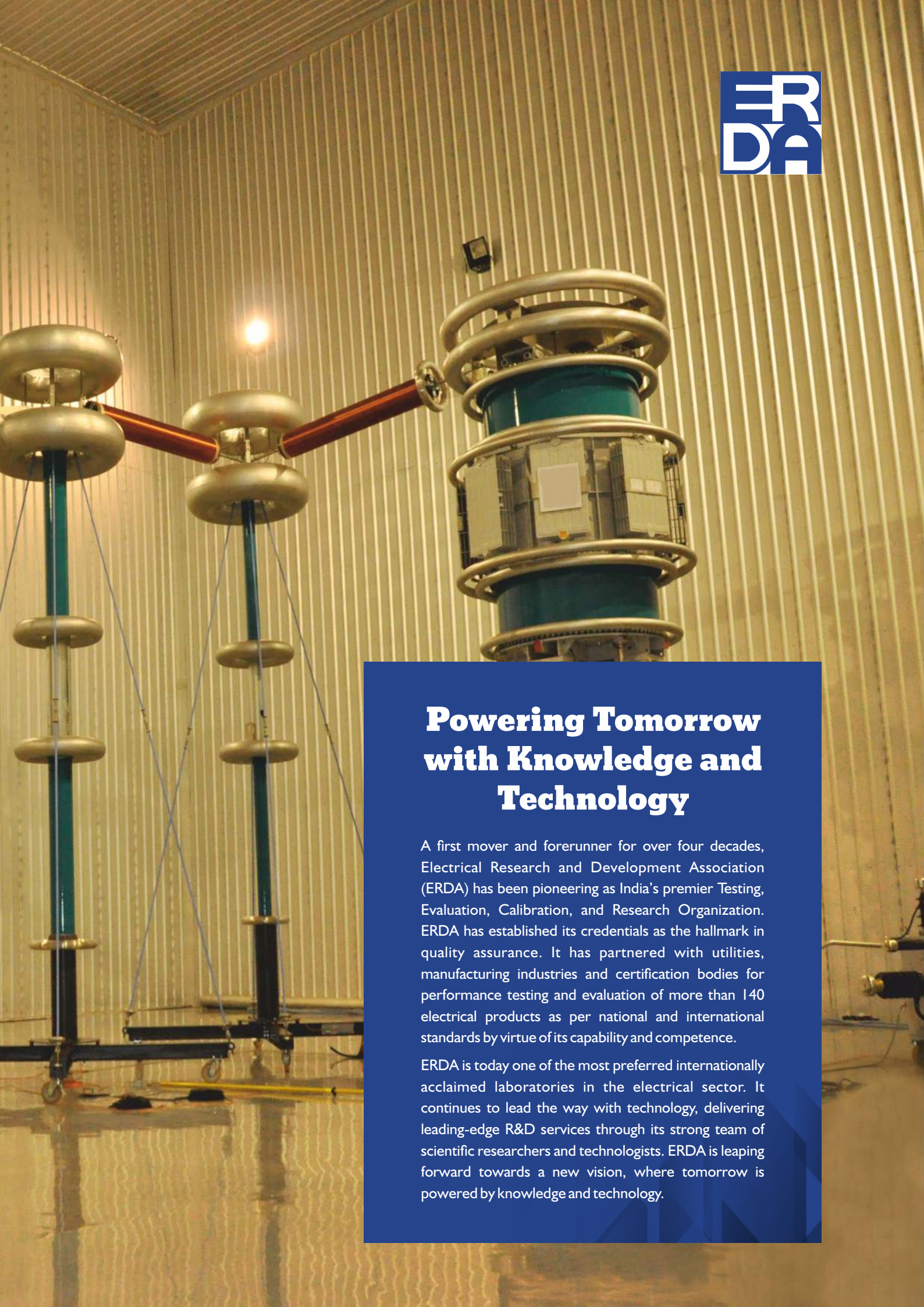
CHARGING UP TOMORROW

TESTING AND EVALUATION | FIELD SERVICES | R&D AND EXPERT SERVICES

State-of-the-art High Voltage Partial Discharge Laboratory with excellent background noise level of < 2 pc at 600kV

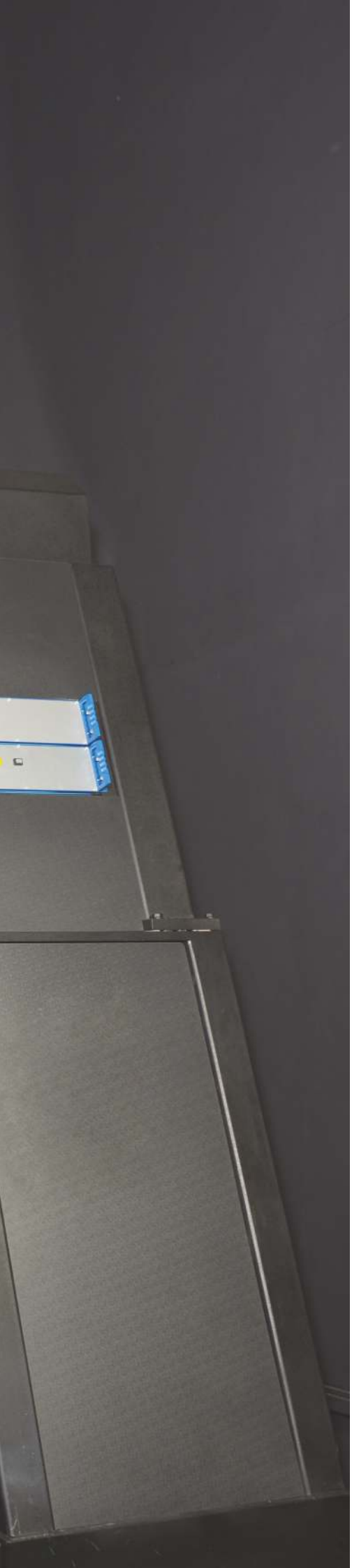


Powering Tomorrow with Knowledge and Technology

A first mover and forerunner for over four decades, Electrical Research and Development Association (ERDA) has been pioneering as India's premier Testing, Evaluation, Calibration, and Research Organization. ERDA has established its credentials as the hallmark in quality assurance. It has partnered with utilities, manufacturing industries and certification bodies for performance testing and evaluation of more than 140 electrical products as per national and international standards by virtue of its capability and competence.

ERDA is today one of the most preferred internationally acclaimed laboratories in the electrical sector. It continues to lead the way with technology, delivering leading-edge R&D services through its strong team of scientific researchers and technologists. ERDA is leaping forward towards a new vision, where tomorrow is powered by knowledge and technology.

Type C Goniophotometry facility traceable to METAS, Switzerland for Photometry testing of LED Lighting Products



24
State-of-the-art Testing Laboratories

Development of more than
60
Technologies with Commercialization
of more than 24 Technologies

More than
300
Sponsored R&D Projects Completed

Holding or Applied for more than
15
Patents for Innovative Product Technologies

400
Experts

Testing of more than
140
Electrical Products

Customer Base of more than
10000

Handling of more than
60000
Samples on yearly basis

Complete Range of Energy Meter Test Facility

Accreditation & Recognition

National Accreditation

- National Accreditation Board for Testing & Calibration Laboratories (NABL)
- Bureau of Indian Standards (BIS)
- Ministry of New and Renewable Energy (MNRE)
- Bureau of Energy Efficiency (BEE)
- National Accreditation Board for Certification Bodies (NABCB)
- Integrated Headquarters, Ministry of Defence (Navy) for EMI/EMC Testing
- Central Boiler Board (CBB), Government of India
- Petroleum and Explosive Safety Organisation (PESO), Nagpur
- Information Security Management System (ISO/IEC 27001:2013)
- Scientific and Industrial Research Organisation (SIRO) recognized by Government of India

State Accreditation

- Electrical Contractors Licence, Government of Gujarat
- Electricity Regulatory Commission of Gujarat and Madhya Pradesh (GERC and MPERC)
- Energy Development Agencies of Gujarat and Uttarakhand (GEDA and UREDA)

International Accreditation

- INTERTEK (ASTA), UK
- ADWEA (Abu Dhabi)
- DEWA (Dubai)
- SEWA (Sharjah)
- TNB (Malaysia)
- DCRP (Oman)

Memorandum of Understanding (MOU)

- Central Board of Irrigation and Power (CBIP) in the area of Field Services
- Gujarat Industries Power Company Ltd. (GIPCL) in the area of Energy Audit
- Energy Efficiency Services Limited (EESL) in the Strategic area of Energy Efficiency

Transformer and Associated Component Evaluation Facility

Testing and Evaluation

Power Equipment Testing

- On-line Short Circuit test facilities: 120kA, 575V – 1 no. & 50kA, 550V – 2 nos.
- Impulse Generator: 1600kVp, 80kJ – 2 nos. & 800kVp, 40kJ – 1 no.
- High Voltage Transformer: 700kVrms & 600 kVrms
- High Voltage Partial Discharge test facility: 600kV, 3A
- IEC:61850 Communication Protocol testing facility
- Temperature-rise test facilities up to 20kA
- Time-current characteristics up to 40kA
- Electrical Endurance test up to 2.5kA at 690V
- Mechanical Endurance test for HT Circuit Breaker up to 145kV
- IP 5X & 6X test with capacity of chamber (6.8m x 5.8m x 5.0m) and weight 40 Tonnes
- Current Transformer facility up to 8000A, 0.05 accuracy class for in-house as well as on-site
- Voltage Transformer testing / calibration facility up to 220kV voltage class / 0.1 accuracy class for In-house & up to 33kV, 0.2 accuracy class at site

Products Tested

- Distribution Transformers
- Power Transformers
- Instrument Transformers
- Low and Medium Voltage Switchgears
- Low Voltage Switchboards
- Insulators and Bushings
- Cables and Accessories
- Capacitors
- Connectors
- Fuse Links and Fuse Bases

10 meter Semi Anechoic Chamber for the EMI/EMC Testing

Testing and Evaluation

Secondary Equipment Testing

- 10 meter Semi Anechoic Chamber having shielding effectiveness from 10kHz to 40GHz & turn table capacity up to 3000kg
- Type C Goniophotometric Laboratory for Lighting testing with capacity of sample size of 1600mm & 50kg weight
- Complete Type Test Facility for Energy Meters and Smart Meters
- Energy Efficient Motor & Pump Testing up to 150 HP
- Solar Pump (up to 10 HP) and Solar Lighting System testing as per MNRE Guidelines
- Solar Inverter test facility up to 50kVA
- Calibration services in the field of Electro-technical and Thermal equipments
- Class AAA Solar Sun Simulator conforming to IEC 60904
- Testing of Flameproof Enclosures (PESO Approved)

Products Tested

- Solar Panels
- Energy Meters (including Smart Meters)
- LED Luminaires
- Solar Pump
- Solar Street Lighting
- Motor & Pump
- Household Appliances
- Professional Electronic Equipment

Electrical, Chemical & Physical Properties of Liquid Insulation

Testing and Evaluation

Mechanical and Insulating Material Division

- Surface Condition and Stress Strain test on Conductor & Steel Core
- Thermal-mechanical Performance test and Mechanical Load test
- Specified Mechanical Load test and Brittle Fracture test
- Resonance Frequency and Dynamic Characteristics test
- Vibration, Seismic and Salt Spray test
- Specific Core Loss and Polarization test
- Degree of Polymerization (DP) and Rubber Identification & Filter Content test
- Dissolved Gas Analysis (DGA) & Furan analysis

Products Tested

- Overhead line Conductors, Hardware, Fittings & Structural Components
- HTLS Conductor & OPGW
- Insulators – Ceramic & Polymeric
- CRGO & CRNO steels
- Solid Dielectric Materials (Paper, Pressboards, Laminates, Adhesive tapes, Piercing Connectors/Dead End Clamps, Heat shrink sleeves etc.)
- Liquid Dielectric Materials (Mineral insulating Oil (New as well as In Use), Ester Oil)

Range of Diagnostic Testing Services in Electrical &
Mechanical Field for Power & Process Plants

Field Services

- Electrical Diagnostics of Transformer, Motor, Generator, Cable and Switchyard Equipment
- Mechanical Diagnostics and Residual Life Assessment (RLA) of Thermal, Hydro, Nuclear Power Plants & Process Plants
- Well Known Remnant Life Assessment Organisation approved by Central Boiler Board
- Energy Management Services under PAT, PET and M&V Schemes by BEE Accredited Energy Auditors
- ISO 17020 Accredited Type 'A' Inspection Body
- PMA and TPIA Agency for Rural and Urban Electrification
- NABL Accredited Onsite Power Transformer testing facility upto 220kV, 100 MVA
- Solar PV Module Analyzer (I-V curve tracer) for Commissioning, Auditing, O&M and Diagnostic testing of Solar Panels
- Solar PV Modules Hot Spot Monitoring using IR Thermography

Capabilities

- Electrical Diagnostics (Completed more than 350 Transformers, 3000 Motors & 75 Generators)
- Mechanical Diagnostics (Completed more than 150 Boilers and 75 Turbines up to 500MW)
- Energy Audits & PG Testing (more than 250 Energy Audits including 150 Power Generating Units upto 660MW)
- Onsite Testing of Transformers (tested more than 8000 Distribution Transformers and 300 Power Transformer at the manufacturer premises)
- Onsite Combined CT/PT and Energy Meter testing by Primary or Secondary Injection Method
- Working as Third Party Inspection Agency (TPIA) & Project Management Agency (PMA) under Government Schemes like DDUGJY, IPDS for various Utilities

Material Characterization for Polymeric, Metallic, Ceramic and Composite materials

Research and Development

The Focus of the Research and Development vertical is to undertake sponsored and in-house Research Projects in five Technology Missions.

- Advanced Materials (with the Expert Services for Failure Analysis)
- Renewable Energy
- Diagnostics
- Power System & Smart Grid (with the Expert Services for Power Quality Measurements)
- New Product Technologies

Technologies Developed

- Corrosion Resistant Paint using Nano-Carbon Technology
- Anti Dust Coating on Solar PV Panels
- Silver Based Contact Materials using Nano-Technology for LV Switchgear
- On Line Fault Sensor for Transformers
- Automatic Solar PV Cleaning System
- IoT based Hot spot detector for Transformers
- Iot based Wireless Thermal Sensor for Electrical Panel Busbars
- IE-4 Induction Motors
- Charge Controller for Electrical Vehicle

Power Quality Measurement for
Power/Process Plants as per CEA Guidelines

Expert Services

Power System Studies

- Load Flow, Short Circuit & Transient Stability
- Evaluation of Parallel Operation Charges
- Power Quality Measurement & Mitigation for Utilities, IPPS & CPPS
- Transmission Planning and Power Evacuation
- Dynamic Stability
- Relay Coordination
- Protection Audit

Renewable & Smart Grid

- Renewable Energy Integration
- Microgrid & its Integration
- Power Quality Measurement & Mitigation for Wind & Solar Plants

Failure and Root Cause Analysis

- Failure and Root Cause Analysis of Boiler Tubes and other Mechanical Components
- Failure and Root Cause Analysis of Electrical Equipment e.g. Cable, Insulator, CT/PT etc.

Engineering Analysis Services

- Product Optimization
- Product Development
- Electromagnetic, Electrostatic, Multiphysics, CFD, Structural Simulation

Facilities

- Engineering Analysis Centre equipped with Simulation and Modelling Packages e.g. Solid Works, Ansys, CFX, Fluent, Maxwell, RMxprt, CFTurbo / Pumplinx
- Power System Study and Power Quality Lab equipped with Softwares e.g. ETAP, EMTP-RV, Mi-Power etc.
- Material Research Lab
- Material Characterization Lab using Optical Microscopy, SEM, XRD, FTIR etc.
- Power Electronics Lab

International Customers

ELECTRICAL RESEARCH AND DEVELOPMENT ASSOCIATION

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