Boeing Energy

MAGEEP
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The Boeing Company
Boeing Footprint in India

**BDS | Boeing Energy**

- **MUMBAI**
  - BCA Field Service
  - IIT Bombay
  - C-Map (Jeppesen partner)

- **HYDERABAD**
  - Jeppesen
  - P-8I indigenous suppliers
  - Infotech

- **BANGALORE**
  - Boeing R&T India (BRTI)/ NARUS
  - Hindustan Aeronautics Ltd. (HAL)
  - CBAS (Jeppesen partner)
  - Infosys, Wipro
  - National Aerospace Laboratories
  - Indian Institute of Science (IISc)

- **DELHI**
  - Boeing India headquarters
  - Aviall
  - BBJ support
  - GCC: Health, Education

- **KANPUR**
  - IIT Kanpur

- **NAGPUR**
  - Boeing MRO
  - Tata (787 Floor Beam)

- **CHENNAI**
  - CDG
  - TCS, Wipro, HCL Technologies
  - IIT Madras

- **BDI**
  - Manufacturing
  - Aero Infrastructure
  - Field Services
  - IT / BPO / Engineering
  - R&D
  - Community Engagement

*Boeing entities*
India Opportunity – Growth

Commercial

Air India
Jet Airways
SpiceJet

70 years of partnership with India
180+ Boeing airplanes in service

Defense

Indian Navy
Indian Air Force

Programs won: BBJ, P-8I, C-17
Campaigns: AH-64 Apache, CH-47 Chinook, P-8I Follow-on, C-17 Follow-on & P-8 MRMR
India Opportunity – Drive Productivity

IT & Engineering

Product systems and business systems with HCL, Infosys, Infotech, TCS and Wipro

Manufacturing

Component manufacturing/assembly for commercial and defense platforms such as 787 and P-8I

R&D

Fundamental aerospace R&D projects with Indian academic and research institutions such as NAL, IISc and IITs
Boeing Energy

The Boeing Company

Commercial Aircraft

Phantom Works

Military Aircraft

Network & Space Systems

Global Services & Support

Boeing Energy

EPC

Energy Security Solutions

Electronic & Information Solutions

Secure Infrastructure Group
Boeing Core Capabilities and Assets

Distinctive and cross cutting capabilities

- Best-in-class complex systems-of-systems integration
- Compelling military specification security capabilities
- Robust energy platform – controls, resource optimization, cyber secure interoperability, scalable
- Substantial experience designing and running complex operations centers
- Strong military, commercial and industrial relationships
- Industry leading solar technology and know-how
- Globally trusted and recognized brand
Secure Grid Manager Capability Overview

Microgrid Control
- Integrated Energy, Cyber, and Comms Situational Awareness
- Resource Optimization to Mission, Reliability, and Economic Objectives
- Integration to Energy Suppliers / Market
- Change Impact Assessment and Change Planning
- Real-Time State Estimation and Reliability Assessment
- Cyber and Physical Security Protection
- Asset Data Management, Monitoring, GIS Integration, Data Analytics / Historian
  - Coordinated Dispatch of Bldg Mgmt Systems, Generation, Storage, and Curtailable Loads
  - Legacy Systems Integration

Building Integration
- Building Mgmt Systems integration and Optimization
- Demand Response
- Renewables and Storage Integration
- Load prioritization for critical infrastructure
- Investment Planning Tools (ESAT)
- Power Network Design
- Comms Design Tools

Comms
- Secure Distributed OSB
- Bandwidth Mgmt / QoS
- Wireless/Radio

Asset Integration
- Integration of Distributed Energy Resources across wide-area
- Secure Control/Communications to End Devices
- Autonomous Operation
- Vehicle to Grid Integration

Storage and Storage Integration

Substation Integration
- Secure Remote Access
- Asset Monitoring and Automated Configuration Management
- Grid Isolation / Switch Gear Automation
- RTU / IED / End Device Integration
- Sensor Aggregation

Distributed Control
- Distributed Intelligence / Distributed Control, Autonomous Operation
- Localized Sensor and Control Integration
- Distributed Cyber Security

Simulation to support pre-deployment validation
Hydrokinetics

- Boeing has partnered with Canadian company RER to exclusively manufacture and market the TREK - “Run of the River” hydrokinetic turbine
- No civil works construction; minimal environmental impact
- Turbine produces power upon placement in river – no external power source required
- High availability and high capacity factor
- Scalable: Multiple turbines can be placed in large rivers to create an energy farm of significant capacity
- Provides high-quality, 24/7 power to industries, municipalities
- Functions independently or may be connected to microgrid or regional power grid
- Successfully tested in Canada for 2 years and ready for global deployment