ENERGY & UTILITIES

SMART GRID SOLUTIONS

More than 140 Utilities companies worldwide make use of Indra Solutions

indracompany.com
Electrical supply’s sustainability, competitiveness and security challenges lead to a profound transformation of power management.

This transformation requires the integrated management of all network resources: generation, demand, storage and network devices.

Driven by the dynamics of the new energy environment and relying on its deep business and technology experience, Indra has developed a comprehensive vision of Smart Grids based on four basic principles:

**Future readiness** and strong innovation capability

**Resources optimization** and operations efficiency

**Flexibility**
To meet changing customer needs, responding quickly to the changes and challenges ahead.

**Accessibility**
Allowing free access to all network users (open and interoperable communications).

**Optimization**
Through innovation and technology, energy is managed efficiently reducing operation and maintenance costs.

**Reliability**
Ensuring the safety and quality of the power supply, minimizing the risks and uncertainties in real time.
Active Grid Management

Smart meters, distributed generation, inverse power flows, new digital prosumers, storage and operation closer to the limits are radically modifying the conditions under which distribution grids operate impacting their reliability and efficiency.

The combination of these business challenges with massive volumes of information generated by the new distribution grids and the big number of assets to monitor and control down to the customer level, require the convergence of Information and operation Technologies (IT+OT) into a common grid monitoring platform for the active management of the grids.

Indra’s Active Grid ecosystem supports the dynamic operation of a distribution grid where intelligent grid assets, connected consumers and new distributed energy resources continually interact in a more reliable and efficient grid operation.

The Active Grid ecosystem

**GRID ANALYTICS** Massive data analysis for continuous business improvement.
Extend the life of assets, by continuously measuring, monitoring and forecasting key trends in the grid through massive and performing big data analyses.

**INGRID** Real Time Grid monitoring and control.
Monitor, analyze and optimize the grid (HV,MV,LV) in Real Time using distributed and scalable technologies.

**ISPEED** Real Time Interoperability.
Interoperability in real time between devices, nodes, and systems in a common data space.

**NODE#1** The intelligence at the Edge. Applied INTEL and industrial Internet of Things (IoT) technologies to equip substations with intelligence enabling the integration, the processing and the dynamic assessment and control of risks.

**USE CASES:**
- MV/LV Monitoring
- DER Integration
- Asset Condition Monitoring

**Smart Grid Solutions: InGRID**

INDRA’s integrated Smart Grid vision is represented in a solution map guided by the following principles:

- Avoiding large centralized systems, developing flexible and scalable solutions.
- Ensuring the confidentiality and integrity of information of the Smart Grid.
- Through a distributed Real Time integration platform, following an integration model that enables managing big data volumes.
- Open solutions aligned with both electrical (IEC), communications (PLC, ZigBee…) and systems (SOA,WS) standards.
- Decentralized solutions that take advantage of distributed processing capacity and ensure scalability.

**CORPORATE SYSTEMS**
- Renewable integration
- Distribution Automation
- Meter Data Management
- Demand Response

**CONTROL SYSTEMS**
- In GRID
- In GRID
- In GRID
- In GRID

**REAL TIME INTEGRATION**
- SCADA
- Head-End Communications

**COMMUNICATIONS**
- COMMUNICATIONS (GPRS, PLC, RF, WIMAX…)

**MEASUREMENTS AND DEVICES’ CONTROL**
- Modular solutions
- Cyber security
- Global vision

**Interoperability**

**Distributed architecture**
**InGRID**

**DISTRIBUTION MANAGEMENT**

**Network Management**

InGRID is a comprehensive modular solution for network monitoring and advanced operation (ADMS) supporting the key distribution business processes. **Advanced analysis and optimization features, enabling the integrated operation of demand response and distributed generation.**

**InGRID NDM: Network Development and Maintenance**

Management and monitoring of the network development and maintenance activities from the definition until the performance. It is a tool that supports the design, technical analysis, budgeting and automatic calculation of work's materials requirements (integrated with ERP).

**InGRID DB: Dashboard**

The tool analyzes and summarizes the situation of distribution processes (KPIs).

**InGRID WFM: Work Force Management**

Tool for the integration of field works with mobile devices. WFM enables the automatization, streamlining and management of the execution and dispatching of Work Orders for all field services, through a single real time solution that is fully integrated with the corporate systems of the company.

**IGEA**

It is a powerful multi-sectorial geographic information system (GIS) that covers the integrated management of all assets information.

**InGRID DMS: Distribution Management System**

DMS/OMS functionality. The tool provides all necessary information for a real time supervision and operation of the network, as well as incidences management. It can be integrated with SCADA, AMI, graphic databases (GIS) and management environments.

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**InGRID SMART METERING SOLUTIONS**

**Smart Metering Solutions**

**Meter Data Capture (MDC):** Multi Utility solution for the acquisition of data measurements (Electricity, Gas or Water) coming away from any type of field device. Multiprotocol and scalable architecture, supporting also advanced functions like remote connection/disconnection, demand management, etc.

**Meter Data Management (MDM):** Indra’s Multi Utility solution for the treatment, certification, and exportation of Electricity, Gas or Water measurement data. A central inventory links field data with utilities corporate systems. The solution is able to work easily with any new standard protocol in order to exchange information.

**Meter Data Analytics (MDA):** Analytic platform oriented to the massive operation of meter data. Based on open source technologies and Big Data / In memory technologies, supports a vast array of analytic functions, including demand forecasting, fraud detection and demand management.

**Energy Control and losses (ECL):** System allowing the comprehensive control of flows across the distribution network, identifying losses, fraud and default, from network measurements and supply points consumption.

**Energy Efficiency Platform (EEP):** Comprehensive solution to manage, monitor and control consumption, events and processes from a large number of points, remotely and in real time. This powerful solution has been built with a robust and scalable architecture, consistent with the needs of the current market.

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**ENERGY & UTILITIES**
High performance distributed platform enabling real-time data exchange between multiple systems.

**BENEFITS**

Availability of critical information in Real Time.

Readiness for Closed Loop Mission Control environments.

High performance field message bus.

Seamless integration of new systems and services into existing ecosystems.

Available for multiple architectures and programming environments.

**Smart Grid Consulting**

Indra’s comprehensive approach to current and future power systems’ operation, with expertise and solutions in the generation, transmission and distribution businesses, allowing us to offer consulting services to our customers to support them in the transition to the Smart Grid.

- Plans and deployment campaigns of Smart Meter.
- Roadmap definition for the evolution of national systems to the Smart Grid.
- Analysis and proposal of regulatory and technical changes required to enable renewable energies’ integration.
- Consultancy services to improve the efficiency of power systems and energy markets.
- Implementation of energy efficiency programs.
- Smart Grids Pilots.
Indra reserves the right to modify these specifications without notice.

**AMERICA**
- Energuate (Guatemala)
- Ecopetrol (Colombia)
- Cemig (Brazil)
- Elektro (Brazil)
- OSE (Uruguay)
- UTE (Uruguay)
- AES SUL (Brazil)
- CFFL (Brazil)
- Aguas de Hermosillo (Mexico)
- Aguas de Monterrey (Mexico)
- Cadafe (Venezuela)
- Hidrocapital (Venezuela)
- Seneca (Venezuela)
- Disnorte-Dissur (Nicaragua)
- Electricaribe (Colombia)
- Eleval (Venezuela)
- Electrobras (Brazil)
- CEEE (Brazil)
- Energisa (Brazil)
- Enersa (Argentina)
- EEC (Colombia)
- Epasa (Colombia)
- Grupo EMEL (Chile)
- Petrobras (Brazil)
- RGE (Brazil)
- Chevron (USA)
- AyA (Costa Rica)
- Ayas (Argentina)
- Edelap (Argentina)
- Sedapal (Peru)
- Sedalib (Peru)
- Electroduenas (Peru)
- Osninergyin (Peru)
- Sempra (USA)
- AES (Brazil)
- Ligth (Brazil)
- PetroPeru (Peru)
- EP-Petroecuador (Ecuador)
- CDEEE (Dominicana)
- Edesur (Dominicana)
- Edenorte (Dominicana)
- DelSur (El Salvador)
- EDEN/EDES (Argentina)
- UTE (Uruguay)

**AFRICA**
- ONEE (Morocco)
- KPLC (Kenya)
- ENEO (Cameroon)
- EEPCO (Ethiopia)
- NCwSC (Kenya)
- KENGEN (Kenya)
- UMEME (Uganda)
- ZESCO (Zambia)
- ZETDC (Zimbabwe)
- GECDL (Libya)
- ESCOM (Malawi)
- EDM (Mozambique)
- ECG (Ghana)
- KETRACO (Kenya)

**MIDDLE EAST-ASIA - PACÍFICO**
- Merakco (Philippines)
- Maynilad (Philippines)
- Manila Water (Philippines)
- E&W Authority (Bahain)
- Cepalto (Philippines)
- Caltex (Australia)
- Origin (Australia)
- PLN (Indonesia)
- RAWEC (Saudi Arabia)

**EUROPE**
- GNF (Spain/LATAM)
- Enel / Endesa (Italy / Spain/LATAM)
- Enel Green Power (Spain)
- Viesgo (Spain)
- Iberdrola (Spain / Portugal)
- REE (Spain)
- ACEA (Italy)
- ENI (Italy)
- EDP (Portugal)
- BP (Portugal)
- Canal Isabel II (Spain)
- Agbar (Spain)
- FCC Aqualia (Spain)
- SSE Grupo EDF (Slovakia)
- Grupo PP&L CEZ (Czech Republic / Romania)
- RweE (Czech Republic)
- Red Chisinau, Centru, Sud (Moldova)
- Elektro (Romania)
- EDA (Portugal)
- EDM (Portugal)
- GALP (Portugal)
- REPSOL (Spain / Portugal)
- Lafarge Energy (Switzerland)
- ENEA (Poland)
- NEK EAD (Bulgaria)
- Traficura (Global)
- SEPS (Slovakia)
- Sedapal (Peru)
- Sedalib (Peru)
- Electroduenas (Peru)
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- UTE (Uruguay)

- More than 70 Utilities use our Distribution Systems.
- More than 100 million customers managed through Indra’s commercial systems.
- More than 700 Energy Companies are managed with Indra solutions.
- Successful implementations in most of the European and Latin-American companies.