CMS
SIMPLIFYING LIFE

Smart Grid Solutions

Powering the Internet of Electricity

The burgeoning needs of a growing population as well as its galloping ambitions have set off an upsurge in global energy consumption levels. For a power hungry planet, conservation of fossil fuels as well as the shift to alternate renewable sources like solar energy is the need of the hour. This diversity of power sources, need for conservation as well as clean and green energy continually throw up challenges.

CMS understands this well and has invested several years to build an enviable energy portfolio to address challenges of such a diverse world.

We see numerous trends in the energy space that are disrupting traditional notions of energy management.

- Persistent climate changes
- Volatile energy prices
- Ageing power generation plants
- Wastage through transmission losses

This is leading to shifts in the Energy marketplace

- Emphasis on renewable sources of energy
- Environment conscious and tech savvy consumers
- Smart Grids as a Service
- Utility grade smart homes, buildings and smart cities
- Micro grids and distributed small energy sources
- Energy Storage

CMS Smart Grid Solutions

With our vast experience in energy metering and Energy Management, AMI and PLM, SCADA and DMS applications, we offer hybrid communication technology based Smart Grid solution that is

- Adaptive - responding rapidly to changing conditions
- Predictive - in terms of applying operational data to equipment maintenance practices
- Integrated - in terms of real-time communications and control functions
- Optimized - to maximize reliability, availability, efficiency and economic performance

These solutions are backed by deep analytics, automation and management capabilities. Be assured of greater control over energy costs, two way communication with consumers, reliable supply, integration with multiple power sources and of course the ability to digitally respond in real time to changing demands.

CMS also offers consulting services supporting clients in their transition to Smart Grid utilizing our expertise and solutions in the generation, transmission and distribution businesses.

Communication Networks: We enable information access across all components of the Grid leveraging our service expertise as well as network technology from partners.

Smart Meters: We offer a range of single phase and three phase smart energy meters that are AMR/AMI compatible with standard communication protocols. Designed and developed for residential and industrial energy consumers, these meters are setting new standards for revenue grade smart energy meters.

These meters enable advanced energy management, demand management, peak load management, energy account and billing, pre-paid energy billing system, voltage and PF optimization, multi-source energy measurements, TOD measurements etc.

Real Time Integration: Smart Grid requires the integrated management of all resources: generation, demand, storage and network devices across utilities, providers and consumers. CMS provides integration of information and control technologies, allowing shared real time access between multiple systems. Complex event processing, acquisition of data from multiple sources and systems, modelling across various parameters and integration of Big Data solutions help take informed decisions in real time.

Grid Security: The convergence of Internet and utility networks throw up fresh challenges for Grid Security. CMS has security capabilities across both Information Security as well as physical security including Surveillance. Information Security solutions help detect patterns of traffic and actions that are suspicious, aligning with perimeter defense security. Our software and access control solutions can help manage access to information to ensure integrity and compliance.

Micro Grids: Microgrids are localized grids that can disconnect from the traditional grid to operate autonomously and help mitigate grid disturbances and are being envisioned as the future of smart grids. This strengthens grid resilience; helps mitigate grid disturbances by continuing operations if the main grid is down, and allows faster system response and recovery.

Asset, Device Monitoring: Asset Monitoring provides a system for continuously monitoring asset health. With our services, information becomes more streamlined, predictive and proactive. This results in lower operational costs from a smarter, more reliable power grid. Device Status, Application Performance Levels, System Alerts and Alarms are monitored, logged and evenly distributed to ensure a standardized approach to information management by utilizing a consistent monitoring and reporting solution for all assets.

IoT Gateways for aggregation: CMS' IoT Gateway is a platform that facilitates pulling, refining, storing different formats of data from various sources such as energy meters, sensors and PLCs.

Automatic Metering Infrastructure (AMI) Solutions: Our AMI solutions offer energy management, demand response, load forecasting, billing and revenue management and outage management using our software based energy platform, a Central Data Center and communication ports (RS-485, Ethernet, WiFi, GPRS).

- Communication Networks
- IoT gateways for aggregation
- Smart Meters
- AMI & ABT Systems Infrastructure
- Real Time Integration
- Advanced Load forecasting
- Grid Security Solutions
- Meter Data Acquisition Systems (MDAS)
- Micro Grids
- Information Management and Analytics solutions
- Asset, Device & Service Monitoring
- Meter Real Estate Management and Monitoring
- Peak Load Management Software

Availability Based Tariff (ABT) Systems: Our ABT systems provide software tools for load balancing, differential pricing, maximizing UI revenues, avoiding penalties and managing schedules. They can be integrated with other systems like PI servers, SCADA, SAP/ERP etc and are used and trusted by many top players in the power sector. Data can be collected from power and energy meters, third party meters, equipment and data servers over the internet, Ethernet, modem.

Advanced Load forecasting: Load forecasting provides the system operators with advanced warnings on potential normal feeder overloading. Once such overloading signals are received, the operators can take several measures to avoid the undesired event. These measures include load switching, feeder reconfiguration, load reductions, and voltage control.

Meter Data Acquisition Software (MDAS): MDAS is a key Service Oriented Architecture (SOA) enabled application module in the entire smart grid solution. Features include Automatic Meter Data collation, Alarms and Alert generation based on system conditions and validation logic, Dashboard and Reporting, Meter Time Synchronisation, Data Integrity checks as well as GPRS meters/DCU communication using DLMS/COSEM protocol.

Meter Data Management (MDM): MDM is a database repository that allows automatic streamlining of meter data collection, billing parameters calculation and validation, quality assurance with error estimates, alarms and demand response events, structured data delivery to utility billing systems. Modules include Revenue Protection and Theft Analysis, End User Usage Analysis and Forecast, Network Topology Builder and Processor, Distribution Network Applications (DNA) and Geographic Information System (GIS) Integration.

Meter Estate Management System: Our products for management of multiple meters are scalable, high performing, secure and extensible and provide the tools needed to manage, operate and monitor a utility's smart meter estate. With this, customers can also access information about power usage patterns at different times of the day, month or year.

Peak Load Management System (PLM): Increasing population, rising energy demand and thousands of electric appliances bring instability to the existing grid. Energy efficiency, reliability, economic constraints and integration of renewable energy resources are challenges faced by a stable power distribution system infrastructure.

Our Peak Load Management system implements AMI for Load Prediction and Analysis, Load Controlling, Scheduling and

CMS Smart Grid Software: The vital force sustaining the new generation Grid

CMS' Smart Grid Platform is a web-based, integrated power management solution for energy providers and distributors. Using industry-standard network technologies (Ethernet and wireless), we ensure customized view of correct and timely data to each individual user.

Versatile, Powerful and Comprehensive

- Scalable, flexible architecture
- Easy integration with third party equipment, web services and systems management frameworks
- Interoperability with third-party SCADA, automation and business systems
- Real time monitoring and control -manual or set point-triggered controlof multiple loads, generators, relays and various power distribution equipment
- Analysis, Archiving and Log leveraging Power of Predictive analytics
- Delivery and management across devices including mobile applications.

Demand Forecasting based on individual load profiles and Usage Pattern Analytics.

Information Management and Analytics: Evolving technologies in the smart grid ecosystem are providing companies with unprecedented capabilities for demand forecast, customer usage patterns, outage prevention, unit optimization commitment and more. These advances are generating unprecedented volumes of data with great speed and complexity.

To manage and use this information to gain insights, we help utility companies with high-volume data management and advanced analytics that are designed to transform data into actionable insights.

CMS Advantage

- Reliability, better power quality, reduced costs, and choice for the customer
- The best RoI by integrated distribution management
- Allows differential tariffs based on usage timings
- Provides consumers with information about power consumption, and alternative choices through peak levelling and differential billing
- Improves use of existing grid assets to reduce grid congestion and bottlenecks
- Ensures less reliance on auxiliary power plants
- Increasesadoption on alternate energy sources leading to reduced carbon emissions, pollution
- Pre-empts or mitigates power outages, low power quality and other service disruptions that occur anywhere in the power generation, distribution, and demand chain by using real-time information
- Consolidates all consumption data in one system, handles large volumes of meter data and maximizes return on metering investments

CMS –Ahead of the Technology Curve

As a pioneer of the IT movement in India since 1976, CMS Computers adds value to every industry through its products, services and solutions.

Even as the world is waking up to the benefits of big data, mobility and analytics, CMS has already innovated and implemented well over 200 Smart City elements leveraging big data and analytics for holistic city management. These have been in the areas of e-governance services, transportation and traffic solutions, energy management solutions, surveillance and workforce management, broadcasting solutions as well as software services aligning technology with client businesses across sectors.

With over 4000 employees and a pan India presence across 100+ locations, CMS has leveraged the collective power of IT and the Internet of Things (IoT) to improve and simplify the lives of citizens, corporations and the government.

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