Energy Management Consulting Services

Save Energy Today, Survive Tomorrow

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**Introduction**

Cholamandalam MS Risk Services Limited (CMSRSL) is an ISO 9001:2008 company, is a joint venture between USD $3.14 Billion Murugappa group, India and Mitsui Sumitomo Insurance Group, Japan and has a technical collaboration with InterRisk, a group company of Mitsui Sumitomo Insurance Group.

Established in year 1994, CMSRSL is a Risk Consulting Company offering comprehensive Risk Management and Engineering solutions in field of Safety, Energy and Environment. The company has pioneered many innovative and specialized services catering to the needs of Asian and European markets for last 15 years. The organization has successfully executed more than 2000 projects which not only helped its clients maintain compliance but also optimize their EHS performance and set new benchmarks.

CMSRSL is a certified “Environment Impact Assessment” Consultant organization by NABET EIA Accreditation committee, a constituent of Quality Council of India. The organization was also declared “Risk Manager of the Year” in Asian Insurance Industry Awards and is the only Indian company to be approved as Safety Consultants by Kuwait Oil Company under section 31s till date. The organization has a pan India presence with office in Mumbai, New Delhi and Gurgaon besides corporate office in Chennai.
Consulting Services by Cholamandalam MS Risk Services

**Process Safety Division**
- Safety Audit
- Safety Perception Survey
- Fire Protection System Review and Design
- Fire Safety Audits and Fire Risk Assessment Study
- HAZOP
- Layer Protection Analysis
- Quantitative Risk Analysis
- Risk and Reliability Studies
- Occupational and Community Level Health Risk Assessments

**Electrical and Construction Safety**
- Electrical Safety Audits
- Thermography Studies
- Lighting Protection Risk Assessments
- Review of Hazardous Area Classification
- Construction Safety Audit

**Environment Division**
- Environmental Impact Assessment Studies
- Environmental Audits
- Site Assessment and Remediation Plans
- Air Quality Modeling and Management
- Marine Ecological Risk Assessment
- Water Audits
- Waste Water Treatment Plant Design and Upgrading
- CSR Consultancy Services

**Energy Division**
- Thermal Energy Audits
- Electrical Energy Audits
- Power Quality Audit
- Building Energy Audit
- Energy Efficient System Design and Engineering Solutions
- Renewable Energy
- Climate Change

Cholamandalam MS Risk Services Limited
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Energy Management Consulting Services

Around the world, energy cost forms a significant part of operational cost, as high as 25-30% in Process Industries. Technological changes have also forced organizations to re-look at Energy Management and Alternative Sources. With increasing overheads and shrinking profit margins, there is an urgency to optimize energy cost, alternative energy sources and Environment Protection.

The aim of energy management is to achieve organizational objectives at minimum energy consumption and cost, but it is worth emphasizing that the operative word is "management".

Three key principles of energy management are:

- Purchase energy at the lowest available price
- Manage energy consumption at peak efficiency
- Utilize the most appropriate technology
- Alternative Sources

Within these principles lies a complex matrix of knowledge and skill requirements. For example, managing energy consumption at peak efficiency can involve activities ranging from auditing, to specifying retrofit measures and analyzing the resulting return on investment, to monitoring and targeting, to conducting employee and tenant awareness educational programs, and alternative technologies and sources. The energy manager typically will have responsibility for advising senior management on energy reduction strategies, for gaining commitment throughout the organization, for managing the implementation of measures, and for dealing effectively with contractors and energy suppliers.

Energy Audit and Conservative Measures is a key to systematic approach for decision-making in the area of energy management. It strikes to balance the total energy inputs with its use, and serves to identify all the energy streams in a facility. It quantifies energy usage according to its discrete functions. Energy Audit is an effective tool in defining and pursuing comprehensive energy management program.

As per the Energy Conservation Act, 2001, Energy Audit is defined as "the verification, monitoring and analysis of use of energy including submission of technical report containing..."
recommendations for improving energy efficiency with cost benefit analysis and an action plan to reduce energy consumption”.

Energy Audit will help to understand more about the ways electricity and fuel are used in facility, and help in identifying the areas where waste can occur and where scope for improvement exists and alternative solutions. The Energy Audit would give a positive orientation to the energy cost reduction, preventive maintenance and quality control program which are vital for production and utility activities.

Energy and Environment Division of CMSRSL has excellent track record in conducting Detailed/Comprehensive Energy Audits for a wide spectrum of large & energy-intensive industries. CMSRSL also extends technical assistance services to its clients for implementation of identified cost-effective energy saving solutions and exploring possibilities for Renewable Energy Resources. CMSRSL has conducted over 100 Energy Audits so far covering a range of industrial sectors.

CMSRSL is expertise lies in addressing the Energy Management Consulting Service related to the following disciplines:

- Electrical Energy Audits
- Thermal Energy Audits
- Power Quality Audits
- Building Energy Audit
- Energy Efficient Systems Design and Engineering Solutions
- Renewable Energy and Climate Change

Electrical Energy Audits

Electricity is considered key driver for targeted 8 to 10% economic growth of Country. Electricity supply at globally competitive rates would also make economic activity in the country competitive in the globalized environment. As per the statistics, there would be an electricity supply shortfall of 96,367 million units in 2011-12. As 65 % of the power
generation is through the coal availability and shortage of the coal is the criteria.

Electricity distribution network in India is inefficient compared to other networks in the world. India's network losses exceeded 32% in 2010, compared to world average of less than 15%. Loss reduction technologies, if adopted in India, can add about 30 GW of electrical power, while simultaneously reducing electricity cost and carbon footprint pollution per MWhr used.

Due to raw material availability, increased losses the Central Electricity regulatory commission (CERA) forced to increase the tariff mainly on the industrial consumers which applies electricity cost is more costly in industries. CMSRSL offer the following Electrical Energy Audit Services:

- Electrical Systems
- Electrical Motors
- Electrical Load Management Studies
- Power Factor Measurement and Improvement Studies
- HVAC and Refrigeration Systems
- Cooling Towers
- Air Compressors and Compressed Air Distribution Systems
- Pumping System Audit
- Fans and Blowers Audit
- Lighting System
- Diesel Generators and Captive Power Generation Systems

**Thermal Energy Audit**

Thermal Energy is an extremely important resource and Steam is an expensive utility that finds application in a wide range of processes. The prudent, careful, and energy-efficient use of thermal energy can be as vital as to affect the very viability of any process activity. We innovate, design, produce and implement solutions and systems to achieve amazingly large cuts in process costs, apart from drastically increasing product quality and quantity. The audit of energy
consumption is a specialized process. It takes thorough knowledge and expertise in multiple fields to estimate design, commission and performance monitor projects for energy conservation. CMSRSL is offers the following Thermal Energy Audit services:

- Boilers Performance Study
- Furnaces Performance Study
- Steam Distribution System Study
- Insulation System
- Thermic Fluid Heaters Performance Study
- Process Heat Recovery System
- Material and Energy Balance for Processes

**Power Quality Audit**

Power Quality is of major concern to all types of industries, especially those operating with critical machinery and equipments. Poor Quality of power leads to major problems like break-downs, production interruptions, excess energy consumption etc. Modern industries require automation of their operation enabling them to produce quality products and also for mass production. The conventional systems are being replaced by modern Power Electronic Systems, bringing a variety of advantages to the users. Classic examples are DC & AC Drives, UPS, soft starters, etc. Since the Thyristor converter technology is rapidly gaining ground in the modern industrial plants, the power supply systems are contaminated as the ideal sinusoidal current and voltage waveforms are getting distorted. This in turn is affecting the performance of the equipment in the electrical network, especially the Power Factor Correction Capacitors.

Cholamandalam MS Risk Services offers a comprehensive Power Quality Audits to the industries, distribution centres and commercial establishments. Power Quality (PQ) consultation can help businesses prevent equipment malfunctions related to electric power anomalies. The main task of the Power Quality consultant is to monitor, analyze and identify power quality problems and make recommendations on how to solve them.
The basic benefits of Power Quality audits are:

- Savings in energy bills due to reduced losses
- Accurate measurement by installed meters
- Reduced kVA demand
- Improved system efficiency
- Better capacity utilization of network
- Better production rate and quality due to reduced interruptions
- Improved safety
- Enhanced life of electrical network and components
- Improved system power factor

**Design of Energy Efficient Systems and Engineering Solutions**

Energy efficient system design requires the reduction of energy consumption in all portions of a system. System level design of hardware is concerned with selection and organization of the components. Software design is concerned with definition and selection of operating system, application software and compilers. The interaction between software and hardware components can greatly affect the energy consumption at the system level. Thus it is of critical importance to have a fast and easy way to evaluate energy consumption of the whole system during the design stages. CMSRSL offers the following services under Design of Energy Efficient Systems and Engineering Solutions:

- Waste Heat Recovery Systems
- Improving Boiler Efficiency
- Fans and Blowers Design
- Steam System Optimization
- Pinch Technology for Heat Recovery System
- Line Loss Analysis in Electrical Systems
- Fuel Switching Scope in Industries
Building Energy Audit

The Energy Audit in a building is a feasibility study. For it not only serves to identify energy use among the various services and to identify opportunities for energy conservation, but it is also a crucial first step in establishing an energy management program. The study should reveal to the owner, manager, or management team of the building the options available for reducing energy waste, the costs involved, and the benefits achievable from implementing those energy-conserving opportunities (CEOs). It begins with a detailed, step-by-step analysis of the building's energy use factors and costs, such as insulation values, occupancy schedules, chiller efficiencies, lighting levels, and records of utility and fuel expenditures. It includes the identification of specific ECOs, along with the cost-effective benefits of each one. The completed study would provide the building owner with a thorough and detailed basis for deciding which ECOs to implement, the magnitude of savings to be expected, and the energy conservation goals to be established and achieved in the energy management program. The second stage is to improve efficiency of energy conversion equipment and to reduce energy use by proper operations and maintenance. ECOs would include the following:

- Building equipment operation,
- Building envelope,
- Air-conditioning and mechanical ventilation equipment and systems,
- Lighting systems,
- Power Systems, and
- Miscellaneous services

Renewable Energy and Climate Change

Considering the importance of fossil fuels and greenhouse gas effects, we have understood the value of renewable and alternate energy sources that will be remain in the future. In this way, we strive hard to offer the best-in-class services to the clients that enable them to use...
alternative sources of energy and assessment studies in their residential and commercial usage.

CMSRSL offers the following services under Renewable Energy and Climate Change:

- DPR Preparation for Renewable and Non-Renewable Energy
- Solar Energy
- Hydro Power Generation
- GHG Emissions Services
- Wind Energy Projects
- Biomass and Gasification Projects
- Biogas Projects
- Capacity Building in Renewable Energy in Urban and Rural Areas
- CDM and Climate Change
- Green Building Services

**Energy Audit Instruments**

CMSRSL is equipped with the following instruments to measure a variety of process parameters to investigate the electrical and thermal energy savings.
### List of Instruments

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<th>Photograph of the Instrument</th>
<th>Purpose</th>
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<td>1</td>
<td>Ultrasonic Flow Meter</td>
<td>Eesiflo</td>
<td>Portalok 7S</td>
<td><img src="image" alt="Ultrasonic Flow Meter" /></td>
<td>Non contact type Water flow measurements</td>
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<tr>
<td>2</td>
<td>Power Quality Analyzer</td>
<td>Krykard</td>
<td>ALM 32</td>
<td><img src="image" alt="Power Quality Analyzer" /></td>
<td>Three Phase and single phase Continuous Power and Harmonics measurements</td>
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<td><img src="image" alt="Digital Clamp On-power Meter" /></td>
<td>Instantaneous three phase and single phase Power measurements</td>
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<td>Anemometer</td>
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<td>Multi-stem Thermometer</td>
<td>HTC Thermometer</td>
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<td>Contact type Rotation (RPM) Measurements</td>
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<td>S No</td>
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<td>Lux Meter</td>
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<td>Noncontact type digital lighting intensity measurements</td>
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<td>8</td>
<td>Infrared Thermometer</td>
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<td>9</td>
<td>Hygrometer</td>
<td>Metravi</td>
<td>HT 3006</td>
<td></td>
<td>Measuring the moisture content in the air, or humidity</td>
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Our Prestigious Clients

- Honda
- Pary's
- Ester Industries Ltd.
- Piaggio Vehicles Pvt. Ltd.
- Super Spinning Mills Limited
- Sangeeth Group of Companies
- Garware-Wall Ropes Ltd.
- Precot Meridian Ltd.
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- kg Denim
- Hikal
- SoKtas
- Krebs
- Carlsberg
- BKT
- Krebs Biochemicals & Industries Ltd.
- Responsive Industries Limited
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To Protect Business, Society and Environment

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