THE ENERGY & PROCESS MANAGEMENT SYSTEM

(ELUCIDATED USING THE TEXTILE INDUSTRY)
From anytime, anywhere connectivity for anyone, we will now have connectivity for anything!

**Why Internet of Things?**

- Dynamic control of industry and daily life
- Improve the resource utilization ratio
- Better relationship between human and nature
  Forming an intellectual entity by integrating human society and physical systems
Our solution helps you to optimize the entire production process. After an initial power quality audit, the system team work on integrated systems design, engineering, installation, and commissioning in new and existing textile mills.
ENERGY CONSUMPTION PATTERN

Most companies waste up to 15% of energy. The problem is knowing which 15%.
Elmeasure offer solutions for conserving quantity and improving quality of power.
To manage energy efficiently, you need to start by asking the right questions, which is often half the answer.
Elmeasure 3–Step Energy Efficiency Plan of Measure, Detect and Control helps not just to ask the right questions but to find the answers to them.
Our menu of products and solutions can increase your profitability and make your plant energy efficient. And in a matter of a few months you can recover your investment.

(Source: TEDDY -04/05)
ELMEASURE SOLUTION

**Electrical Related**
- Transformer Monitoring: load analysis / Maintaining Sanction Demand / Managing of non-critical / Individual Harmonic Monitoring
- DG Set: Energy consumption / Run hours / Load hours
- Lighting Loads: Energy consumption / Day – Night consumption Monitoring

**Process Related**
- Ring Frame Machines: Doff wise Energy Consumption / Start Time and Stop Time / No. of stoppages / Doff duration – For Different counts
- Humidification Plant: Energy Consumption analysis at different loads / Load Hours
- Pre Spinning Area: Energy Consumption of all major loads / Load Analysis of All Loads Machine ON/OFF time / Doff wise consumption (Simplex Machines)
- Compressors: Energy Consumption Analysis / Operating patterns / Load Analysis at different operating Parameters
S/W ELMEASURE SOLUTION - ELECTRICAL SIDE

1. **Demand management**
   a. Overshooting of demand due to parallel running of machines
   b. Maintaining the demand close to the sanctioned demand
   c. Managing of non-critical loads to optimize the Demand

2. **Transformer level**
   a. Individual Harmonic Monitoring
   b. Transformer load analysis

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**Power factor Management Load Management reports**
- Idle running of machines
- Oversized motors
- T&D reports

**DG Set Report**
- Performance Analysis
- Maintenance tracking
- Load Hours

**Power interruption report**

**Performance Analysis Reports of all major loads**
S/W ELMEASURE SOLUTION - PROCESS SIDE

- **Dashboards:**
  - Over all plant summary
  - Selection of different department (Like, Spinning Machines, Carding Machines, Combing Machines etc.)
  - Alerts and provision for acknowledgment

- **Identify the performances and load variations of each machines**
  - Advance Alerts to avoid the losses and breakdown of machines

- **Alert when Spinning frame deviates from scheduled operation**

- **Ring Frame Analysis**:
  - Doff Counting, Doff wise energy, Doff Time, No. of Stoppage, Ideal Time, UKG, Production, Doff Duration, Doffing Time, Spindle Speed, Weight, Length, Energy.

- **Calculate the cycle time of the doffing operation during power failures, number of interruptions**

- **Calculation of SEC in every stage of operation (ring frames, Carding, Combing etc.)**
  - With large number of ring frames
  - With different yarn counts

- **Identify the yarn counts loaded in different ring frames**

- **Status Screen of Machines On / Off status**

- **Real time status and power parameters of different ring frames**

- **Calculate the ideal cycle time of Ring frames/Machines during normal operation**
## ALERTS

<table>
<thead>
<tr>
<th>Events</th>
<th>Benchmark</th>
<th>Alerts</th>
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<tbody>
<tr>
<td><strong>Compressors</strong></td>
<td></td>
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<tr>
<td>Pressure</td>
<td>Upper limit (Real-time pressure)</td>
<td>Local as well Mobile</td>
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<tr>
<td></td>
<td>Lower Limit</td>
<td>Local as well Mobile</td>
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<tr>
<td>Flow</td>
<td>Upper limit (Real-time flow)</td>
<td>Local as well Mobile</td>
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<tr>
<td></td>
<td>Lower Limit</td>
<td>Local as well Mobile</td>
</tr>
<tr>
<td><strong>Equipments (Spinning and Pre Spinning)</strong></td>
<td></td>
<td></td>
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<tr>
<td>Delivery Speed</td>
<td>Meter/Minutes</td>
<td>Local</td>
</tr>
<tr>
<td>Front roller Speed</td>
<td>RPM (Set RPM, Should send an Alert if there any variation)</td>
<td>Local</td>
</tr>
<tr>
<td>TPI</td>
<td>Count</td>
<td>Local</td>
</tr>
<tr>
<td>Hank</td>
<td>Production In length</td>
<td>Local</td>
</tr>
</tbody>
</table>
ANALYTICS

• **Dash Boards for Directors/GM**
  - % of Plant running
  - Production Vs Consumption
  - Electricity Cost/Hr (Demand and Energy in One Graph)
  - Energy Generated by Wind Mill (If Available)

• **Dash Boards for Maintenance Engineer**
  - Equipment Status (With Counts) - Ring frames
  - Energy Trend (Hourly)
  - Demand Trend (Hourly)
  - % of Plant Loading (Zone wise)

• **Comparison of Ring frames/ Equipments of same counts**
  (Should be in a position to select the parameters)
  - UKG
  - Hank
  - Speed (rpm) – Front roller Speed
  - Speed (Length) – Tin Roller speed
  - Doff duration
  - Doff Time

• **Status Changes as per the set Parameters**

• **Performance Analysis of Equipments**
  - Current, W and Wh (Daily)
  - Equipments deterioration Analysis

• **Indications on Periodic Maintenance**

REPORTS

• Machine Wise, Operator Wise, Supervisor Wise, Department Wise
• Production Reports, Stoppage Reports, Doff Report, Doff Prediction Report, Efficiency Reports
• Performance Reports, Efficiency Trend Graphs, Comparison Reports, Assignment Reports
• Power consumption, Power factor, Units consumed, KVA, etc., reports related to power.
• Power consumed vs Production comparison for each DOFF, Shift etc.,
• Air Consumption Reports
NETWORK ARCHITECTURE

ELECTRICAL SIDE

LT Line

DG Set

Lighting Load

Energy Consumption at Process Side

EN8400 LM

Ethernet Gateway

Ethernet Switch

EMS Server PC

LAN

RS 485

www.elmeasure.com
NETWORK ARCHITECTURE

ELECTRICAL SIDE

LT Line

DG Set

Lighting Load

Energy Consumption at Process Side

EN8400LM with Zigbee

Ethernet Switch

Zigbee to Ethernet Gateway

EMS Server PC

Zigbee Repeater

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LOCAL SERVER & DATA VIEWING FROM CORPORATE OFFICE

All locations are connected to Existing INTRANET

Location 1
Local ElNet Server

Location 2
Local ElNet Server

Location 18
Local ElNet Server

...
**NETWORK ARCHITECTURE - PROCESS MONITORING SYSTEM**

**Location 1**
- EN8400L M with 4DI
- Gateway
- RS 485

**Location 2**
- EN8400 LM with 4DI
- Gateway
- RS 485

- Ring Frame
- Front Roller
- Tin Roller
- Doff Status
- DI

**EMS Server PC**

**LAN**

- Ethernet Switch

**www.elmeasure.com**
NETWORK ARCHITECTURE
- PROCESS MONITORING SYSTEM

Location 1

- Ring Frame
- Front Roller
- Doffing Sensor
- Tin Roller
- EN8400 LM with 4DI

- DI
- Doff Status
- Proximity Switch

Location 2

- Ring Frame
- Front Roller
- Doffing Sensor
- Tin Roller
- EN8400 LM with 4DI

- DI
- Doff Status
- Proximity Switch

Gateway

RS 485

LAN

EMS Server
PC

Ethernet Switch

LAN
DASHBOARD

Production (Total)
06 Tonnes

Power Consumed
1600 kWh

Downtime (Avg)
300 Secs

Reaction Time (Avg)
260 Secs

Man Power (Avg)
400 People

Unit Insight
Production Unit 01
Production Unit 02
Production Unit 03
Production Unit 04
SOLUTION SCREENS
Ring frame status comparison with type of Yarn Count loaded

- Quick review of status of ring frames
- Yarn count in ring frames on real time basis

Ring frame machine analysis

- Yarn count loaded, Status & Power parameters of each Ring frame.
- Stoppage time & Number of stoppages during doffing – power failure, yarn cut
- Duration of doffing for optimum productivity
Report menu for Textile application

Ring frame UKG and Production report

Complete Textile Performance report
DASHBOARD DAILY
DASHBOARD
HOURLY
DASHBOARD

WEEKLY
DASHBOARD

GAIN/LOSS
EL-NET REPORTS

5 LISTS OF REPORTS...

- All the reports are generated in excel format with the chart
- All the reports can be generated for Single device or multiple selectable devices.
- Reports can be generated with a device in different group.
REPORTS

CONT...

OTHER REPORTS

ANALYSIS REPORTS
OUR MANUFACTURING CAPACITY

- Four manufacturing plants across India
- Around 10000 Sq.ft production area
- One Plant In Dehradun offers faster delivery for North customer
- Having Manufacturing Capacity of 25000 Meters per month
- 80000 Sq.ft state-of-the-art manufacturing unit is coming near to Bangalore Airport
WASTAGE REDUCTION

• **Yarn Wastage:**
  Estimating the expected yarn realization for the existing working conditions and compare the actual yarn realization with the expected value and actual wastes with norms.

• **Benchmarking Energy Consumption:**
  Identifying unit consumption of each machine with the other running at same configuration by plotting energy vs. production and also by finding over speed of machine.
BENEFITS

• Specific energy consumption of heavy loads
  – Calculation of section wise energy consumption against product output
• Performance check and periodic maintenance
  – Verification of equipment data with respect to rated specs
• Monitoring of cyclic operation of spinning unit (Ring frame)
  – Number of Stoppages with durations during doffing
  – Energy comparison of various ring frames vis-à-vis product outputs (Ring UKG)
  – Different Yarns count and specific energy consumption (UKG) per Ring frame
• Identifying idle running of machine
Inputs from Proximity Sensors

- RPM of Tin Roller Shaft
- RPM of Front Roller

Machine Parameters (Manual Entry)

- Tin pulley diameter in mm
- Front roller diameter in mm
- Yarn count
- Number of Spindles in machine
- Machine Efficiency

- **Spindle Speed** = Tin Roller Speed in RPM \( \times \) (Dia. of tin pulley / Dia. of spindle Wharve)
- **Delivery Rate in Mtrs / min \( (Y) \)** = Front Roller RPM \( \times \pi \times \) Front Roller Diameter
- **Twist Per Inch** = Spindle Speed / (Delivery rate in inch / min)
- **Run Hours** = Based on the Front Roller Rotation
- **Production per Doff** = Kilogram of yarn produced in a single doff

* doff can be sensed through proximity fixed at the spindle beam
OUR USP (UNIQUE SELLING PROPOSITION)

- All products Elmeasure uses in this Solution are Indigenous
  - Designed, Manufactured and integrated in our Manufacturing Units
  - Using all high quality and reliable components (Importing from US, Singapore etc.. )
- All quality standards are Traceable
  - Using Highly accurate Reference equipments for Calibration of Meters
- Elmeasure solutions are Tailor - Made
  - Both H/W and S/W can be customized based on customer requirement

- Elmeasure ensures that we deliver the value proposition to customer
  - Will not just dump product to the customer
  - Quality product with latest technology
- Wired and wireless meters
  - Zigbee based meters
  - Ease the installation Process
- Strong Dealers and after sales support N/W
  - Strong Dealers and Sales force representation across the country
- Interoperability
  - Flawlessly work with third party devices
  - Easy integration with Non Electrical Parameters
  - OPC Connectivity

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Technology Stack & Interoperability

Solutions
- Energy Management System
- Process Management System
- Water Management System
- Data Center Management System
- Solar Plant Management System

Products
- Lighting Management System
- Ambience Monitoring
- Fuel & Gas Monitoring
- Battery Monitoring Unit
- Smart IO

Capabilities
- Energy Monitoring
- Water Monitoring
- AC & DC
- Flow, Pressure, Level
- CO2, Temp, Rh, Hydrogen
- Indoor, Outdoor

- Process Management
- Billing
- Smart Metering
- Billing
- Ethernet, WLAN, GPRS
- Sensors
- Actuation
- Zigbee Mesh Network
- GSM Network
- Wifi

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Take the ElMeasure™ Site Survey today.

A global presence in over 36 countries with 10,000+ clients, sales offices in 6 countries and 2 Million products live on field.

*we’re a preferred OEM manufacturer for some of the leading international brands.*