Systel
We Know Compressed Air. Better

DIGITALIZING COMPRESSED AIR FOR ENERGY EFFICIENCY AND SUSTAINABILITY IN TYRE MANUFACTURING

2024

Systel Energy Solutions (India) Pvt Ltd

Enhancing Compressed Air Performance

ABOUT US

Systel
We Know Compressed Air. Better

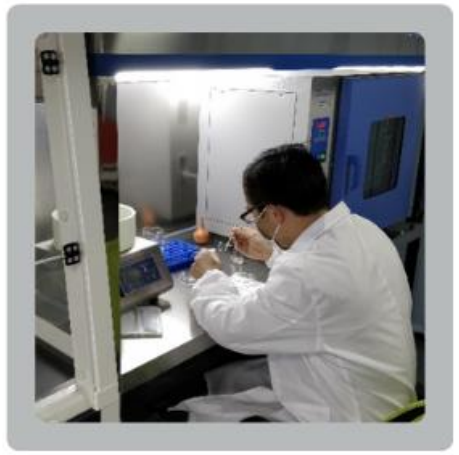
- 22 Years of Experience
- Over 1800 Compressed Air Projects
- Contributing to 50 Million MWH of Energy Savings
- ISO 11011

OUR FACILITIES

COPENHAGEN - DENMARK

INDIA CORPORATE OFFICE COIMBATORE

SENSOR MANUFACTURING SHENZHEN



SENSOR MANUFACTURING - KARLSRUHE - GERMANY

OUR HAPPY CLIENTS

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At Systel, we are proud to have collaborated with over 1700 industries across the Asia Pacific region and made a significant impact in optimizing their compressed air energy efficiency. Our dedicated efforts, in partnership with our customers, have resulted in remarkable annual energy savings of up to 50 million MWH. We take great privilege in being a driving force behind the improvement and sustained peak performance of our clients' compressed air systems.

DO YOU KNOW THAT COMPRESSED AIR SYSTEMS ARE HIGHLY IN-EFFICIENT ?

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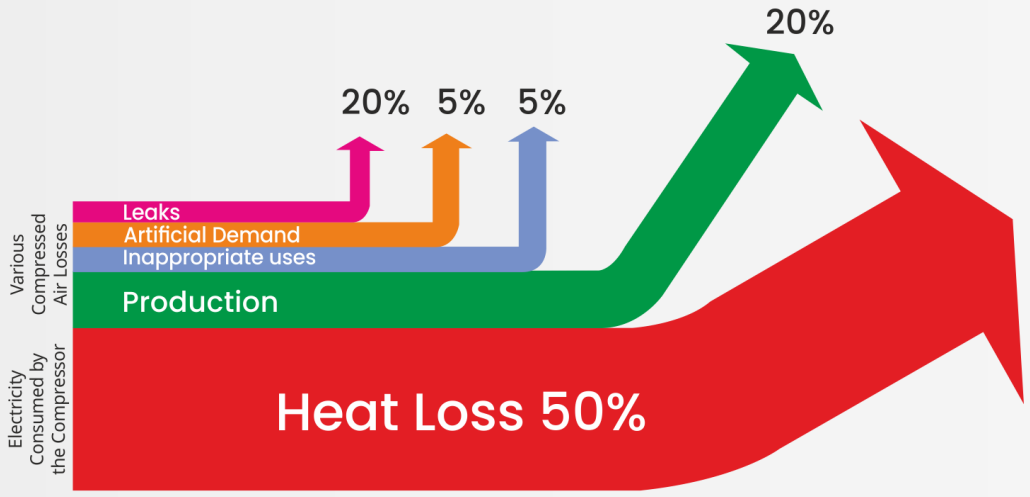
Distribution Of Compressor Input Energy



Compressor Life Cycle Costs

Energy is typically the most expensive component in operating a compressor throughout its useful life.

COMPRESSORS AND THEIR IMPACT ON SUSTAINABILITY

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Importance of Compressed In Tyre Manufacturing:

- **Curing Presses:** Compressed air is essential for operating curing presses, which are crucial for vulcanizing rubber into durable tyres.
- **Pneumatic Tools:** Used extensively in tyre assembly, maintenance, and repair processes.
- **Conveying Systems:** Compressed air powers pneumatic conveying systems to transport materials within the manufacturing plant.

Annual Impact Of A 90 KW Screw Compressor

> 870 MWH of Energy Consumption*
> Rs 6.96 Million in Energy Costs
> 648 Tons of Annual Green House Gas Emissions
> 7,00,000 Litres of Cooling Water Required Annually**
> 1,30,000 Litres of Condensate Produced Annually
> 3,40,000 Btu/hr Equivalent of Thermal Energy

* Considering Annual Operation of 8700 Hours
** In Case of Water Cooled Compressors

PAIN POINTS IN OPERATING A COMPRESSED AIR SYSTEM

Every compressor, regardless of type, draws in contaminated air, concentrates the contamination by compression and, if no measures are taken to remove it, passes it on to the compressed air network. Listed Below are the Key Pain Points Users experience while Managing their Compressed Air System

- **HIGH ENERGY COSTS**
- **RE-OCCURRENCE OF LEAKAGES**
- **POOR AIR QUALITY**
- **HIGHER COST OF OWNERSHIP**
- **PRODUCTION INTERUPTIONS**
- **FREQUENT BREAK-DOWN**
- **HIGH MAINTENANCE COSTS**

ABSENCE OF SMART MONITORING SYSTEMS

Consequence of Not Monitoring your Compressed Air System

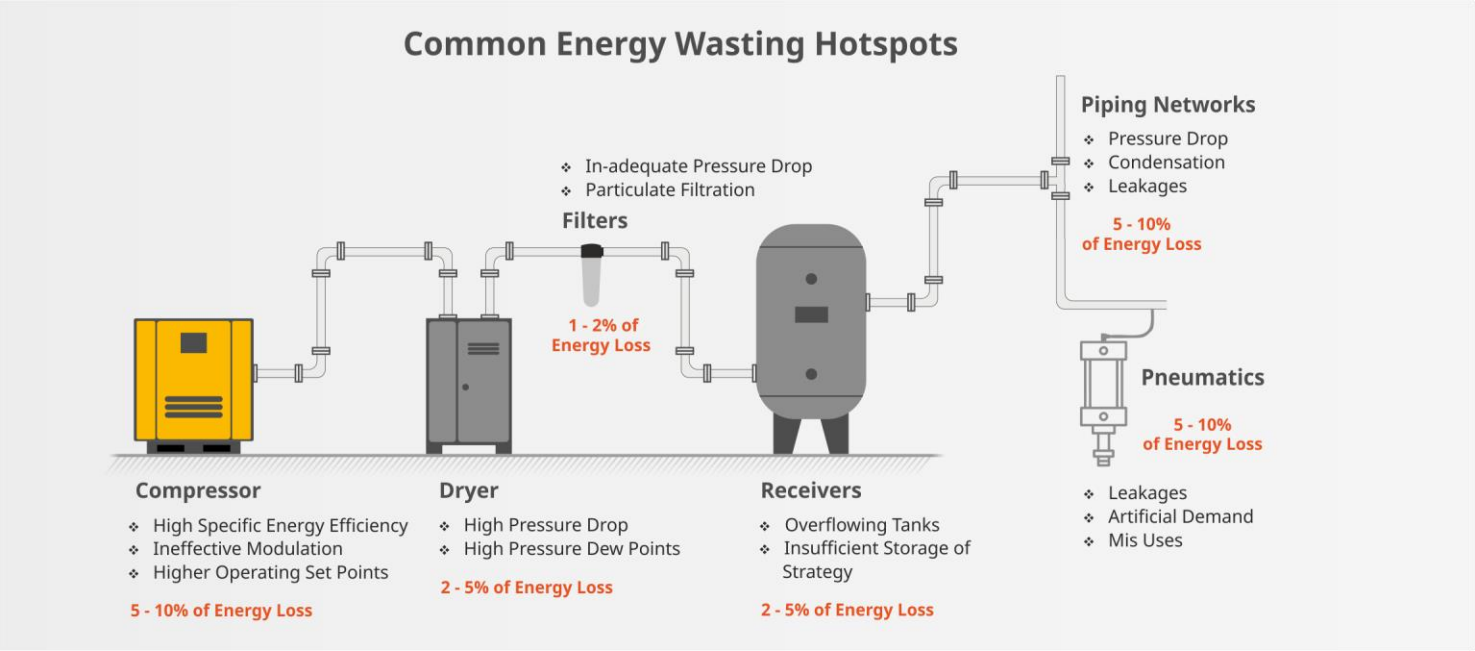
- **Confusion - Where to Start ?**
- **High & Repeated Efforts**
- **Asset Depreciations**
- **Non Productive Efforts**
- **Excessive Energy Utilization**

Smart Measurement is a comprehensive and systematic approach to continuous improvement. It includes all actions taken to reduce energy consumption and costs, and it is used to create an institutional framework for identifying and capitalising on energy-saving opportunities.

ENERGY WASTING HOTSPOTS

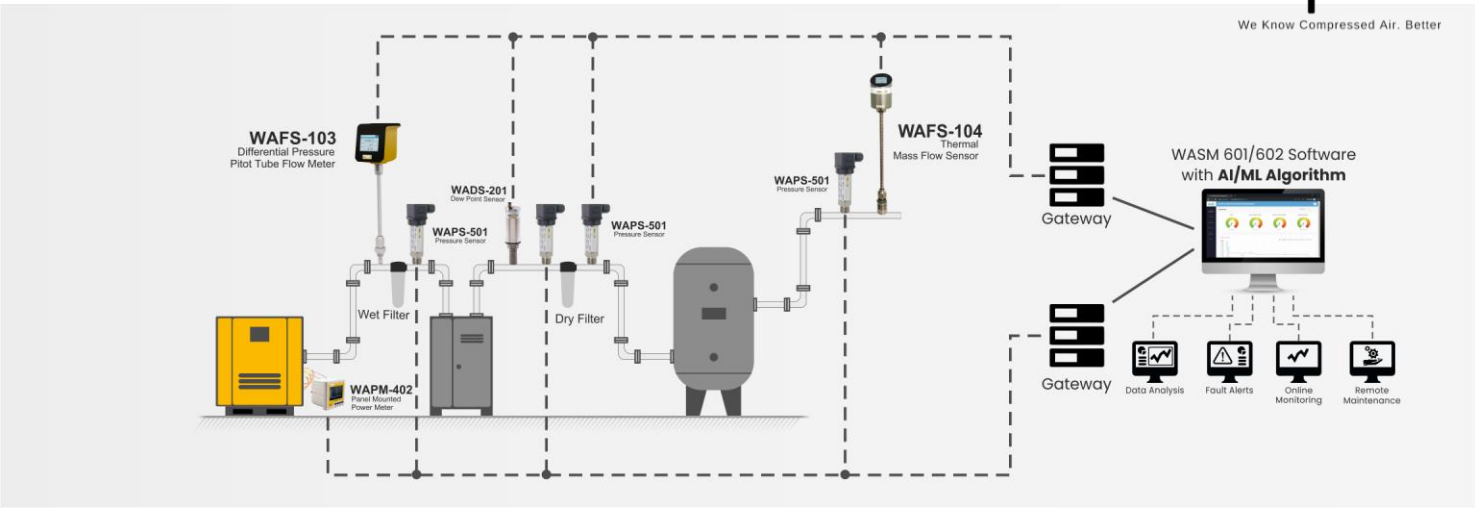
Regular Audit & Inspection in Compressed Air System can lead to Identifying & Eliminating Energy Wasting Hotspots as illustrated below,

Eliminating leaks, misuse, over pressurization and pressure drop can ensure efficient Operation of compressed air systems.



DIGITALIZE YOUR COMPRESSED AIR SYSTEMS, THE SYSTEL WAY...

We offer a complete, flexible and affordable way to adopt digitalisation of factories and to help our customers digitally transform their Compressed Air Systems, into a smart facility through connecting all aspects from Supply till Demand.



BENEFITS OF COMPRESSED AIR SYSTEM DIGITALIZATION

Real-time Monitoring: Continuous tracking of system performance and air usage.

Predictive Maintenance: Using data analytics to predict and prevent failures before they occur.

Energy Optimization: Identifying and addressing inefficiencies to reduce energy consumption.

Cost Savings: Lower operational costs through reduced energy usage and maintenance needs.

Sustainability Goals: Reducing carbon footprint and supporting corporate sustainability initiatives.

GET COMPLETE INSIGHTS INTO YOUR COMPRESSED AIR SYSTEMS

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CREATE A PERFECT AIR BALANCE

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WISE AIR 4.0

WiseAir Smart Compressed Air Monitoring System - WASM 604

Amitara Overseas Pvt Ltd - Nayka Plant

Compressed Air Generation

History - Yesterday

Compressor Ref	Date	Rated Capacity	Actual Average Flow	Actual Average Pressure
AMI-Compressor 1	06/08/2024	4000 SCFM	3799 SCFM	6.67 Bar
AMI-Compressor 2	06/08/2024	6310 SCFM	5072 SCFM	6.62 Bar
AMI-Compressor 3				
AMI-Compressor 4	06/08/2024	6310 SCFM	0 SCFM	-0.01 Bar
AMI-Compressor 5	06/08/2024	10000 SCFM	8515 SCFM	6.68 Bar
AMI-Compressor 6	06/08/2024	10000 SCFM	9026 SCFM	6.70 Bar
AMI-Compressor 7	06/08/2024	6310 SCFM	5652 SCFM	6.53 Bar
Total		42930 SCFM	32065 SCFM	6.64 Bar

Compressed Air Consumption

History - Yesterday

Compressor Ref	Date	Rated Capacity	Actual Average Flow	Actual Average Pressure
Balaji Weaving	06/08/2024	5400 SCFM	5601 SCFM	6.16 Bar
Bhagyalakshmi	06/08/2024	4500 SCFM	4808 SCFM	6.21 Bar
Gayathri Flow	06/08/2024	4500 SCFM	4678 SCFM	6.22 Bar
Niharika Flow	06/08/2024	5120 SCFM	5315 SCFM	6.27 Bar
Saroj	06/08/2024	4500 SCFM	4829 SCFM	6.18 Bar
Yash Exports Flow	06/08/2024	4500 SCFM	285 SCFM	6.20 Bar
Yash Weaving Flow	06/08/2024	4500 SCFM	4816 SCFM	6.21 Bar
Total		33020 SCFM	30331 SCFM	6.21 Bar

VIEW KEY METRICS IN A SNAPSHOT

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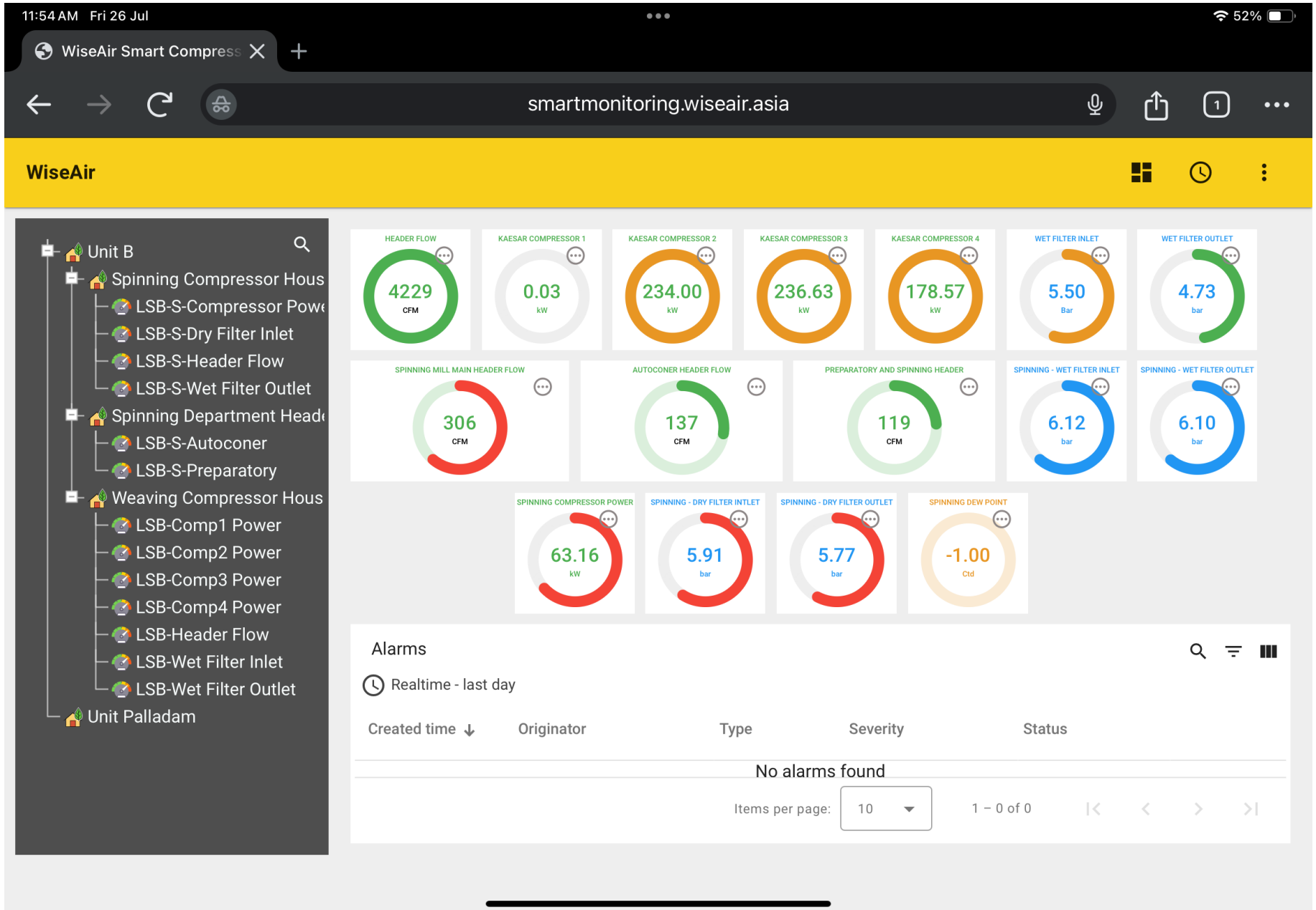

SMART IIOT SENSORS:

- **Flow Sensors:** Measure the volume of compressed air being used.
- **Pressure Sensors:** Monitor system pressure to ensure optimal operation.
- **Power Sensors:** Track energy consumption of compressors and other equipment.
- **Dew Point Sensors:** Measure moisture levels in compressed air to prevent equipment damage and product defects.

ADVANCED DATA ANALYTICS AND AI:

- **Predictive Maintenance:** AI algorithms analyze data to predict potential system failures and maintenance needs.
- **Energy Optimization:** Data-driven insights to fine-tune system performance and reduce energy consumption.

CLOUD-BASED MONITORING PLATFORMS:

- **Real-time Data Access:** Access system data from anywhere for informed decision-making.
- **Alerts and Notifications:** Immediate alerts for any anomalies or issues detected in the system.

OUR SYSTEMATIC APPROACH

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Step 1

Digitalize

Step 2

Monitor

Step 3

Improve

CASE STUDY - JSW STEEL LIMITED - SALEM WORKS

DIAGNOSING SYSTEM INEFFICIENCIES

Context:

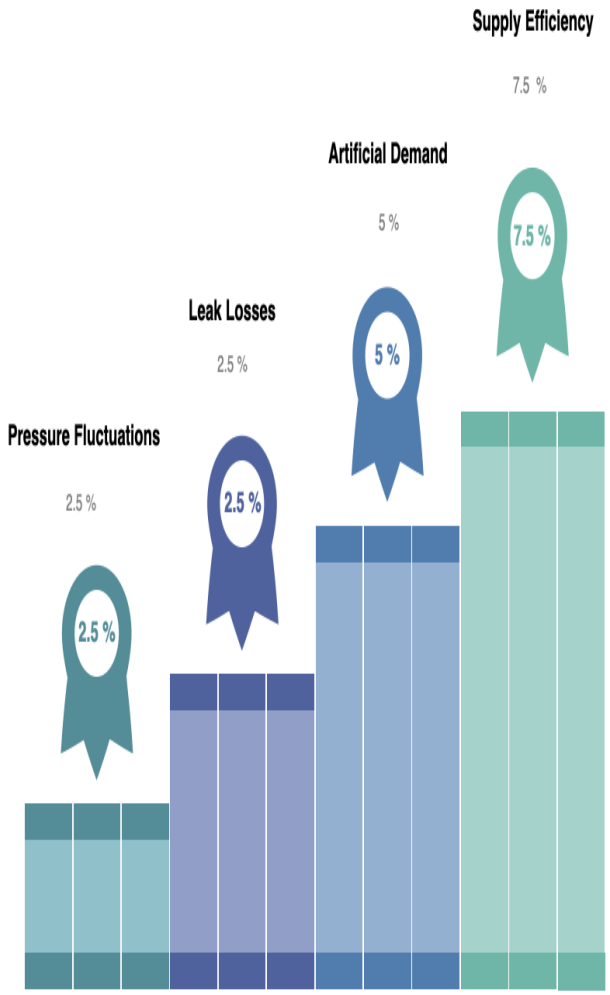
- Specialty Steel Manufacturing Plant in India with high energy usage due to compressed air systems.
- Operating 3 Centrifugal Compressors, total capacity of 14,700 CFM.

Key Challenges:

- Inaccurate flow measurements from existing Orifice Plate Flow Sensors.
- Compressors consuming approximately 75,000 kWh per day.
- Refrigerant Compressors used for drying air were not effectively measuring Pressure Dew Point (PDP).
- Frequent leaks (750 CFM) due to high moisture damaging pneumatic equipment.
- Misaligned supply and demand sides, resulting in increased system pressures and artificial demand.

CASE STUDY - JSW STEEL LIMITED - SALEM WORKS

TRANSFORMATIVE STEPS TO EFFICIENCY



Annual Savings Potential in Energy

Rs 2,32,05,000 - Rupees Two Crores Thirty Two Lakhs Five Thousand Only

Solutions Deployed:

- **Step 1**: Replaced Orifice Plate Flow Sensors with Systel WAFS 103 Model Pitot Tube Flow Sensors, eliminating pressure drops and saving 1,104 kWh/day.
- **Step 2**: Installation of WADS 205 Pressure Dew Point Sensors to accurately monitor air quality, reducing moisture-related issues.
- **Step 3**: Replaced 21 Vortex Flow Sensors with Systel WAFS 106 Thermal Mass Flow Sensors, stabilizing pressure fluctuations and reducing energy loss.
- **Step 4**: Integrated complete system with Systel's Real Time Monitoring Software for data analysis and immediate alerts on abnormalities.

CASE STUDY - JSW STEEL LIMITED - SALEM WORKS

RESULTS AND ROI

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JSW Steel Limited

JSW Steel

04.02.2022

To,

Mr. Hidhay. Managing Director,
M/s Systel Energy Solutions (India)
Pvt Ltd,No. 2, Systel Business Centre,
12 Sri Venkatalakshmi Nagar,
Singanallur, Coimbatore – 641005

Dear Sir,

Sub : Confirmation of Energy Savings through Systel's Compressed Air Digitalization Project.

We Hereby confirm you that we have realised Energy Savings of Upto 432 kW/H which is nearly 14 % of our Compressor Energy Consumption after installing your Smart Online Compressed Air Monitoring System and implementing the Various Energy Saving Measure Taken by our Internal Team with your suggestions under this Project.

We Appreciate the Support you have extended us in this Project and Would Welcome Additional Suggestions to further improve our Compressed Air System Efficiency.

With Best Regards,

G.Mahendran
Sr.Manager - Utility

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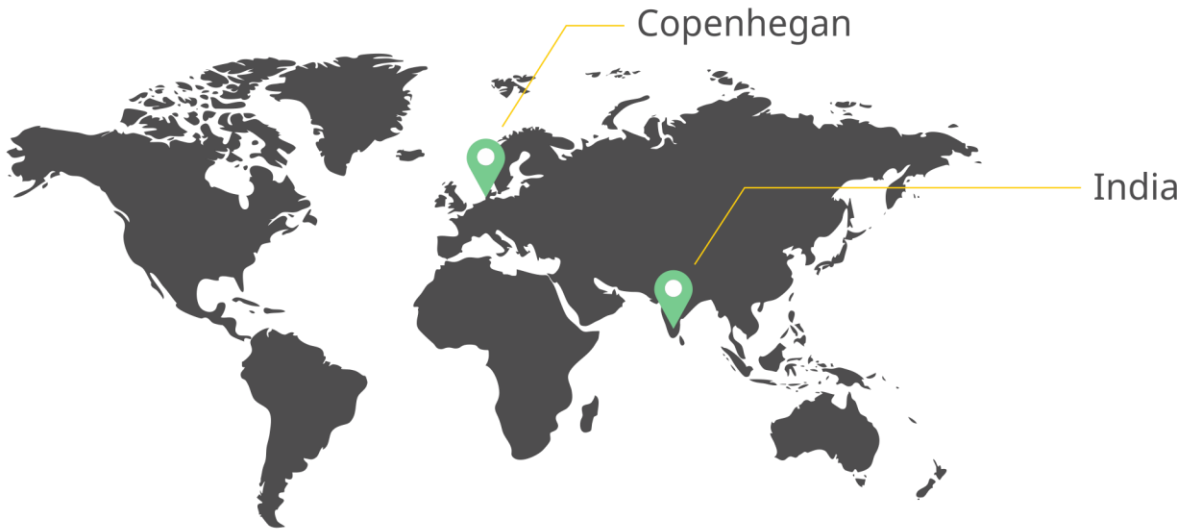
JINDAL
O.P. Jindal Group

Achieving Significant Energy Savings

- Immediate energy savings of 1,104 kWh/day post sensor replacement.
- Reduced leaks by 60%, saving up to 1,718 kWh/day.
- Stable system pressure and improved air quality across the plant.
- Overall energy cost savings of over Rs 2.32 Crores with an investment of Rs 75 Lacs.
- Return on Investment (ROI) achieved in under 4 months.
- Significantly reduced maintenance and repair costs.
- Enhanced control over the compressed air system for the plant's technical team.

OUR NETWORK



DIGITALIZATION SOLUTIONS FOR COMPRESSED AIR SYSTEMS

ASIA REGIONAL OFFICE

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