Energy efficiency improvement of Compressed Air System

Process optimization and Waste elimination

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Equipment, Facility, Process Engineering

7 yrs - Semiconductor Industry
9.5 yrs - Non Ferrous Metal Processing
Overview

- Introduction
- Catalyst
- Challenges
- Energy Management Philosophy
- Project Implementation
- Energy Saving Journey
- Future Opportunities
Wieland Group

7,000 employees

1820 founded in Ulm

3,02 € billion turnover

70 € million investments

485 kt sales

65 locations

Ulm, Germany - 1820

Singapore - 1989
4 Divisions

Rolled Products

Slide Bearings

Extruded/Drawn Products

High Performance Tubes
Catalyst

- Cost & Profitability
- Sustainable Business Model
- Socially & Environmentally Responsible
- Wicare

Win the EENP Awards
Challenges

- Energy Efficiency Investment = Huge Capex
- Difficult to Collect Reliable Data Efficiently
- Complex Chain of Energy Consumption
- Limited Resources
- Education
- Customer Behavior
Energy Management Philosophy

- Implementation
- Check Effectiveness
- Sustain
- Data collection
- Analysis and Planning
- Culture Change and Education
  Teamwork, TPM, 5S, Kaizen

- Inventing
- Visioning
- Sensing & Relating
Data Collection and Analysis

Plant Consumption

Air Compressor Consumption (Ltr/Sec)

Major Consumers

Equipsments
RM1  SA1  BS1  MILLING  OTHERS

225  300  20  50  45
Compressed Air Saving  
- Rolling Mill - Re-Engineering.

**Problem Description**
- High Energy consumption
- High Electricity Cost

**Analysis**
- 20% of total energy usage in the plant
- RM1 Shutter Motor uses 87 ltrs/sec at all time (idle & Running)

**Implementation**
- Redesigning of RM1 Air shutter motor to a brake system
Implementation

Compressed Air Saving

- Annealing Furnace - Strip Blower modification

Problem Description

- High Energy consumption
- High Electricity Cost

Analysis

- 20% of total energy usage in the plant
- Strip Blow of system in Strip annealer uses 40% of the Plant CDA
- Blow Off Usage 277 ltr/sec

Implementation

- Addition of a high performance air regulator before blowing system to control flow and add accuracy to process

Check Effectiveness

Savings Achieved

S$47,000/Yr, 294.4 MWh/Yr
Check Effectiveness and Sustain
Wieland Journey towards Energy saving:

- 2011: Replace shop floor lights to LED
- 2011: WWTP Dosage pump optimization
- 2014: Furnace Optimization
- 2014: Cooling Tower Optimization
- 2016: Slitter recoiling mode energy saving
- 2017: Air consumption optimization @ Rolling & Annealing

What’s next !!!

“We have to integrate the energy efficiency activity into day to day operation”
Future Opportunities

- Air Compressor optimization for Part load operation
- Furnace flue gas heat recovery
- Energy saving @ Slitting Vacuum Motor with VFD.
- Cooling Tower Flow Optimization
Take Away

Strong Leadership

Simplicity

Our new brand

Empowering Success.
Service for a new era.
Thank You!