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Energy consumption optimization

This workflow automatically monitors energy consumption patterns across water treatment equipment and implements optimization strategies to reduce operational costs while maintaining treatment efficiency.

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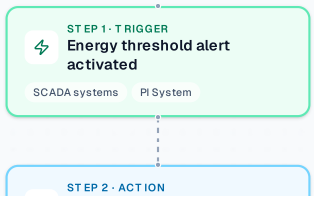
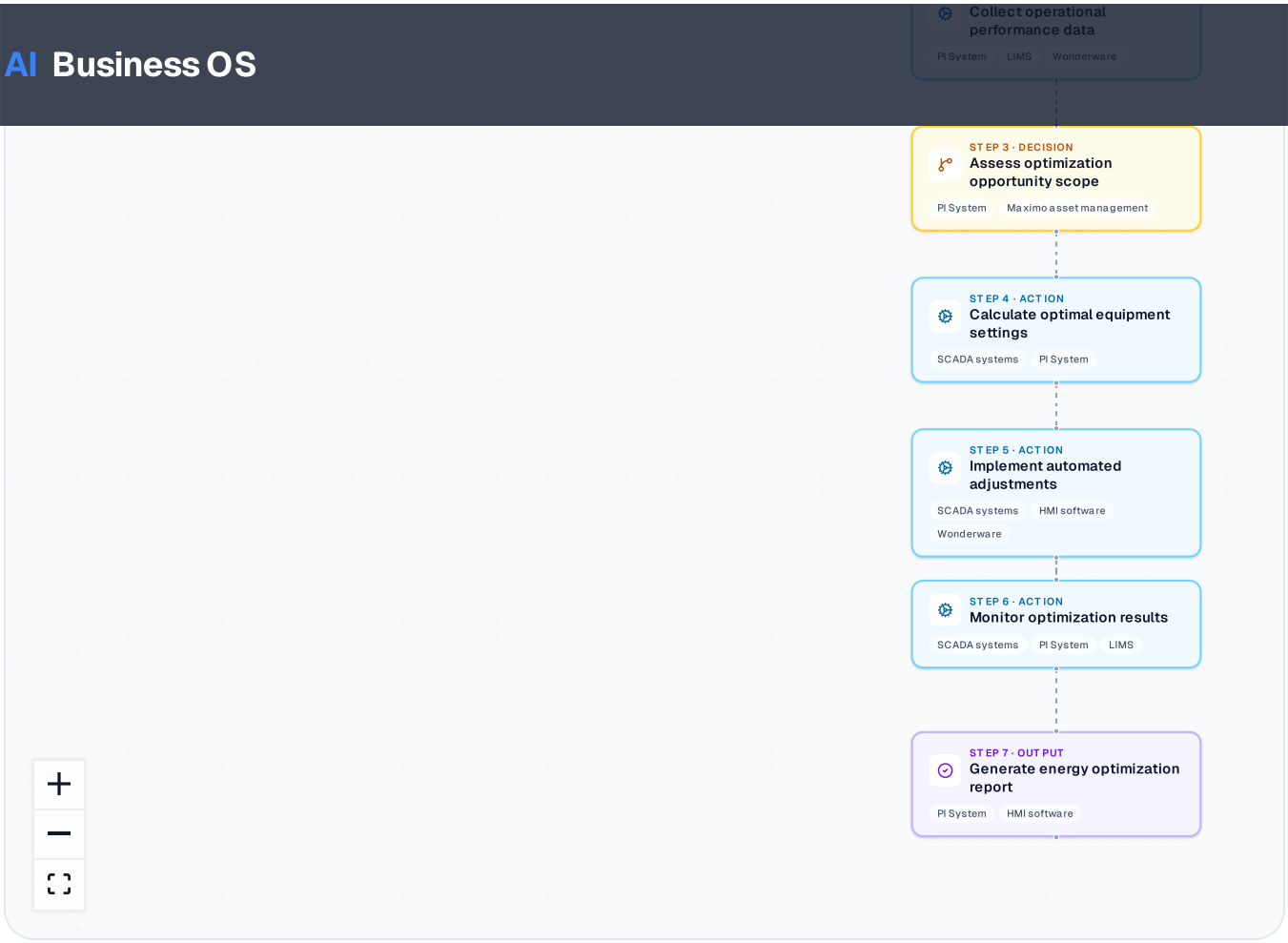
WORKFLOW TRIGGER

Real-time energy usage data shows consumption above baseline thresholds for 15+ minutes

Visual Flow

Each node represents an automated step. Connections show how data and decisions move through the workflow.





Step-by-Step Breakdown

Detailed explanation of each automated stage in the workflow.

1

TRIGGER

Energy threshold alert activated

SCADA system detects energy consumption exceeding predefined efficiency baselines across pumps, blowers, or chemical feed systems. Real-time monitoring triggers automated analysis workflow.

2

ACTION

Collect operational performance data

System gathers current flow rates, chemical dosing levels, equipment status, and treatment quality parameters. Historical energy patterns are retrieved for comparative analysis.

PI System LIMS Wonderware

3

DECISION

Assess optimization opportunity scope

AI analyzes whether energy spike is due to equipment inefficiency, process overload, or maintenance issues. Determines if immediate action or scheduled optimization is required.

PI System Maximo asset management

4

ACTION

Calculate optimal equipment settings

System calculates energy-efficient pump speeds, blower frequencies, and chemical feed rates while ensuring water quality compliance. Predictive models estimate potential energy savings.

SCADA systems PI System

5

ACTION

Implement automated adjustments

Control systems automatically adjust equipment parameters within safe operational limits. HMI displays real-time changes and estimated energy impact to operators.

SCADA systems | HMI software | Wonderware

6

ACTION

Monitor optimization results

System tracks energy consumption changes and water quality parameters for 30 minutes post-adjustment. Performance data is logged for continuous improvement algorithms.

SCADA systems | PI System | LIMS

7

OUTPUT

Generate energy optimization report

Automated report documents energy savings achieved, equipment adjustments made, and compliance status. Recommendations for future optimization opportunities are included.

PI System | HMI software

Outputs

- Energy consumption reduction report

- Equipment optimization settings
- Regulatory compliance verification
- Cost savings calculation

Key Metrics

- Energy consumption reduction percentage
- Cost savings per day
- Water quality compliance rate

Tools & Integrations

- SCADA systems
- LIMS
- PI System
- Wonderware
- HMI software
- Maximo asset management

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