



**A day of production...**

**...a day of energy savings!**

**Cliff Whitehead, Rockwell Automation**



## Discussion Topics

***Market drivers for industrial energy efficiency***

***Optimization of Energy Usage (OEU™) in action***

***What ODVA is doing next***

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# Increased Demand on Industrial Production

**30%**

More Water



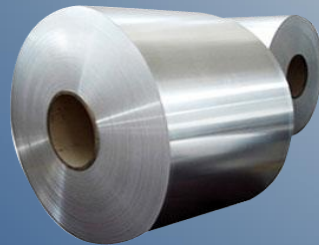
**100%**

More Vehicles



**80%**

More Steel



**50%**

More Energy

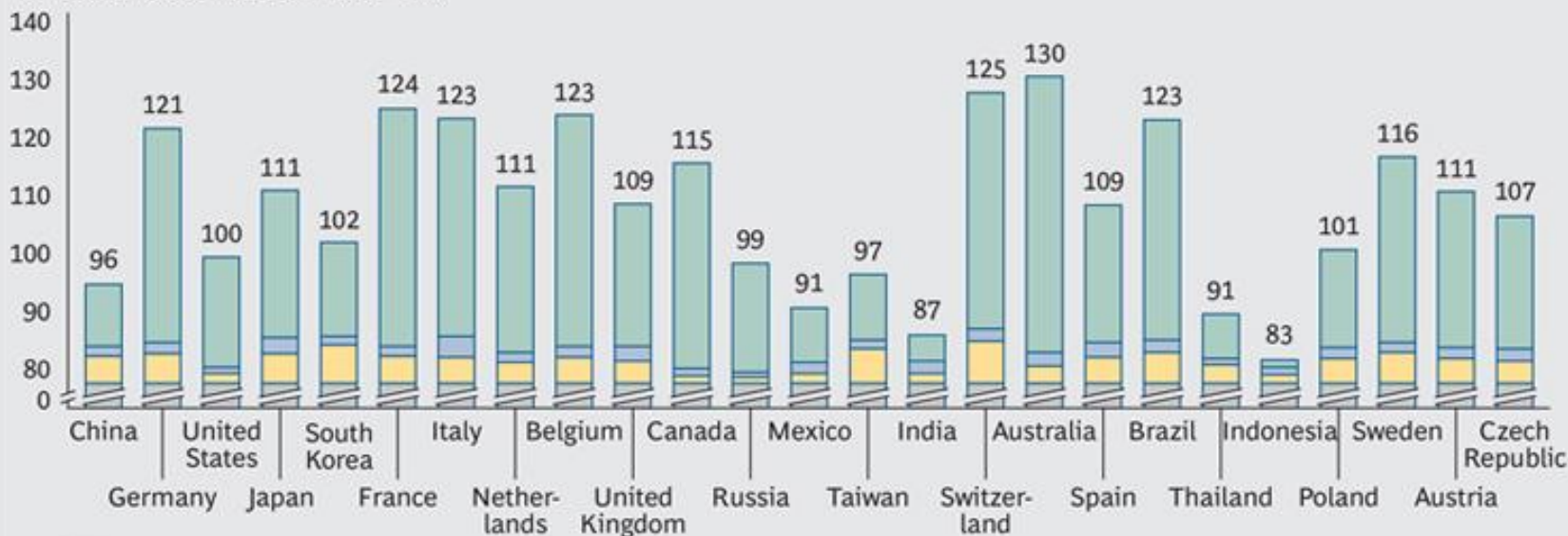


# Global Manufacturing Competitiveness

Technology and global trends balance the scale

**EXHIBIT 1 | Comparing the Top 25 Export Economies**

Manufacturing cost index, 2014 (U.S. = 100)



Volume of exports (highest to lowest)

■ Labor<sup>1</sup>
■ Electricity
 ■ Natural gas
 ■ Other

**Sources:** U.S. Economic Census; U.S. Bureau of Labor Statistics; U.S. Bureau of Economic Analysis; International Labour Organization; Euromonitor International; Economist Intelligence Unit; BCG analysis.

**Note:** The index covers four direct costs only. No difference is assumed for other costs, such as raw-material inputs and machine and tool depreciation. Cost structure is calculated as a weighted average across all industries.

<sup>1</sup>Adjusted for productivity.



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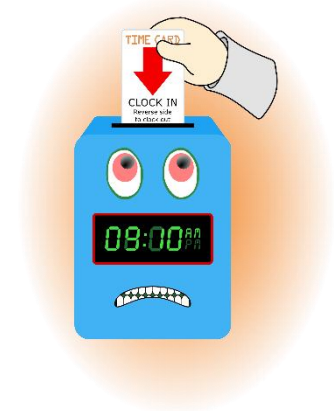
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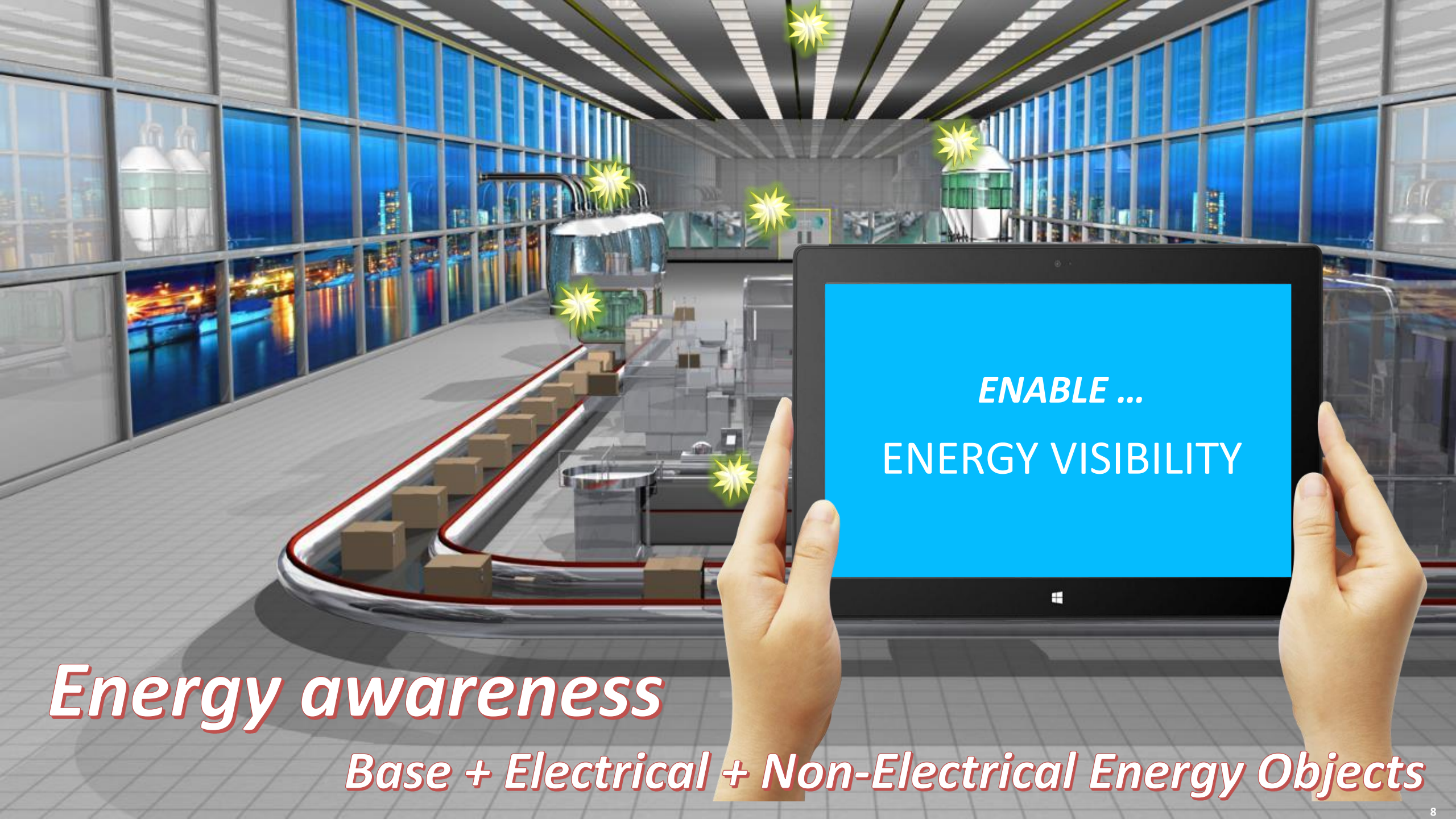
# “A day of production...a day of energy savings!”

## ***The setting: A hybrid manufacturing plant***

- Three operating shifts per day, seven day per week operation
- Batch mixing operations feeding packaging lines
- Cold storage and ambient storage warehousing
- Facilities/utilities management center
- Office space and grounds (parking, perimeter security, etc.)





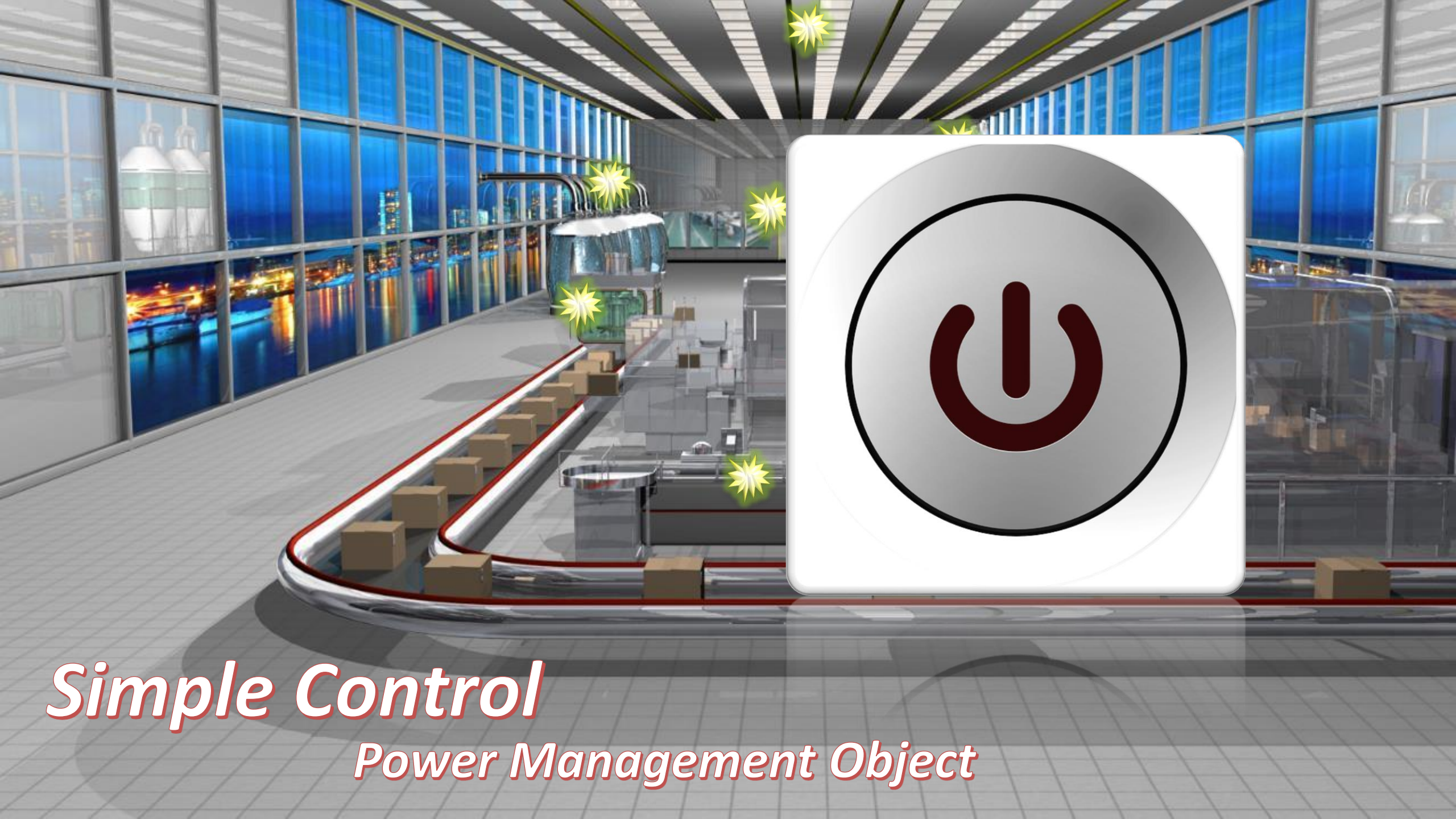


*ENABLE ...*  
ENERGY VISIBILITY

*Energy awareness*

*Base + Electrical + Non-Electrical Energy Objects*





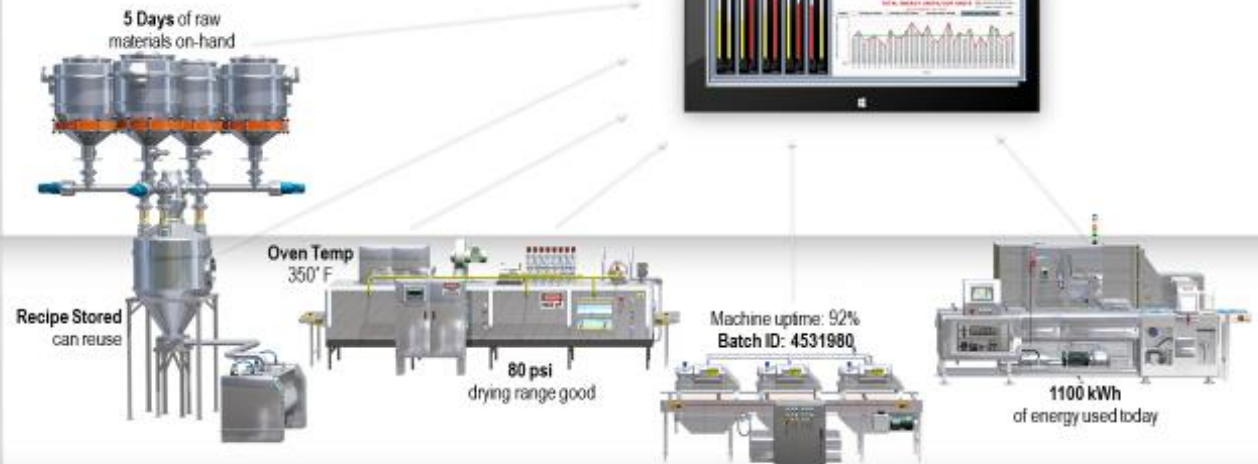
*Simple Control*

*Power Management Object*



## Smart Plant Operations: *Analyze*

Correlate Energy with production data



***Advanced Control***  
***Power Curtailment Object***



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# Enhancement to Power Management Object







# Energy Supply

## *Information exchange*

SUSTAINABLE



OPTIMIZED



DEMAND-DRIVEN







**Thank you!**