



Energy Consulting.

2016

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Bühler + Scherler

Agenda

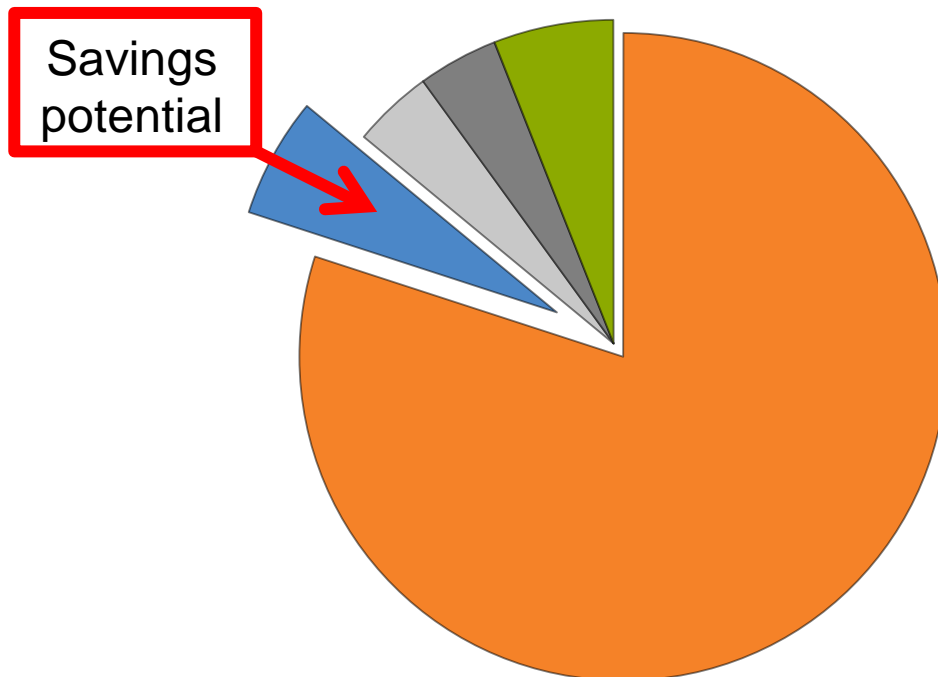
- 1 Potential in einer typischen Mühle
- 2 Optimierungen beim Engineering
- 3 Optimierungen an bestehenden Anlagen
- 4 Beispiele

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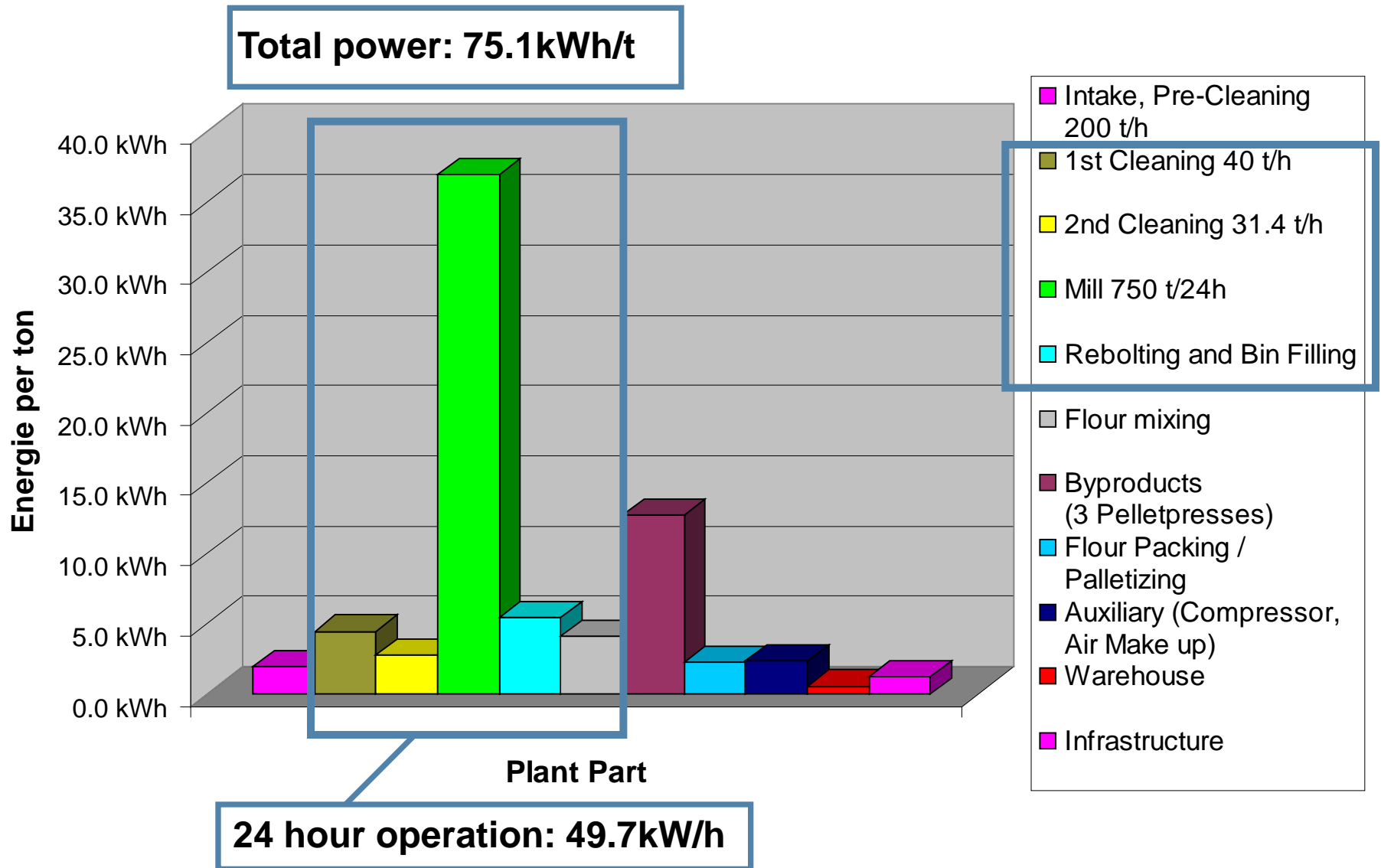
Evaluate possible savings.

Cost structure example of a European flour mill.



Raw Material	80 – 82 %
Production	6 – 9%
Energy	3 – 4%
Staff	2 – 4%
Distribution	4 – 8%
Packing	~2%
Transportation	~2%
Staff	~2%
Capital Cost	4 – 8%
Amortization	~4%
Profit	1 – 8%

Energy Consumption



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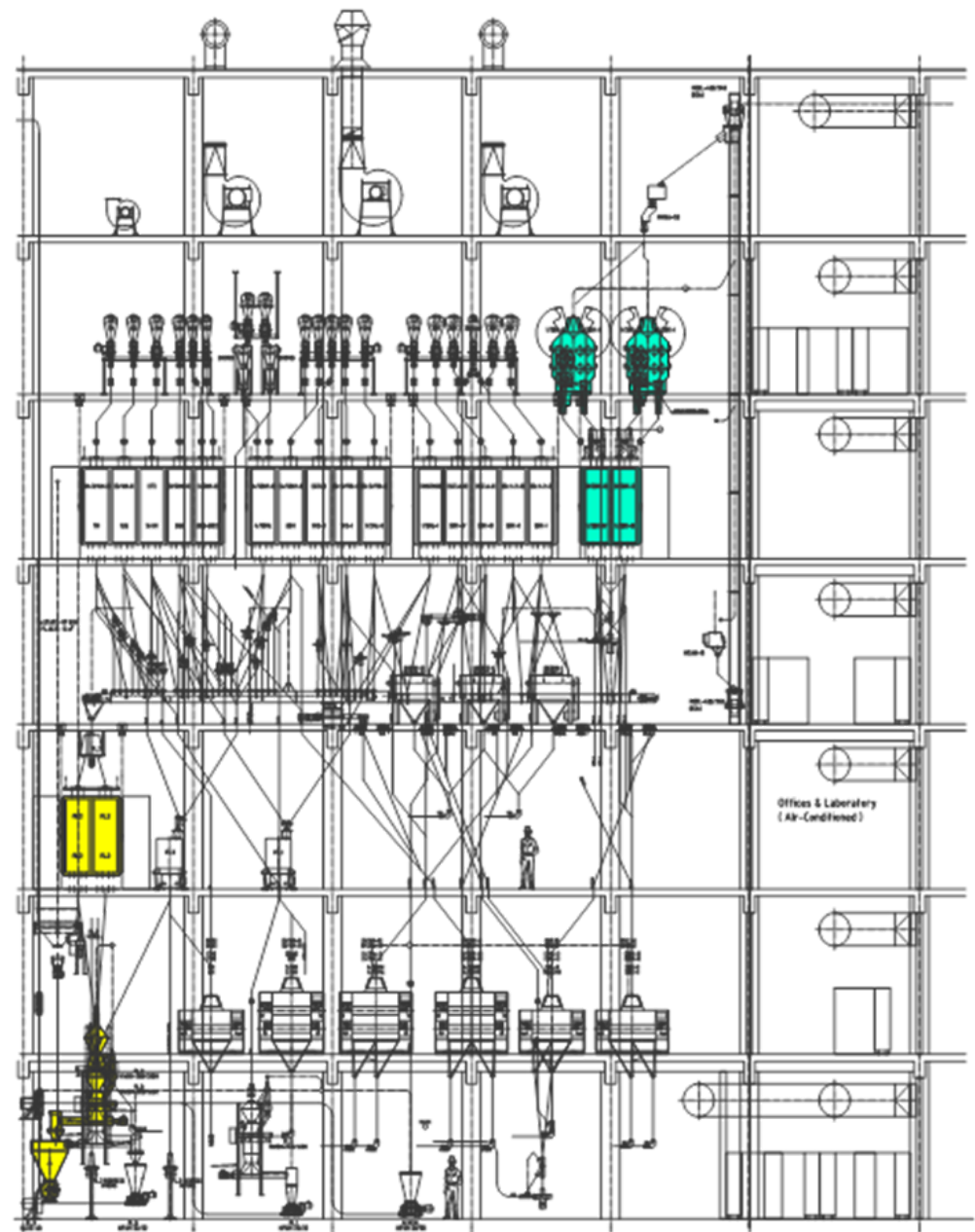
Criteria of a modern mill building

Optimum layout
Short conveying distances



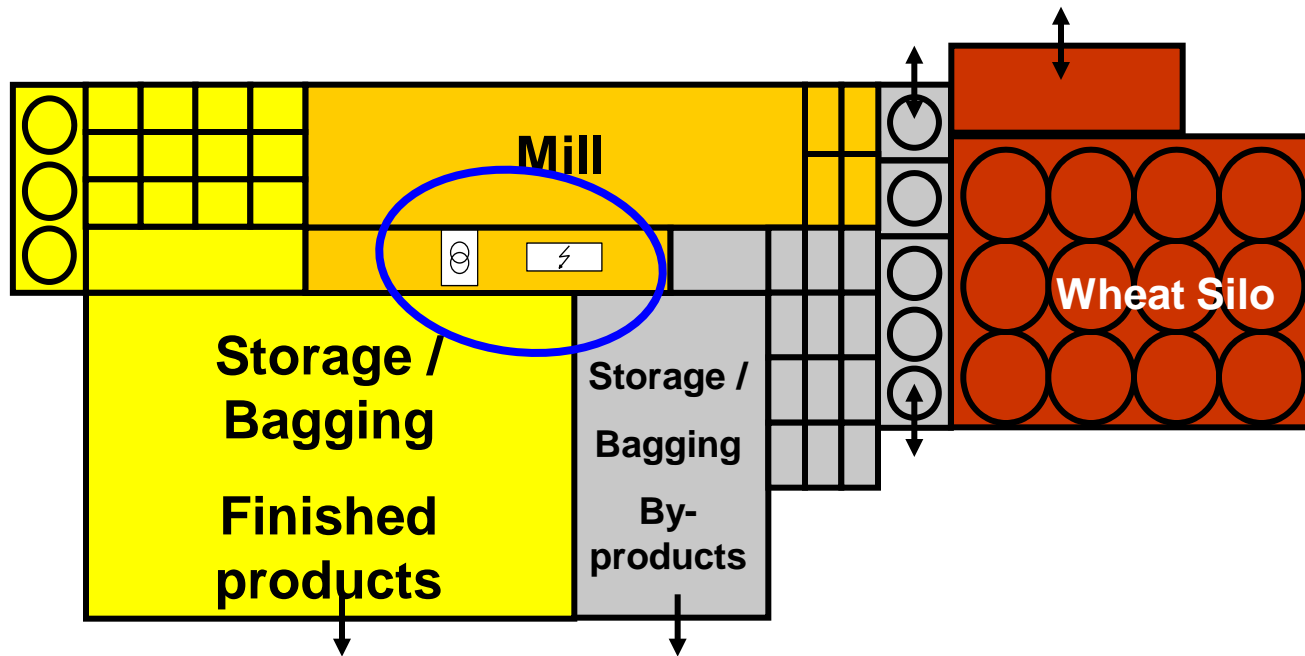
Plant aspects:

- optimized layout
-  less pneumatic lifts
-  less equipment
- Only high efficient motors
- Only high efficient aspiration systems
- only high efficient filters
- only high efficient air compressor system



Criteria of a modern mill building

- Transformers
- Low tension distribution board / Power factor correction
 - to be installed as close as possible to the power users



Optimized machinery

- Development of new machines
- Development of new drives on machines
- Combination between drive and frequency convertor
- Air recycling system
- New plant layout



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Assessment on customer site (Energy consultant + head miller)

- **On site meeting with the maintenance personnel**
- Evaluation / Measuring all drive with a capacity bigger than 7.5 kW
- Evaluation /Measuring of the pneumatic suction conveying system
- Check the pipe work / installation of the existing pneumatic conveying system
- Measuring the Aspiration System
- Information about other saving possibilities
- Optimize adjustment of the high pressure filters
- Evaluation power supply / Transformers / high tension switchgear)
- Evaluation of energy savings in infrastructure like lighting
- Air compressor units / Air Leakages
- **Final Meeting on site for further steps and recommendation**

EnergySaving – RETROFIT

Energy efficiency package for mill pneumatic

Benefits

Reduced operating costs

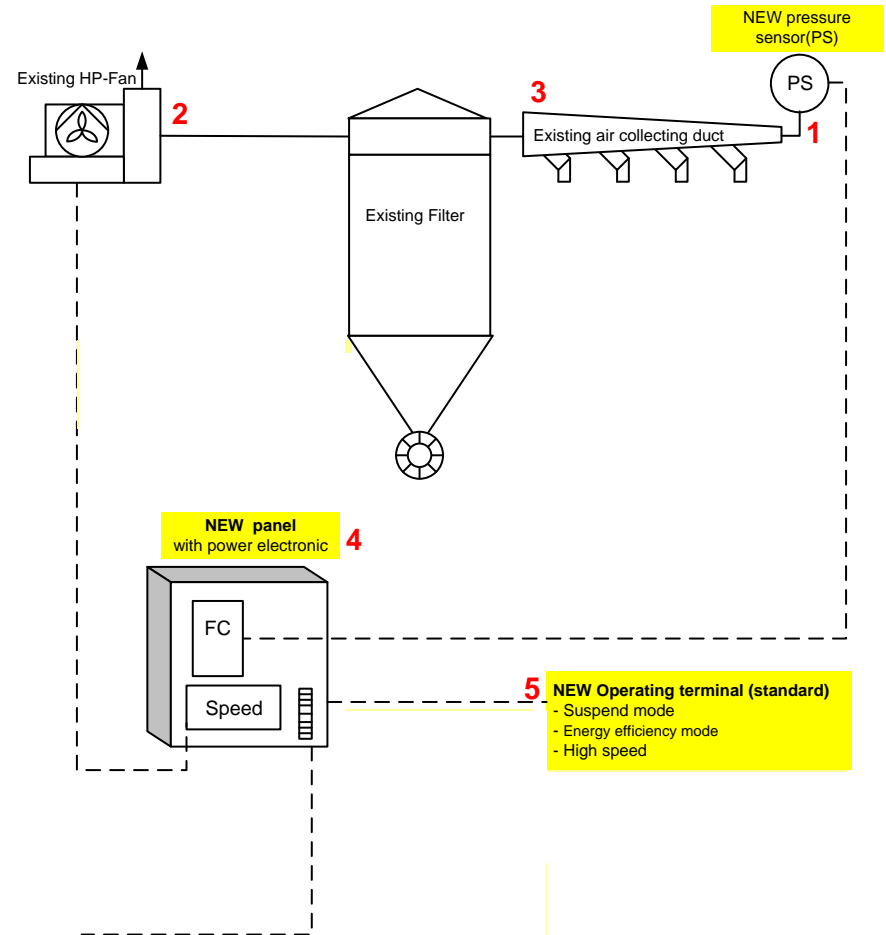
as the control system of the high pressure fan responds to the present need

Increased productivity

thanks to the automatic adjustment to current production

Environmentally friendly and sustainable production

in view of reduced CO₂ emissions



EnergySaving – RETROFIT

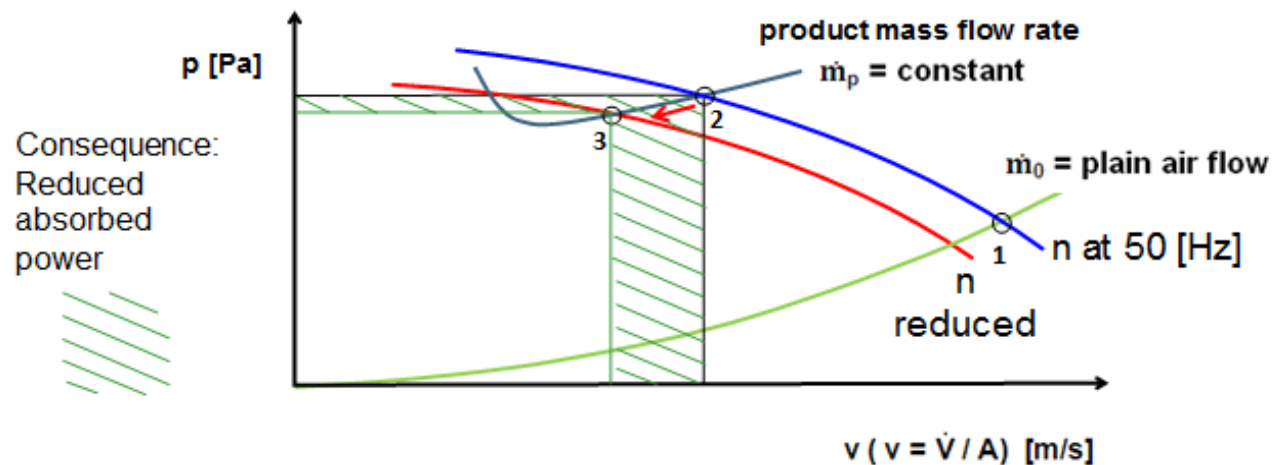
Energy efficiency package for mill pneumatic

- Reduction of power consumption through adjustment of working point for the high pressure fan
- Manifold safety will be reduced to the minimum

Basic Characteristic Curves → Fan with Converter.

Summary: simultaneous adjustment of valves and fan speed

Task: reduced velocity and pressure → from operating point 2 to point 3



EnergySaving – RETROFIT

Energy efficiency package for mill pneumatic

The fan curve can be optimally adjusted to the required operating point

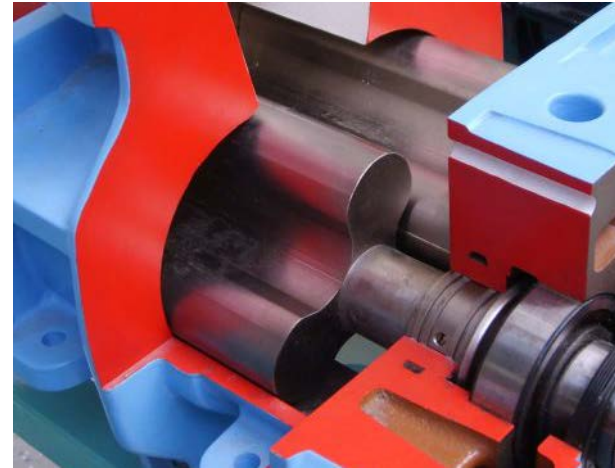


High pressure fan with frequency converter in training center school mill

Energy Saving – Blow line

A frequency converter can be useful in following cases:

- different products
- if you feed two different lines
- different tasks



Energy Consulting – Cost Optimization.

Infrastructure

General power supply:

- load study, load shedding, observe energy invoice

Power factor correction unit:

- reactive power costs
- consider the harmonic distortions

Power transformers:

- low loss transformers



Improved lighting technologies means:

- only the newest and efficient lighting technology
- light is on where required (motion sensor)
- less maintenance costs. (long life bulbs)



Without monitoring tool no control over your savings?

Key Facts:

- all type of Energy can be displayed
- Benchmark between different plants
- automatically generated reports
- ISO 50001 certified
- Energy flow visible



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Energy Consulting Service.

A success story: Grain Mill.

- Customer: in Spain (1050 t / 24 h)
- Customer's targets:
 - reduced energy costs
 - ROI < 3.5 years
 - environmentally friendly production
 - increase of production capacity
- Action: (pneumatic conveying systems, aspiration, electrical drives, leakages etc.)
- Savings:
 - 560,000 kWh p. a. (8.5 mio. kWh/a)



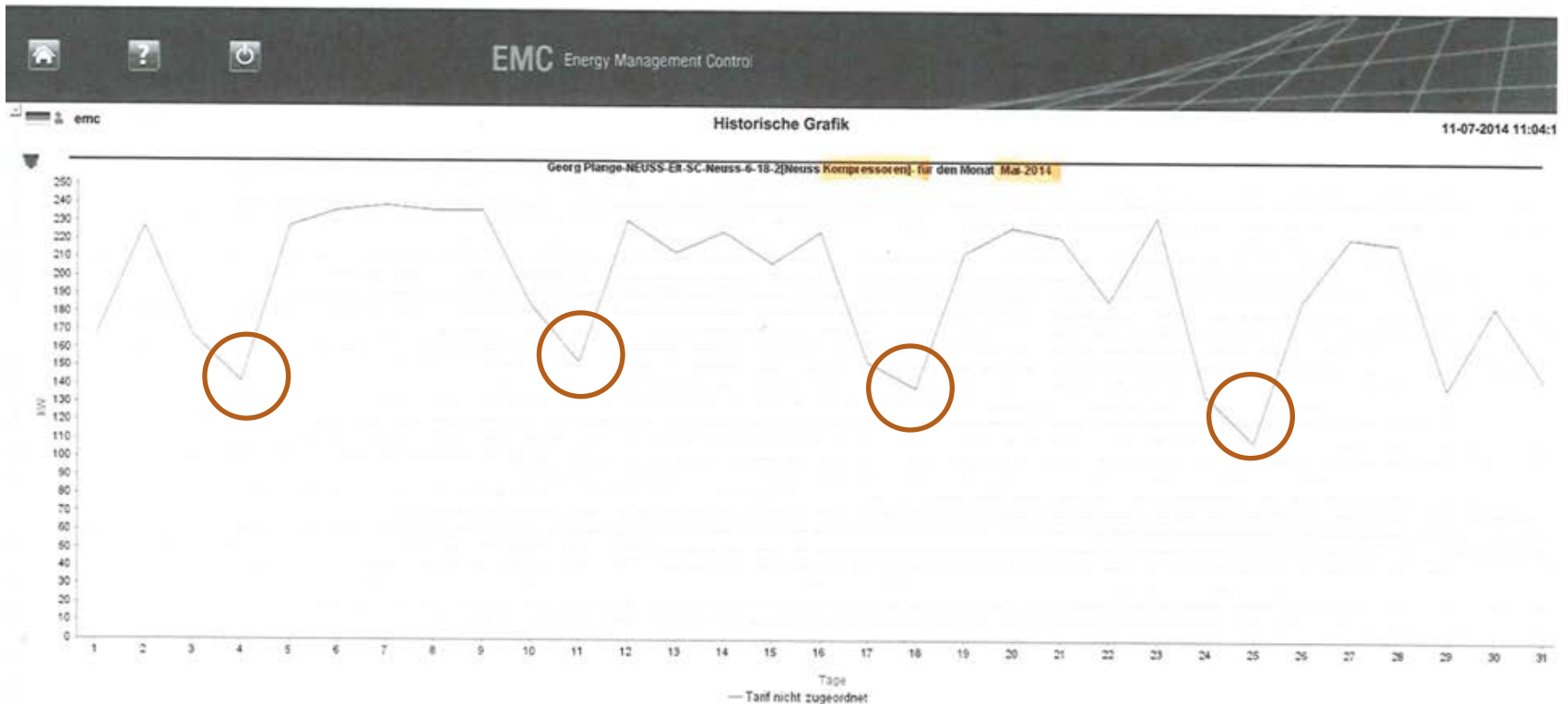
Energy Consulting Service.

*A success story: **Feed Mill.***

- Customer: in Germany (56 t / h)
- Customer's targets:
 - reduced energy costs
 - ROI < 3.0 years
 - environmentally friendly production
- Actions: VFD loop controlled fans, heat recovery system, cooling system, improvements on the inlet part, etc.
- **Savings:**
 - 490,000 kWh p. a.



Air compressor



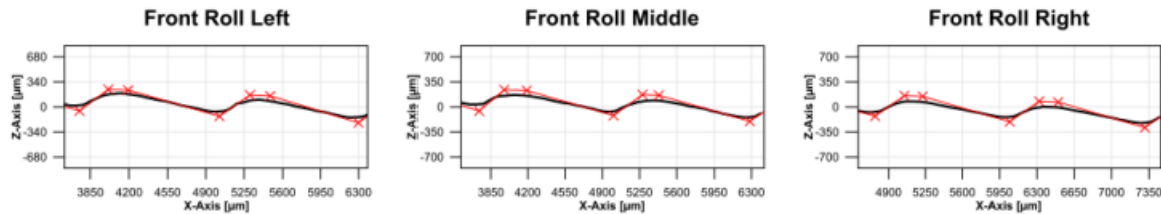
No production during the weekends

stand-by is still approx. 120kW

➡ more than 120'000kWh loss / 18'000€ per year

Solution: pressure reduction / splitting the system

General: Roll detect



Parameters	Front Roll - Left	Front Roll - Middle	Front Roll - Right	Mean	Unit
Corrugation Area Reduction:	17	21	18	18.6	%
Corrugation Height Reduction:	21	20	22	21.1	%
Gap Area Reduction:	23	32	32	28.8	%
Predicted Corrugation Type:	57	57	57		Type #
Wearout Status:	CRITICAL	CRITICAL	CRITICAL		Status



Vielen Dank für ihre Aufmerksamkeit



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