



**Bathhan**  
Industrie-Keramik

®

# Streamlining of Maintenance Processes

Track: Technology & Plant Operations

Holger Streetz

# Agenda



Application

Service & Portfolio

Technology

Planning

Maintenance Tasks

Downtimes

Optimization

Optimized Maintenance

Case Study I

Case Study II

Conclusions

# Application

Bathan lubricants outpace technology leaders in industrial lubrication. They reduce wear and increase lubrication intervals.

- Solution Provider for several industries
- Co-Operations in Europe, USA, LATAM and Asia
- Full Service supplier for pellet industry
- Flexible and efficient logistic chain

Wood Processing  
Engines  
Wind Power  
Cement Plants  
Packaging Facilities  
Industrial Gears  
Mining  
Shipping





# Service & Portfolio

We offer consulting for lubricants, and advise pellet producers regarding maintenance planning and efficiency initiatives. Our service team provides maintenance services in OEM quality. We deliver with reliable shipping companies and guarantee highest quality.



## **Bathan KF Greases**

400 g tube

25 kg Hobcock keg

200 kg drum

## **Bathan Additive**

500 ml can

20 l canister

## **Spare Parts Pellet Industry**

Rollers

Roller Bearings

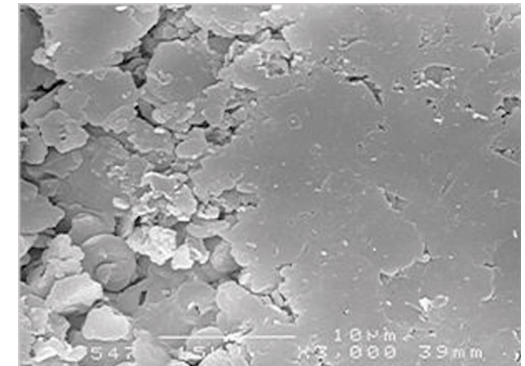
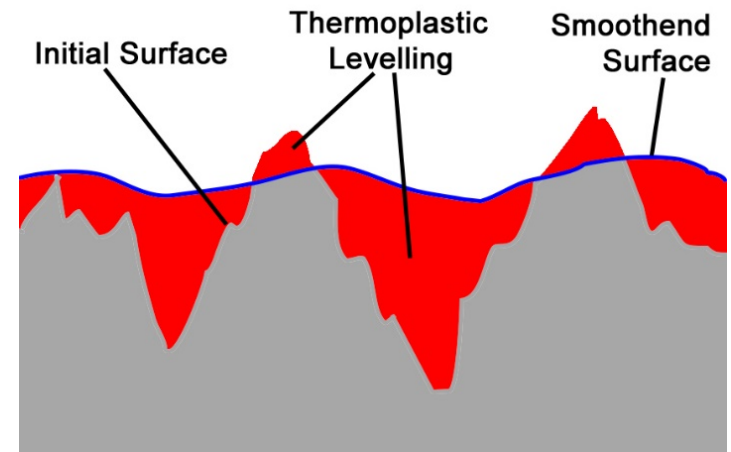
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# Technology

Bathan is a combination of industrial ceramics, and has a distinct crystalline structure with low density, high lubricity and thermal conductivity. The ceramic particles change the structure of surfaces: Thermoplastic levelling smoothens the surface, increases the load bearing capacity, and reduces wear.

## Highlights Greasing:

- Reducing grease consumption by 95%
- Reduced power losses by up to 9%
- Lower maintenance & operating costs
- Less friction and increased lifetime

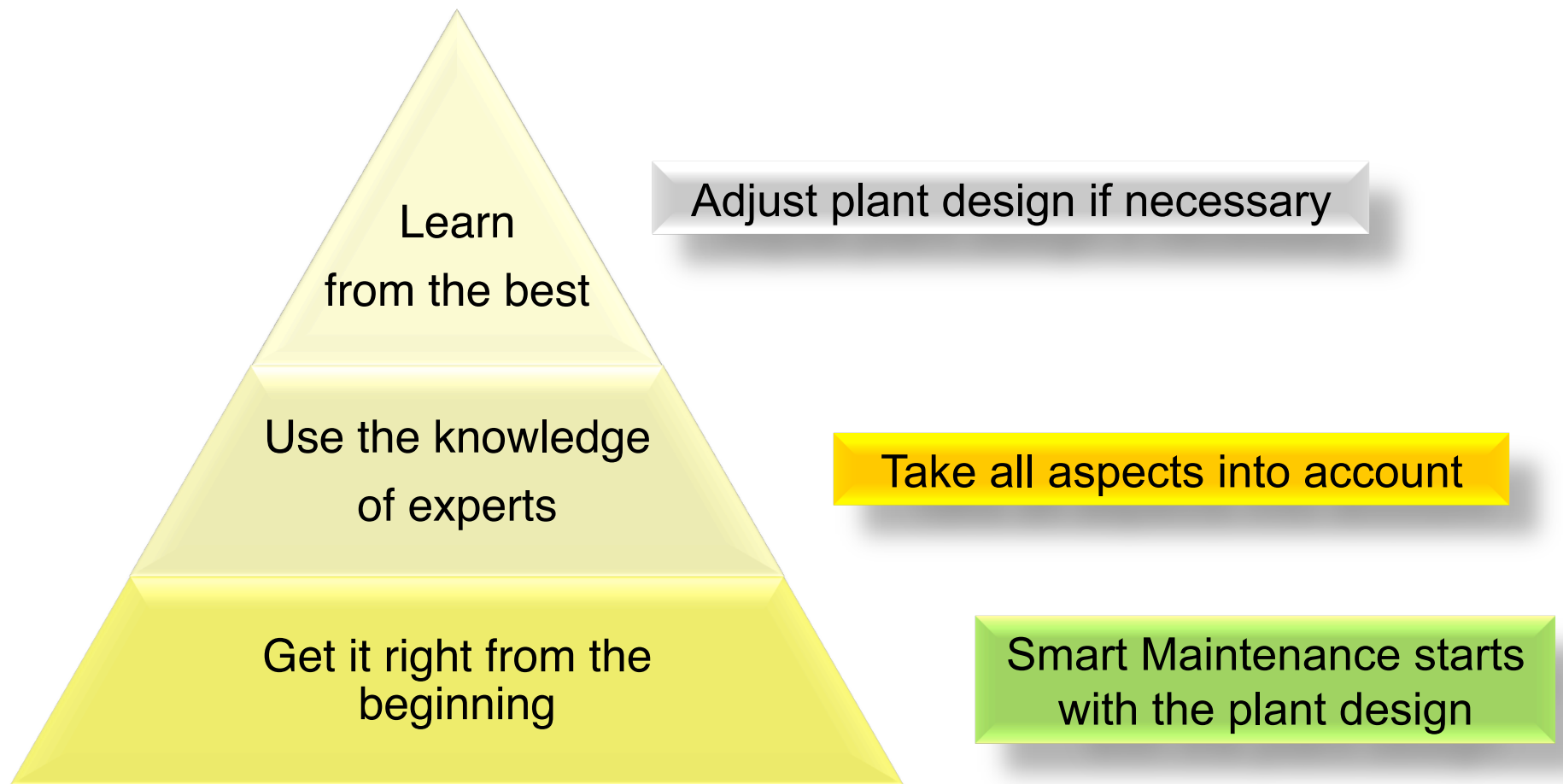


Partially polished surface

# Planning

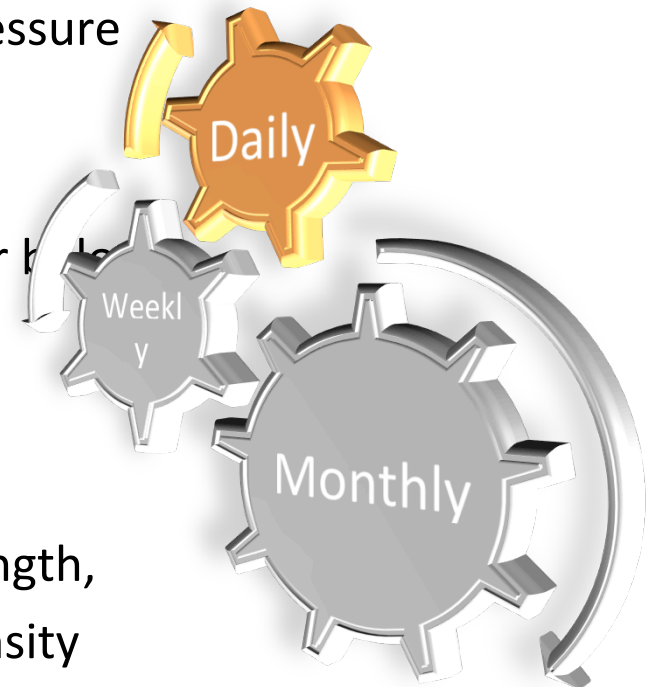
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The goal is to produce wood pellets in an adequate quality with an acceptable production rate at reasonable costs. Plant design is vital.



# Maintenance Tasks

Moisture control	before moistening and after maturing vessel
Visual inspection: die	honeycombing, micro cracks, wear, foreign material
Visual inspection: rollers	adjustment, wear, temperature 120-150°C (250-300°F)
Grease pump control	fill level, grease and air pressure
Gear control	oil pressure (1 to 5 bar), oil filter, oil cooler temperature 65°C (150°F), volume (oil level glass)
Quality control	pellet quality, abrasion, length, moisture, bulk weight, density



# Maintenance Tasks

Hammer mill control      wear of sifters and hammers, clean magnet

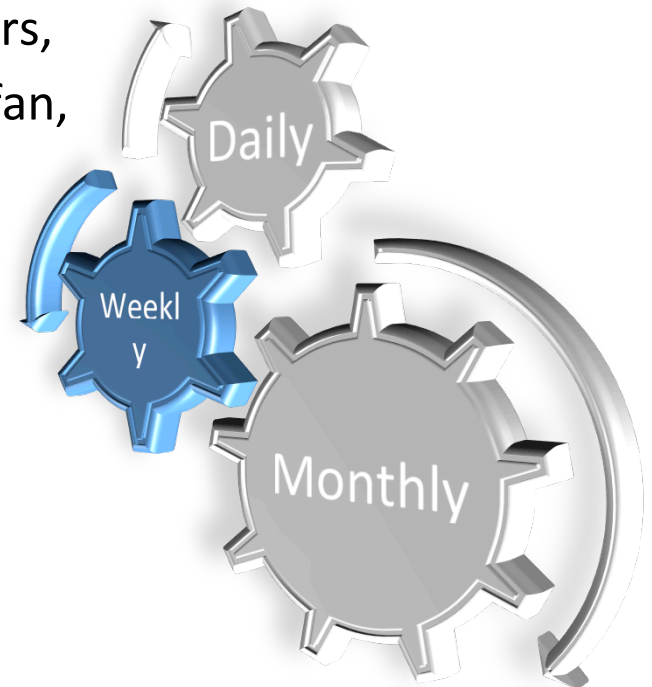
Conditioner and feeder      clean thoroughly, check magnetic separator

Moisturizer control      check calibration, recalibrate if necessary

Pellet mill control      clean feed chutes and sifters,  
clean crumbler, collector, fan,  
exhaust, and roto shaker

Knives      check sharpness

Control tonnage reports and  
hours run to plan maintenance.





# Maintenance Tasks

Die and roller control      wear pattern, leakages, micro cracks, clearance

Gear control      wear, leakages, micro cracks, (belts if existing)

Conveyors control      lubrication, wear, belts

Other      e.g. lubrication pipelines,  
Oil and oil filter changes  
(according to manufacturer specifications)

Evaluate productivity and costs.  
Exercise die and roller change to  
ensure short maintenance downtimes!



# Downtimes

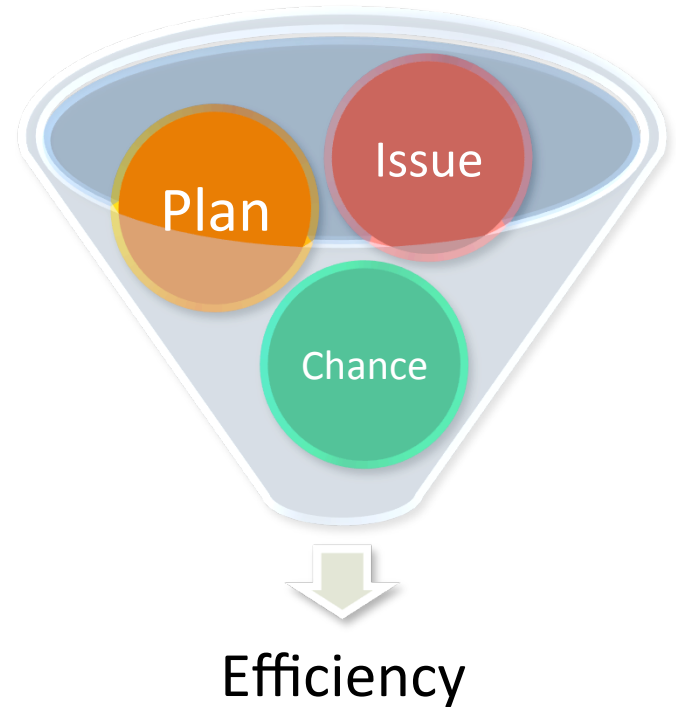
Downtimes are a bottle neck and an opportunity.

## Planned Downtimes:

- Planned maintenance tasks
- Overhaul by service engineer

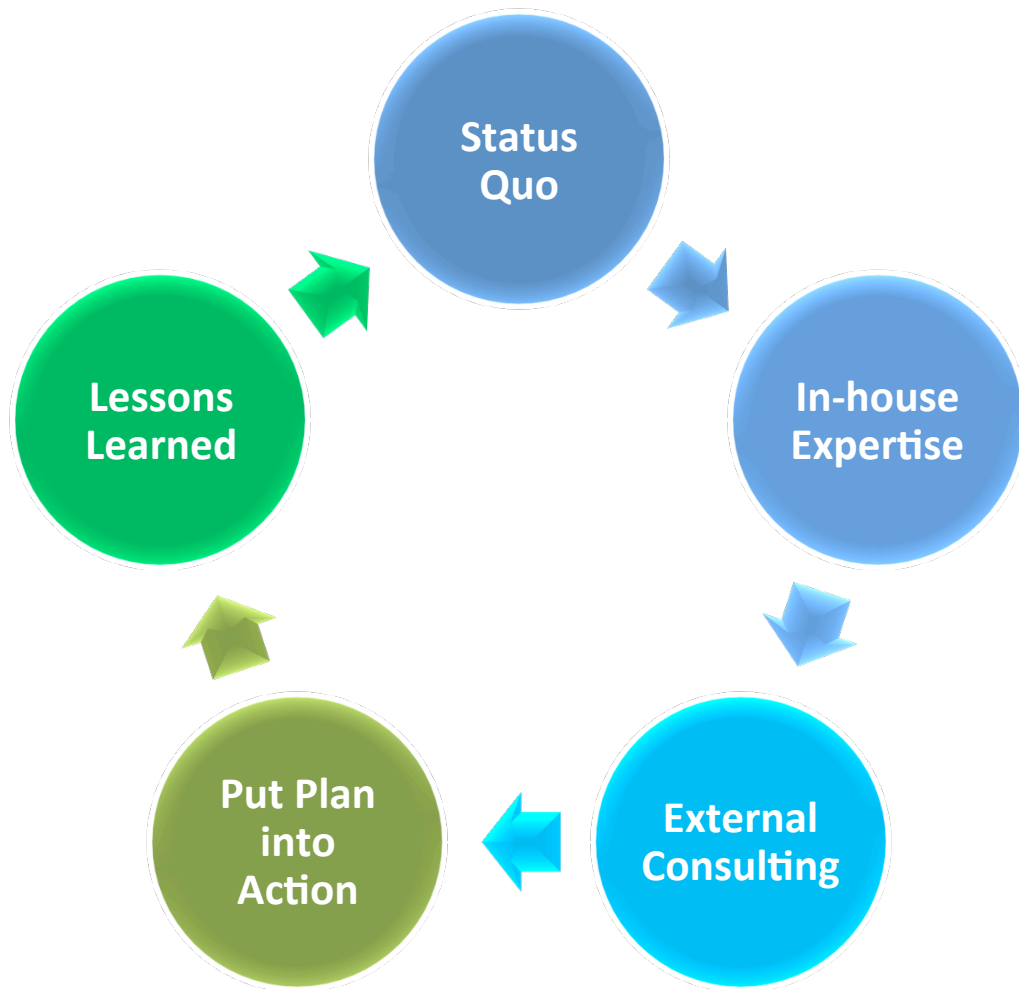
## Unplanned Downtimes:

- Failure → Fix the problem
- Other (weather, material)  
→ According to time available



# Optimization

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- By assessing the status quo, weaknesses become visible
- Third parties help overcome organizational blindness
- Ask your team of experts to find opportunities, then consult other professionals
- Put your plans into action!
- Implement a continuous optimization process to remain excellent

# Optimization

Pay attention with new rollers when delivered on site.

- Inspection of delivered rollers
- Cleanliness of lubrication intake
- Easy movability of roller
- Clean storage away from weathering effects



# Optimization



## Refurbish rollers in-house

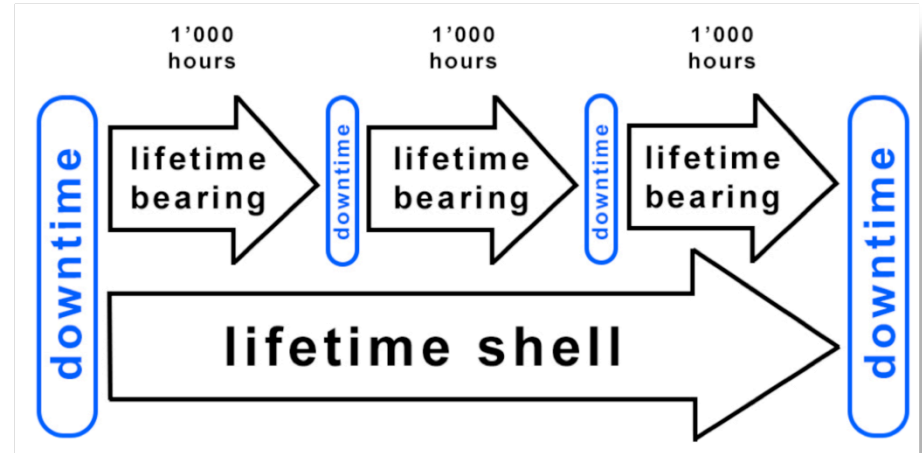
- Disassemble roller warm
- Clean shafts & bearings thoroughly
- Inspect bearings before assembly
- Assemble roller warm
- Moving pre-lubrication for several hours



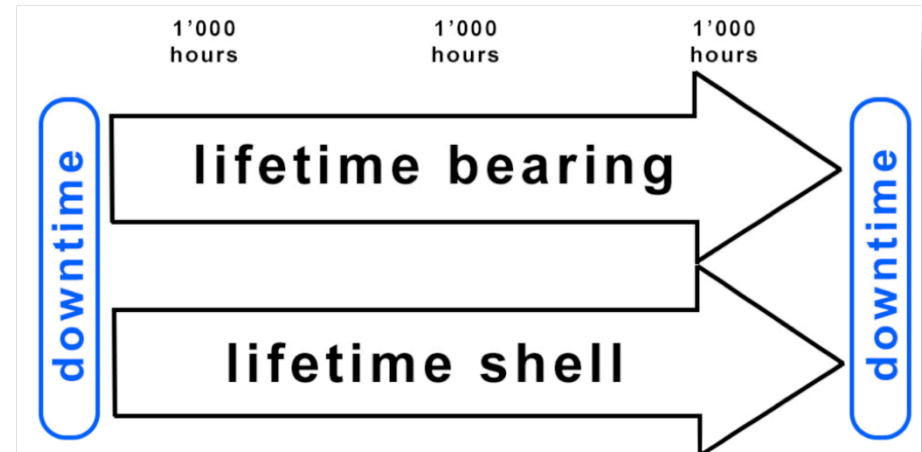
# Opt. Maintenance

Tripling the lifetime of bearings causes two fewer downtimes, and decreases working hours and spare part costs.

- Refurbish rollers in-house
- Pay attention to assembly of rollers
- Use high-quality lubricants
- Keep everything clean



Regular Maintenance Plan



Improved Maintenance Plan

# Case Study I

Swiss Pellet Producer, CPM, 60'000t annual production

Status Quo:	1'000 operating hours lifetime of bearings Temperature Ø 115 °C (240 °F)
Changes:	Pre-lubrication, Ceramic grease and distance rings with improved lubrication
Improvement:	95% less grease consumption up to 10'000 operating hours lifetime of bearings Temperature decrease by 10 °C (50 °F) Savings of approx. 100'000 CHF



# Case Study II



German HD-Pellet Producer, CPM, 200'000t annual production

Status Quo: 1'200 operating hours lifetime of bearings

Changes: Ceramic grease, rollers from Bathan AG,  
and in-house refurbishing of bearings

Improvement: 95% less grease consumption  
4'000 operating hours lifetime of bearings  
Savings of approx. 125'000 EUR (140'000 \$)



# Conclusions

- Preventative Maintenance is better than cure
- External professionals can offer a different perspective
- Attention to quality of roller refurbishment pays off
- High-quality lubricants help improve performance
- Even small changes can have a huge impact



# Contact Details

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## **Bathan** **Aktiengesellschaft**

**Holger Streetz**

*Member of the Board of Directors*

**Bathan AG**

web [www.bathan.ch](http://www.bathan.ch)

email [h.streetz@bathan.ch](mailto:h.streetz@bathan.ch)