Intelligent Maintenance in Food, Feed & Advanced Materials Processing

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Bühler Group

2020 Intelligent Maintenance Conference

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Every day, billions of people come into contact with Bühler.

06:30 07:00 07:15 07:30 10:00 12:00 15:00 18:00 19:00 20:00

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Good Maintenance Practices help to become more sustainable

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Industry Needs

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Intelligent Maintenance

McQuade 2020

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Maintenance in Practice – Combined Strategy

Percentage of plants with recorded maintenance jobs in a specific category

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A Computerized Maintenance Management System (CMMS) Features and Functions.

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Analytics as enabler for Intelligent Maintenance

Source: Gartner

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Benchmarking based on actual Maintenance Data from CMMS

Mean days between Preventive Maintenance Jobs vs Fleet average

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Replay data.

Process optimization enabled by billions of observations.

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‘Process-Condition-Monitoring’ for Plant Optimization

Example: Distribution of dosing accuracy over one month

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Malfunction Prognostics for Key Components in Die Casting

Unit specification

Operator name	Bühler
Unit name	DEMO-A
Unit location	Worldwide
Unit type	Production site
Unit OEM & model	DEMO-A
Unit capacity	4145 shots
Unit ID	DEMO-A
Components monitored	
Contact person	Service Tech
Phone	+123-456-7890
E-mail	service.tech@buehler.com

Condition diagnostics

Condition

View: Specification / Location

Malfunction prognostics

Select	Critical equipment	Capacity	11.Mar	18.Mar	25.Mar	01.Apr	08.Apr	15.Apr	22.Apr	29.Apr	06.May	13.May	20.May	27.May
DCM1	SV (P1.M1.1)	709 shots	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
DCM2	SV (P1.M1.1)	641 shots	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%
DCM3	SV (P1.M1.1), SC (P1.M4.1)	463 shots	0%	0%	1%	4%	8%	15%	21%	30%	36%	44%	49%	56%
DCM4	SV (P1.M1.1)	759 shots	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
DCM5	SV (P1.M1.1)	342 shots	1%	4%	8%	14%	18%	23%	26%	30%	33%	37%	40%	43%
DCM6	SV (P1.M1.1)	389 shots	0%	0%	0%	1%	3%	6%	8%	12%	15%	19%	23%	27%
DCM7	SV (P1.M1.1), SC (P1.M4.1)	439 shots	0%	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%
DCM8	SV (P1.M1.1)	403 shots	0%	0%	0%	0%	0%	0%	0%	1%	1%	1%	2%	2%
Total risk			1%	4%	10%	19%	27%	39%	47%	57%	64%	72%	77%	83%

Next maintenance: 15.Mar'19

Prognostic horizon (zoom): Short (12 days) / Long (12 weeks) / Maximum (12 quarters)

View: Customize

Downtime risk: >15%
Downtime risk: 5% - 15%
Downtime risk: <5%

High prognostic strength
Medium prognostic strength
Low prognostic strength

Schedule

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Summary

- Various needs relating to Intelligent Maintenance beyond uptime optimization
- Industry is looking for a hollistic approach to Intelligent Maintenance
- Different data sources & types of analytics are combined to add value
- A hollistic maintenance strategy will include different types of maintenance: Reactive, preventive, predictive, prescriptive & the human maintenance manager
- We are currently only scratching the surface of data-enabled Intelligent Maintenance.
- We expect much more to come in the future.

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