



ABB – Main Technology Service Center for grinding solutions



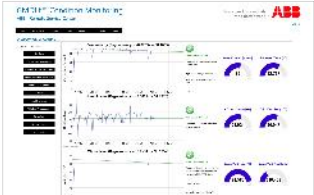


**GMDbeat™ and GMDfit™**

**Rapid support and innovative monitoring**

Power and productivity  
for a better world™



# Remote diagnostic services (RDS) Grinding service portfolio

Long-Term Service Agreement (LTSA)				
Site audit	Inventory audit	<b>GMDfit™</b> Condition monitoring  <b>GMDbeat™</b> Supportline & troubleshooting	Competence development	Evolution & upgrades
Long-term scheduled maintenance	Spare parts lists and kits		Training partnership	
Long-term on-site support	On-demand spares		On-site	Engineering, optimization & consulting
Extended start-up support	Emergency spares		Classroom	
On-demand service				
<b>Field services</b>	<b>Spare parts services</b>	<b>Remote services</b>	<b>Training services</b>	<b>Special services</b>
				

# Remote diagnostic services (RDS) Description

Long-Term Service Agreement (LTSA)				
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On-demand service	Emergency spares			
Field services	Spare parts services	Remote services	Training services	Special services

Preventive & Predictive	<h2 style="margin: 0;">GMDfit™</h2> <p style="margin: 0;">Condition monitoring</p>	<ul style="list-style-type: none"> <li>• Continuous and automated assessment of the overall operating condition of the GMD Drive system.</li> <li>• Trending and forecasting the future by applying state of the art predictive methods</li> <li>• Scheduled health and condition examination of the drive systems through periodic inspections.</li> </ul>
Corrective	<h2 style="margin: 0;">GMDbeat™</h2> <p style="margin: 0;">SupportLine &amp; troubleshooting</p>	<ul style="list-style-type: none"> <li>• Telephone SupportLine.</li> <li>• 24/7 service gets the customer in immediate contact with our technical support engineers.</li> <li>• ABB experts are linked to the operators' HMI via a secure remote access connection to enable on-demand problem solving.</li> </ul>

# Remote diagnostic services (RDS) GMDbeat™

# GMDbeat™ SupportLine and troubleshooting SupportLine



## Features

- Single contact for all emergency service related calls
- Assistance by phone, e-mail and fax
- Case tracking tool
- Guaranteed response time

## Benefits

- Access to ABB experts 24/7/365
- Unlimited time for emergency support
- ABB support engineer is assigned for problem resolution
- Monitored case status ensures expedient resolution
- Escalation plan



# GMDbeat™ SupportLine and troubleshooting Troubleshooting



## Features

- Standard solution across our entire installed base
- Secure connection based on SSL standard
- Remote access and support by ABB engineers all over the world

## Benefits

- Quick response and fast resolution of SupportLine calls
- Reduced overall maintenance costs
- ABB can immediately assist customer in the case of a SupportLine call by directly looking into the customer's system
- Real-time access and support

# Remote diagnostic services (RDS)

## GMDfit™

# GMDfit™ Condition Monitoring Content



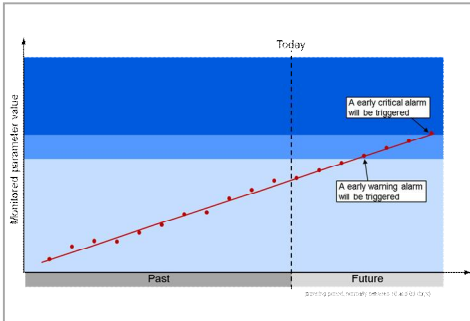
## Periodic Maintenance Reports

1 Summary of findings	
<b>Operation report</b>	
	All oil leak aspects acceptable. If the shutdown (beginning of May) is not taken into account, the oil was utilized for more than 50.5% of the remaining time.
<b>Data availability (Snapshot comparison and long term observation)</b>	
	All oil leak aspects within expected ranges.
	The availability of data was checked over the reporting period.
	There was no alert or alarm data available.
<b>Ring motor air gaps</b>	
	It appears that air gap sensor 5 is not working as expected (air gap 6 is the only air gap in the 1050mm section).
	It appears that a different bearing is used in the TR (ratio 0.5:1 "Trend" air gap measurement).
	It appears that a significant offset may be set for air gap 6.

## Dashboard



## Analytics



Past

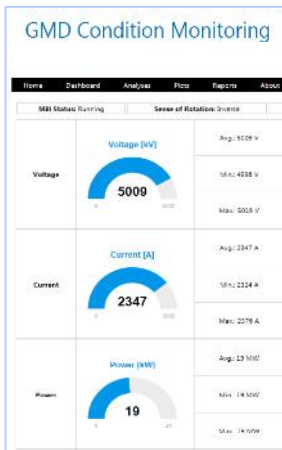
Now

Future



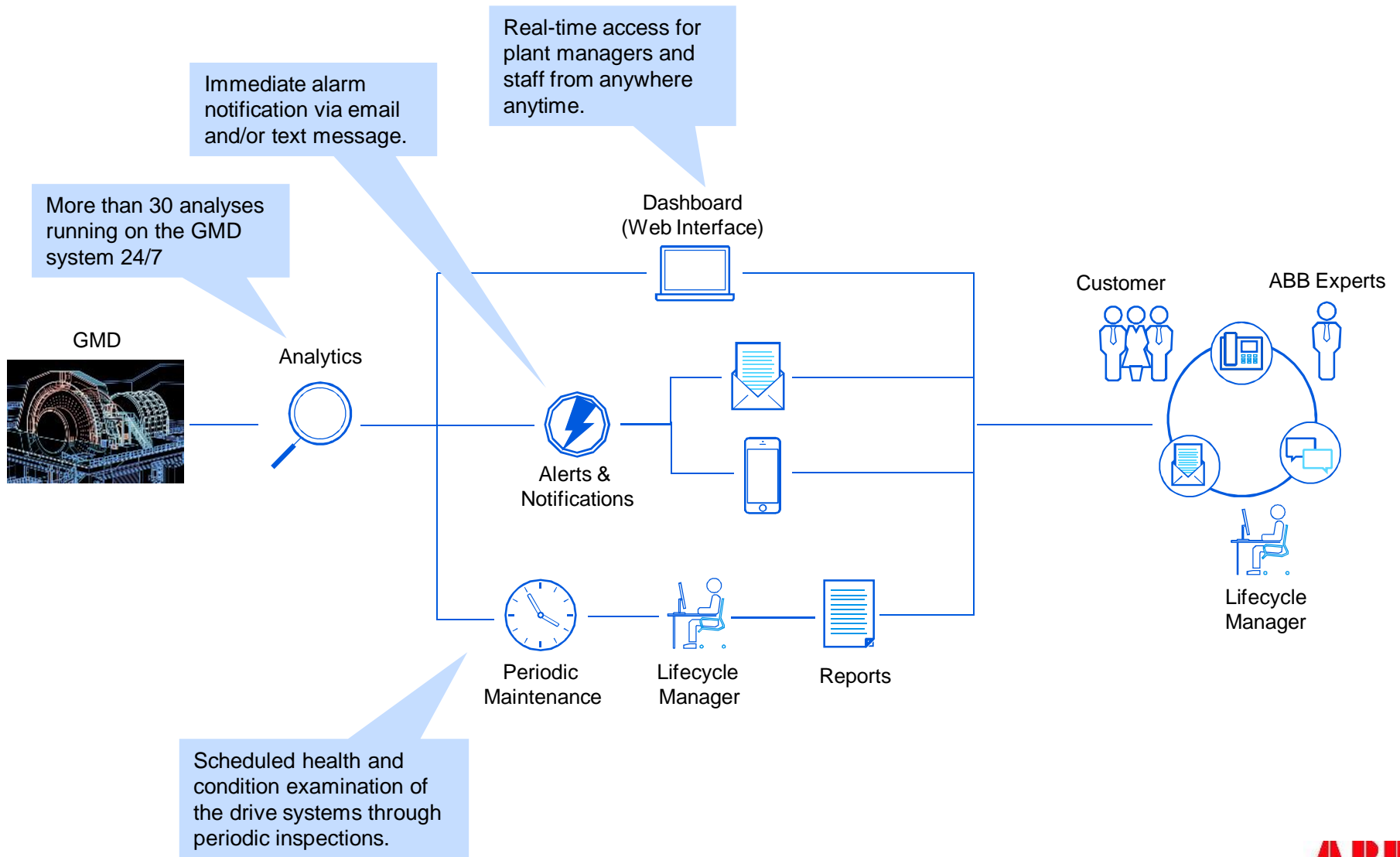


# GMDfit™ Condition Monitoring Benefits



- Real-time access for plant managers and staff from anywhere anytime
- Continuous health monitoring and assessment – User knows the health status of the system
- More effective performance of planned downtime due to recommendations from ABB Experts
- Increase Overall Equipment Effectiveness (OEE) by reducing forced outages and increasing availability

# GMDfit™ Condition Monitoring Flow of information



# GMDfit™ Condition Monitoring User Interface: Dashboard

GMDfit™ Condition Monitoring  
ABB - Remote Service Center

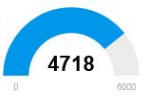
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Home
Dashboard
Analyses
Plots
Reporting tool
PMR
About


Mill Status: Running
Sense of Rotation: Forward
Operating Mode: Normal
Total Time of Operation : 1116 days
Current Time: 11:05

**Voltage**



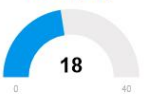
Avg.: 4718 V  
Min.: 4713 V  
Max.: 4722 V

**Current**




Avg.: 2370 A  
Min.: 2347 A  
Max.: 2397 A

**Power**




Avg.: 18 MW  
Min.: 18 MW  
Max.: 18 MW

**Speed**

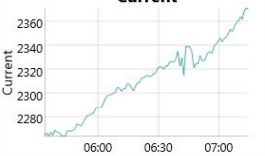


Avg.: 9 rpm  
Min.: 8 rpm  
Max.: 9 rpm

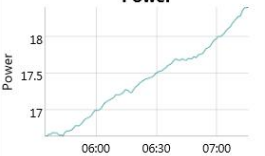
**Voltage**




**Current**



**Power**



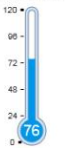
**Speed**



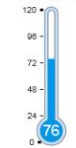
ID	Date	Severity	Message	Info
0	2014-04-02 07:15:27	600	172.16.80.155-3.1.2:HWError:HWError	G56_PS80_155   CON_0000  CON_HW_Connection_down
1	2014-04-02 07:15:06	600	172.16.80.155-3.1.2:HWError:HWError	G56_PS80_155   CON_0000  CON_HW_Status_OK
2	2014-04-02 07:15:06	400	172.16.80.155-3.1.2::	G56_PS80_155   CON_0000  CON_HW_Status_OK
3	2014-04-02 07:14:54	200	G56_KR1420_X1::	AIC01_Alarm_P_Blk
4	2014-04-02 07:14:22	600	172.16.80.155-3.1.2:HWError:HWError	G56_PS80_155   CON_0000  CON_HW_Connection_down

1 2 3 4 5 6 7 8 9 10 =

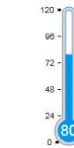
Wind. Temp. U1




Wind. Temp. V1




Wind. Temp. W1




Wind. Temp. U2



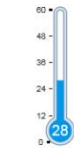
Wind. Temp. V2




Wind. Temp. W2



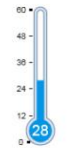
Heat Ex. Temp. L. Water Warm




Heat Ex. Temp. R. Water Warm



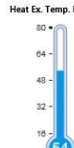
Heat Ex. Temp. L. Water Cold




Heat Ex. Temp. R. Water Cold



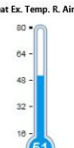
Heat Ex. Temp. L. Air Hot




Heat Ex. Temp. R. Air Hot



Heat Ex. Temp. L. Air Cold



Heat Ex. Temp. R. Air Cold



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# Remote diagnostic services (RDS) Customer Benefit

# Remote diagnostic services (RDS)

## Example: Loss per day

### Estimated production data for Mining Corp.

- The unitary mill will produce 22,500 ton/day
- The average mineral grade is 0.40% Cu
- The average recovery is 89.5%
- The process plant cost is 4.9 US\$/ton

### To evaluate 1 day loss (Roughly):

- Cathode net cost is US\$/lb 1.22 → 2,689 US\$/ton
- Price of Cu 3.0 US\$/lb → 6,600 US\$/ton
- Lost in 1 day =  $22,500 \times 0.40\% \times 89.5\% \times (6,600 - 2,689) = 315'031 \text{US\$/day (net loss)}$

Thus if RDS services cost the customer 100kUSD/year and it reduces the downtime by only 7.6 hours in the entire year, it would be worth it.

# GMDbeat™ and GMDfit™

## ABB's condition monitoring for your drive system

### Your challenge

- Need for high production efficiency
- Achieve high system availability with low maintenance effort

### Our solution

- Holistic service concept using innovative technology and system expertise to help you increase the OEE of your GMD

### Features

- Over 30 analyses running on your GMD 24/7
- Immediate alarm notification via email or text message
- Periodic health check and system audit by ABB experts
- Rapid 24/7 access to ABB experts all over the world

### Your benefits

- Real-time access for plant managers and staff from anywhere anytime
- Continuous health monitoring and assessment
- More effective performance of planned downtime due to recommendations from ABB experts
- Increase OEE by reducing forced outages and increasing availability





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