


### Asset Performance Management

<p><b>PROGNOST®-SILver</b> Data Acquisition Machine Protection</p> <p>SIL Certified</p> <p>Vibration Temperature Displacement Pressure Other</p> <p><b>Safety Protection</b></p>	<p><b>PROGNOST®-NT</b> Condition and Performance Monitoring</p> <p>NT Server </p> <p><b>Safety Analyses</b></p> <p>Early Failure Detection Performance Optimization Wear Monitoring</p> <p>Process Data Analyses Lubrication Monitoring Component Tracking</p>
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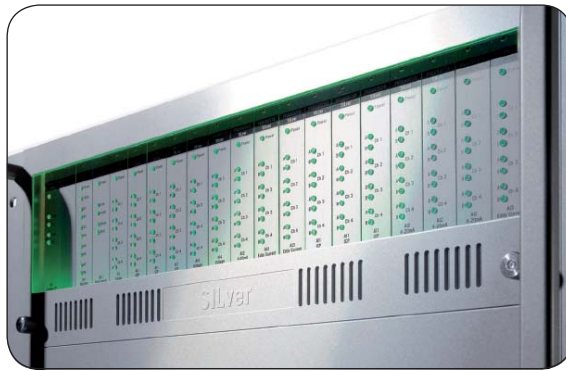
Enhancements to Version 10

# PROGNOST®-NT Version 11

# Safety Analyses

## PROGNOST®-SILver

In future the PROGNOST®-SILver will be used as machine protection and data acquisition system. The PROGNOST®-SILver is a hardware implementation of the formerly software-based "Safety Protection" - conforming to IEC 61508. This enables operators to install SIL 2 certified acquisition and shutdown hardware directly in the field. Please note the new systems overview on the rear page of this brochure.



Select a machine to display the available ring buffers. Then select a ring buffer and click buffer.

Type	Date From	To	Triggered by	Archive
Dynamic Data	14.10.2009 18:31:12	18:41:12	SILver Shutdown	Not archived
Dynamic Data	14.10.2009 18:22:21	18:32:21	Stop	Not archived
Dynamic Data	14.10.2009 17:56:25	18:06:25	SILver Shutdown	Not archived
Dynamic Data	14.10.2009 17:46:39	17:56:39	Stop	Not archived
Dynamic Data	14.10.2009 14:05:14	14:15:14	SILver Shutdown	Not archived
Dynamic Data	14.10.2009 10:45:47	10:55:47	SILver Shutdown	Not archived
Dynamic Data	13.10.2009 18:29:51	18:39:51	SILver Shutdown	Not archived
Dynamic Data	13.10.2009 18:21:15	18:31:15	Stop	Not archived
Dynamic Data	13.10.2009 17:55:11	18:05:11	SILver Shutdown	Not archived
Dynamic Data	13.10.2009 17:46:43	17:56:43	Stop	Not archived
Dynamic Data	13.10.2009 16:01:09	16:11:09	SILver Alert	Not archived
Dynamic Data	13.10.2009 15:14:22	15:24:22	SILver Alert	Not archived
Dynamic Data	13.10.2009 13:11:32	13:21:32	SILver Shutdown	Not archived

## Ring buffer activation for ALERT / SHUTDOWN / UNSAFE

The machine status (ALERT / SHUTDOWN / UNSAFE) which is detected by PROGNOST®-SILver, will directly be forwarded to PROGNOST®-NT and used for ring buffer activation:

- Within this, a status message comprises the possibility to accomplish a root cause analysis.
- The well known and approved ring buffer functions are useable for the PROGNOST®-SILver data acquisition in association with PROGNOST®-NT.

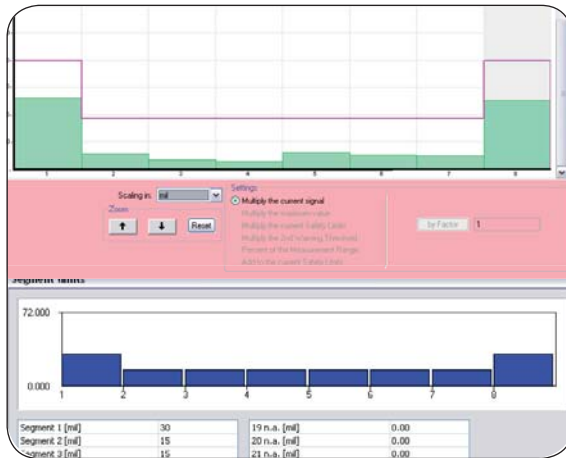
## Display of PROGNOST®-SILver Safety Limits

Indication of safety limits from PROGNOST®-SILver within PROGNOST®-NT VISU.

- Automatic transfer of safety limit changes from PROGNOST®-SILver to PROGNOST®-NT.
- Different safety limits are adjustable for operation with valid or invalid speed.

Example:

- Safety limits for valid speed (within the defined range of speed between 300 and 700 rpm).
- Safety limits for invalid speed (beyond the defined range of speed e.g. less than 300 rpm or more than 700 rpm).



Temp

- M1
- M2
- M3
- M4
- M5
- M6
- M7
- M8

MP1 Machine Protection

DC1 Data Control

Signal Input Card, AI1 (Slot 2)

Serial No: 0852020018  
Hardware Version: 01.00  
Firmware Version: 00.60

Channel 1: Compressor 1, KH  
Status: No Error

Channel 2: Compressor 1, KKB St 1  
Status: No Error

Channel 3: Compressor 1, KKB St 2  
Status: No Error

## Statusview for PROGNOST®-SILver in PROGNOST®-NT

The current PROGNOST®-SILver status can be displayed in VISU. The user advantages are:

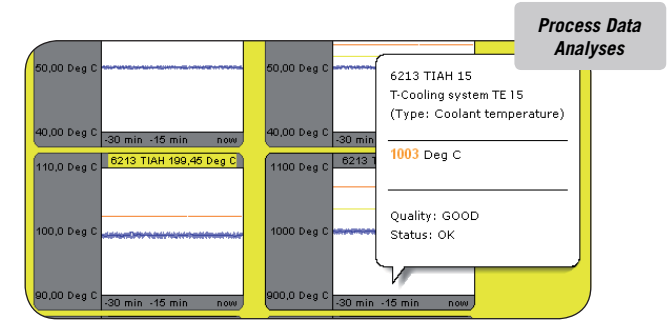
- Statusview for each sensor including a detailed failure report.
- Individual tooltips for each signal input card, to visualize failure reports (open circuit, short circuit, no redundant signal or voltage supply) such as information about the corresponding card or the connected sensor
- Detailed status view for machine protection (MP1) and data control (DC1) cards by means of tooltips.

# Condition and Performance Monitoring

## Results of analysis can be visualized as trends inside the P&I diagram.

2D diagrams and values of analyses can be displayed such as configured by the user

- Miscellaneous analysis can be displayed inside of the P&I diagram.
- Warning thresholds of PROGNOST®-NT will be shown.
- Automatic refreshment of the analysis results.
- The background color of the P&I diagram changes automatically if a warning threshold is violated.



### Wear Monitoring

Cylinder	Sensor	Analysis	rWear potential	Residual wear potential	Z upper
Cylinder 1	Rodring Cylinder 1	Rider ring wear	55,37 ml	0 ml	97,55 ml
Cylinder 2	Rodring Cylinder 2	Rider ring wear	59,05 ml	0 ml	7,914 ml
Cylinder 3	Rodring Cylinder 3	Rider ring wear	55,12 ml	0 ml	26,27 ml
Cylinder 4	Rodring Cylinder 4	Rider ring wear	47,24 ml	0 ml	8,858 ml

Executed Task:

- New rider bands mounted
- Residual wear potential measured
- Just changed the sensor position

## Rider ring wear

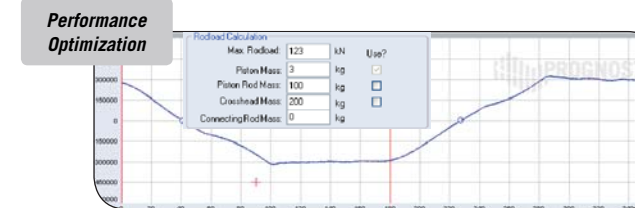
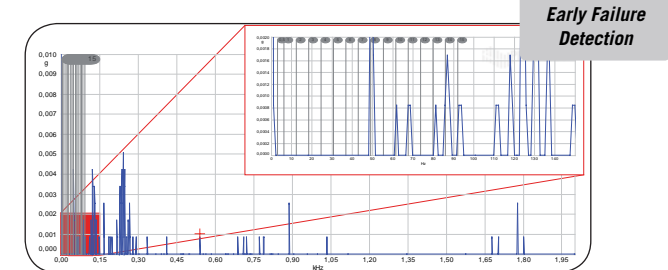
Rider ring wear assistant for parameter changes:

- Depending on the conducted maintenance event, the parameter input changes to a reduced and aligned dialogue.
- The measured residual potential of the rider ring can be integrated.

## Frequency analyses

Enlarged frequency analyses for rotating equipment and engines:

- Useable frequency resolution between 0.2 Hz and 10 kHz.
- Harmonics of speed can be shown in the amplitude spectrum.
- Amplitude spectrum is viewable as 3D plot.



## Cylinder properties

Input fields for mass and additional decision options if the piston rod mass or even the crosshead mass should be used for calculation of piston rod load.

## Plausibility check for signals of non running machines

Measuring loop functionality will be evaluated even if the machine has downtime. This check could be used for the measuring loops pressure, piston rod position and vibration.

## Ring buffer

In the analysis of ring buffer signals options of views are enlarged. Additional to the online-signals, the results of several 1-segmented analyses can be displayed as bar chart and get updated permanently.

## Display of reference value

The reference value for each operating condition is calculated by PROGNOST®-NT before an automatic threshold setting occurs. The position of the reference value gives you an information about the quality of your automatic threshold setting.

