SKF @ptitude Analyst

Intelligent and scalable software for enterprise-wide communications

A core platform from the SKF @ptitude Monitoring Suite of reliability software applications

SKF @ptitude Analyst is a comprehensive software solution with powerful diagnostic and analytical capabilities. SKF @ptitude Analyst provides fast, efficient and reliable storage, analysis, and retrieval of complex asset information and makes the information accessible throughout your organization. SKF @ptitude Analyst easily scales to your specific needs, whether it is operator inspection rounds, condition monitoring data collection or in-depth vibration analysis and expert advice.

- One software program to manage asset condition data from portable and on-line devices
- Easy for novice or experienced users to learn and use
- Interconnectivity with multiple enterprise-wide software programs and systems
- Scalable and flexible to meet your unique needs

SKF @ptitude Analyst allows your operations, maintenance and reliability staff to view data from different sources using the same application to communicate information to other departments in a customizable format.

SKF @ptitude Analyst integrates the SKF Microlog, SKF Microlog Inspector and SKF Multilog data collection device ranges into one enterprise-wide software platform.

SKF @ptitude Analyst
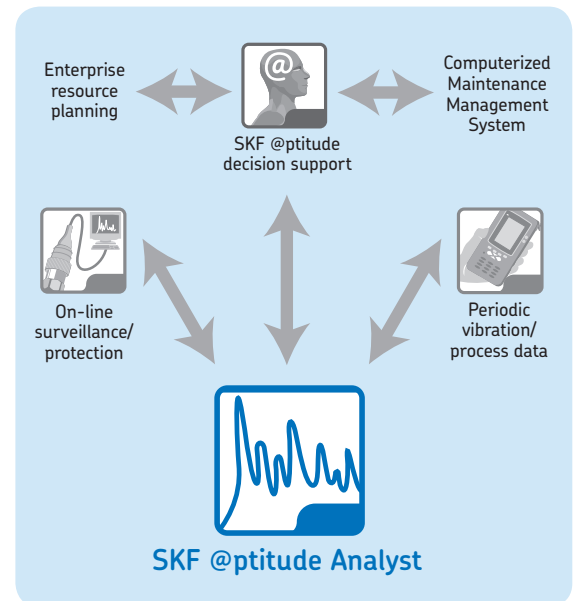
By combining the capabilities of the new SKF Multilog IMx-M and the SKF @ptitude Analyst software, we are able to deliver a combined package of Machinery Protection, and Condition Monitoring; all in a compact and cost effective package. The target application is critical and semi- critical machinery with moderate, to long startup / coast-down times. Target opportunities include new sales where the customer places a high importance on tight integration of online and offline devices and data and existing SKF @ptitude Analyst off-line, and on-line surveillance system users who seek to expand their system capability with the machinery protection function.

SKF @ptitude Analyst – one enterprise-wide software platform

The combined SKF @ptitude Analyst and SKF Multilog IMx-M solution delivers both API 670 machinery protection standard related features like hardware alarm / event log uploads to condition monitoring software, protection module parameters and alarm status information availability in the condition monitoring software and a robust transient machinery state data acquisition feature. The transient machinery data acquisition feature is industry standards based with respect to machine state definitions, controls for starting, transitioning between machine states, and terminating transient events. It offers enhanced data collection modes, allowing users configurable 'run-on' transient data collection periods after entering the Normal Operating state. SKF also focussed on simplifying the transient data collection setup, to reduce the likelihood of setup mistakes which can result in missing important data during a transient event or missing the transient machinery event altogether.

SKF @ptitude Analyst can also incorporate data from other sources, such as OPC servers, and seamlessly interface with your organization's Computerized Maintenance Management System (CMMS), Enterprise Resource Planning (ERP) or other information management systems. In this way, SKF @ptitude Analyst's integrated platform forms the hub to share information, foster teamwork, and facilitate consistent and reliable decision-making across functional departments.

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Organization and overview

Detailed information – efficiently organized

Screen displays such as data plot layout, color, size and position can be personalized and automatically updated. A customizable toolbar provides quick access to your most frequently used program features.

Right click on your data plot to modify settings and machine information. Scrolling across a data plot, displays data values in the plot window.

Asset data customized for your unique needs

With these powerful analysis tools, you are in complete control – from the way you set up hierarchy, filtered workspaces, routes, and analysis parameters, to the customized format for reporting. You can collect information based on location, machine type, frequency, or other selections. SKF @ptitude Analyst allows you to determine the appropriate limits for alarm conditions and how alarms are categorized to ensure you receive consistent, reliable data in the format that suits you best.

Automatically schedule reports to save time

The Scheduler Wizard enables you to automatically schedule a specific action, such as generating a report upon completion of a data collection upload, archiving measurement data at a specified time or other event-based actions. This capability helps to eliminate human error and allows you to focus on other pressing issues.

Using SKF @ptitude Analyst throughout your organization allows collaboration and communication without losing control of your data.

Connectivity

Staying connected is easy with SKF @ptitude Analyst

Today's data collector systems must support a great variety of data connection methods. SKF @ptitude Analyst supports data collector connections via USB. For remote users in a Wide Area Network or users with low bandwidth connection, the Thin Client Transfer application may be used to provide a remote but direct access to the database. In addition, this supporting application also permits completely disconnected data collectors to transfer route and vibration data using an email file attachment.

On-line systems with USB, RS 485 or Ethernet connections are supported and can be routed through gateways and firewalls. Services dedicated to each monitoring device or monitoring chain ensure data collection with a high throughput and thus quick live updates.
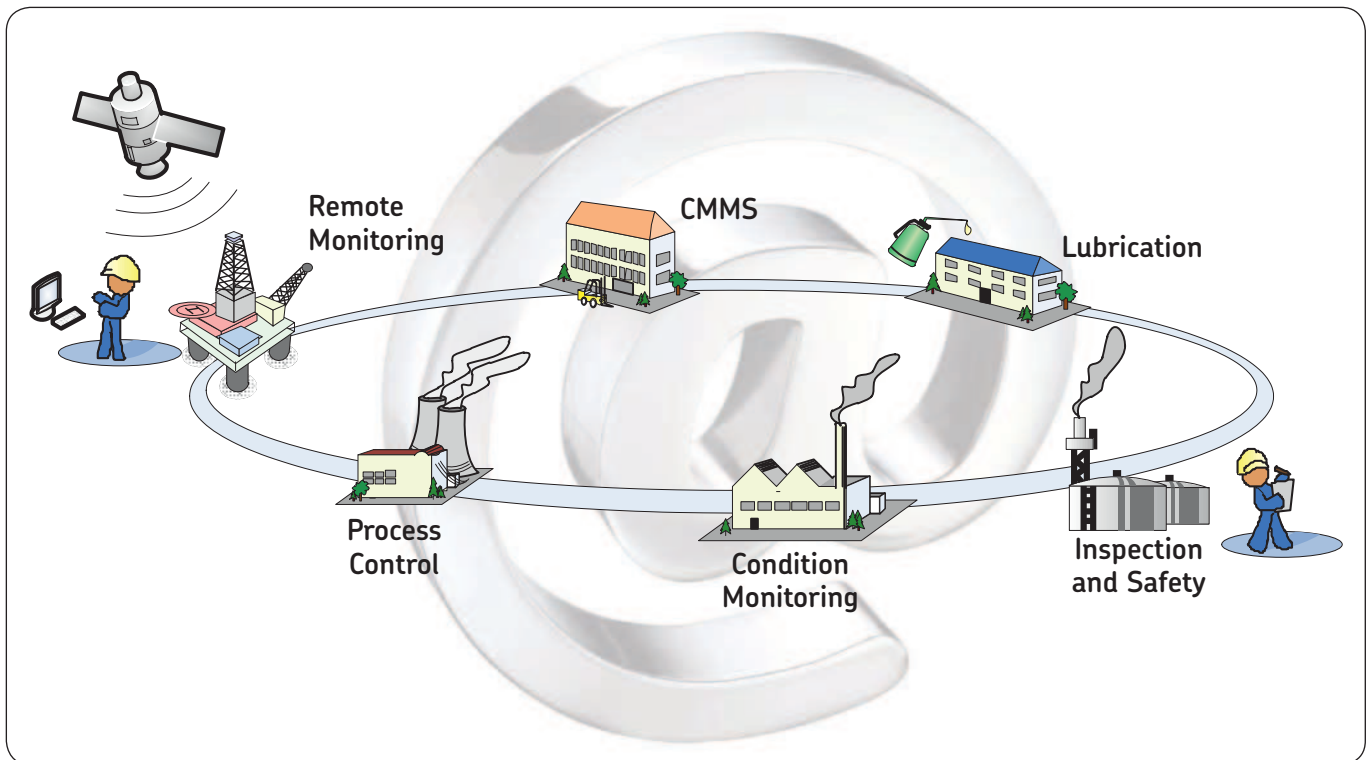
Stay informed 24/7 of your condition monitoring program progress and machine condition changes by using SKF @ptitude Analyst's email and SMS support. You and your colleagues may receive emails and/or SMS messages of events such as; a scheduled HTML Upload Report with a PDF attachment or a SMS message with plain text describing alarm condition changes.

SKF @ptitude Analyst also supports OPC, or OLE for Process Control, the most widely-used plant data exchange format. With the OPC client interface for SKF @ptitude Analyst, common machinery information, such as load, speed, energy usage, and other important process data, can be obtained and stored in the database for side by side analysis.

Export of Hierarchy nodes in CSV (comma-separated value) file format is also supported in SKF @ptitude Analyst. The CSV output includes full Hierarchy information, POINT setup settings, overall and dynamic values and inspection messages.

XML (Extensible Markup Language), is an open data format supported by SKF @ptitude Analyst. Using this format, a flexible data stream can be set up for automatic import or exports of selected data types. XML data can be imported in Excel or other software with little programming, hence making SKF @ptitude Analyst a truly open system.

Remote Monitoring

CMMS

Lubrication

Process Control

Condition Monitoring

Inspection and Safety

Diagnosis and analysis

Robust analytical and diagnostic capabilities that are easy to use

SKF @ptitude Analyst continues to deliver class leading functionality by incorporating innovations such as derived functions, CTA (Cyclic Time Average) overlay, and HAL (Harmonic Activity Locator) analysis to its users (CTA and HAL are SKF patented algorithms).

SKF @ptitude Analyst supports many standard graphs and combination graphs that quickly visualize problem areas. Graph overlays provide cursor functions to obtain special information such as frequency band details, average and standard deviation values, skew or kurtosis. Frequency analysis overlays can be used for spectrum graphs to quickly identify common bearing or other fault source frequencies. Implementation of HAL provides harmonic series recognition whereby impact failures are recognized and prioritized by likelihood.

In some cases, the actual stream of information is not directly acquired but rather must be computed based on a combination of acquired values. Therefore, SKF @ptitude Analyst supports Derived Points, which act like virtual data collection points computed by a user programmable macro that operates on any other data stream. For example, you may calculate potential savings from air leaks in a compressed air system by implementing a derived calculation that multiplies the severity of a measurable air leak in a pipe by the cost to generate each unit.

Automated features simplify configuring and fine-tuning alarms

Since similar machines often use similar alarms, the Alarm Database provides user-defined alarms that can be applied to create alarm settings for multiple measurement points.

An Alarm Wizard assists in creating Statistical Alarms to set alarms for your most important machinery with minimal research and effort. SKF @ptitude Analyst considers historical data and natural variation in machinery vibration levels and generates reliable alarm criteria tailored to the specific machine.

SKF @ptitude Analyst's variable speed alarming features accommodate normal fluctuations in machine speed and function. Alarm limits are automatically reset as speed changes, preventing false alarms.

SKF @ptitude Analyst also supports overdue alarms that notify you if monitoring data was not collected as expected.
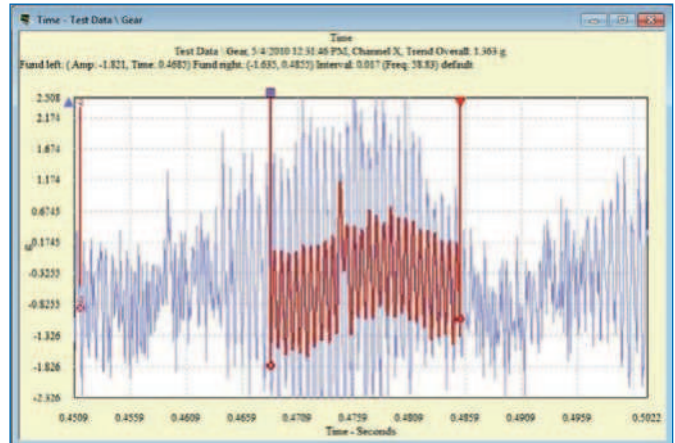
The CTA overlay enhances time waveform analysis when diagnosing broken gear teeth.

Enhanced alarm view saves valuable time

Alarm View window displays all points that require immediate attention to help you quickly identify and prioritize follow-up activities and acknowledge alarm conditions. The Alarm Details window offers a comprehensive list of the specific points in alarm and the level and type of alarm, all in one convenient view.

Auto Linking makes it easy to view individual alarms as data plots and alarm details change automatically when you select new points, saving time and simplifying the analysis process.

Versatile viewing options for multi-parameter analysis

For fast, easy comparison of two or more readings across multiple points, SKF @ptitude Analyst allows you to select a measurement and drag and drop it into the plot, providing convenience and saving time.

The SKF @ptitude Analyst frequency analysis feature helps to identify specific bearing and gearbox frequency sets for rapid detection and correction of probable bearing and machine problems. SKF @ptitude Analyst's on-line data view automatically refreshes to display the latest information, point status and alarm details. Live views provide immediate update of displayed data while the Event Log documents specific occurrences over time. The System Information view provides one-stop navigation between different views, such as Event Log, On-line Data view, individual routes and workspaces.

SKF @ptitude Analyst's database management tools allow you to closely track machine problems to recreate events for predictive maintenance and to perform root cause failure analysis.

Scalability through application add-ons

## Feature and deployment scalability

SKF @ptitude Analyst software is configured using license keys. These keys automatically activate or add new functionality to the base application, hence the name "add-on". Additionally, three different base applications are available: SKF @ptitude Inspector primarily used for Operator Driven Reliability (ODR), SKF @ptitude Analyst for SKF Microlog Analyzer, and SKF @ptitude Analyst, the flagship application of the SKF @ptitude Monitoring Suite.

The SKF @ptitude Analyst software can be deployed as a stand alone application on a single workstation or as a fully networked, distributed application whereby data storage and business logic are kept on separate application servers to help ensure high throughput and availability.

SKF @ptitude Analyst software fully supports virtualization environments. These environments allow SKF @ptitude Analyst to be installed and published onto an enterprise system from a centralized location. Data connections can be made through the virtualization environment or through Thin Client Transfer, which provides fast and secure network connectivity.

Improved performance

The 2013 Edition of SKF @ptitude Analyst Thin Client Transfer software is significantly faster while providing much more feedback for the operators. These improvements and enhancements include; faster upload speed, new user notifications, status updates and progress animations. This increased efficiency puts more time back into the hands of the user, while providing the most important information about the progress of the transaction; gives your team in the field the peace of mind that their important data has been processed and successfully transferred to the SKF @ptitude Analyst software.
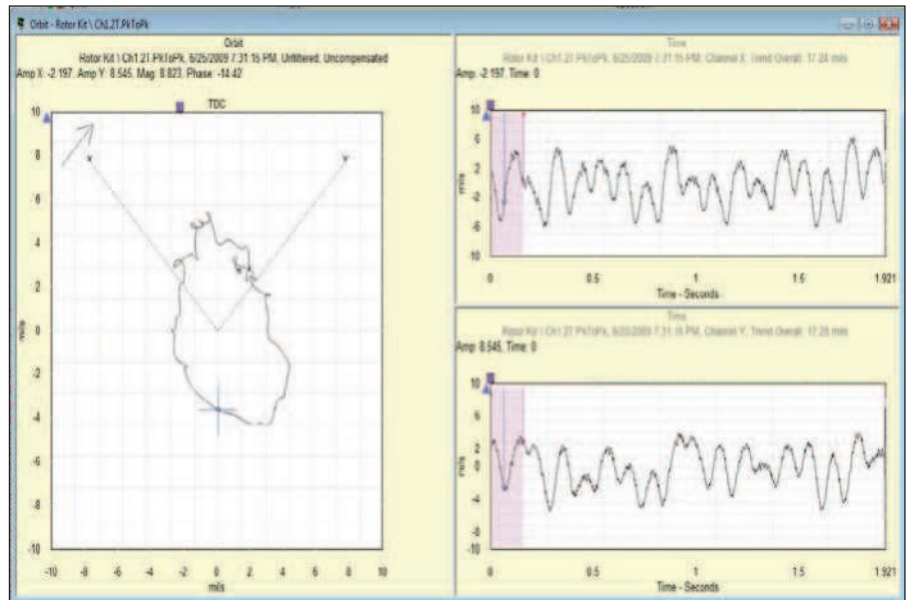
Orbit graph with synchronized X, Y channel time waveforms.

Transient analysis (Run up Coast down)

The Transient Manager is a standard add-on to the SKF @ptitude Analyst that allows you to manage and display all transient hierarchy views. Depending on transient view properties, the transient event may be automatically captured at defined speed changes and other parameters to provide accurate analysis, such as a turbine coast down event. Transient events may be displayed in live or trend (historical) mode using the following graphs:

- The Topology graph illustrates a series of spectra (similar to Campbell plots) using a user-defined color scheme to easily visualize amplitude peaks. This graph also features vector compensation.
- The Bode graph with Damping Cursor is a dual plot consisting of phase and amplitude as a function of rotational speed. The damping cursor enables you to identify resonance information at critical speed when performing transient event analysis.
- The Nyquist graph plots the shaft's movement during a transient event and is similar to a Bode graph but using polar notation. This graph also features vector compensation and optional rotational speed labels.
- The Cascade graph plots data over running speed and features data filtering options for optimal event presentation.

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Scalability through application add-ons

Analysis and Reporting Manager (ARM)

The Analysis and Reporting Manager has a new name; this product was previously known as Analysis and Reporting Module. This updated application has new functionality for the stand-alone product (software model CMSW 7311-SL) as well as the embedded version that will now be included with both the software model CMSW 7400, and now the SKF @ptitude Analyst (software model CMSW 7300) software product as well. The Analysis and Reporting Manager functionality allows users to upload, view and post-process field collected data from modules from the SKF Microlog Analyzers.

SKF's Analysis and Reporting Manager application now has the ability to calculate enveloped (gE) overall limits and store calculations with the collected data. SKF's acceleration enveloping (gE) feature contains a set of calculated warning and alarm levels. These warning limits depend on a specific bearing bore, speed and the Fmax selected for your enveloped spectrum. To assist in setting the correct alarm and warning levels, there is now an SKF bearing database lookup feature that is built right into the Analysis and Reporting Manager software.

The Digital Signal Processing Module (DSP) provides several post-processing features including acceleration enveloping (gE) analysis. This menu has many advanced features including waterfall, and Fast Fourier Transforms (FFT) along with other advanced features. It supports the recording of raw data from a series of sensors to allow users to collect data from a machine running for a short duration. This can be very helpful where route collection would not normally collect enough data; either fast enough, or where collection of data over an extended period of time is not practical. The raw signals can then be post processed, using Analysis and Reporting Manager software to produce all of the spectra required for analysis.
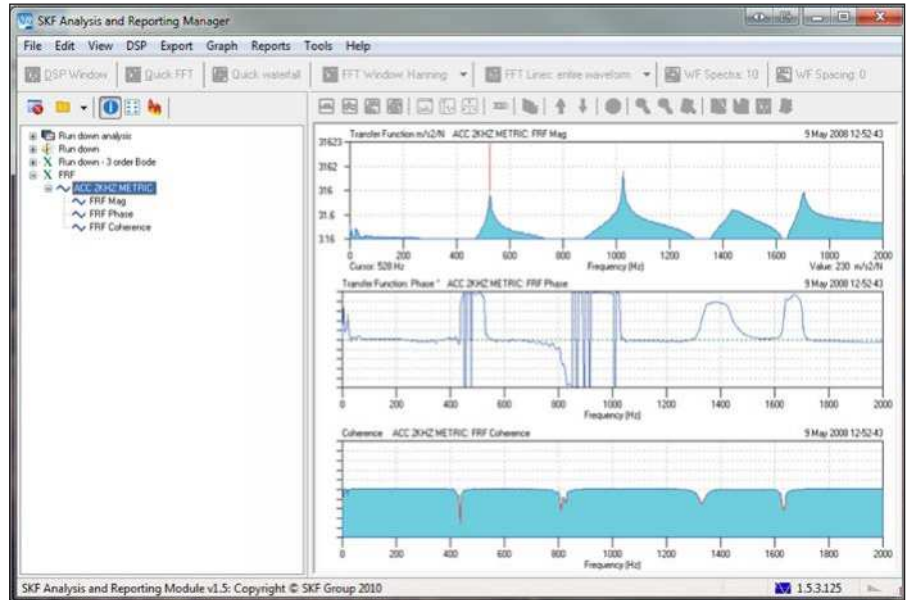
Analysis and Reporting Manager transfer function – Frequency Response Function (FRF) plot.

With the latest version of Analysis and Reporting Manager, the post processing options allow you to perform SKF acceleration enveloping (gE) and display the results right in the analyzer window. Once the data is captured, it can then be overlaid with bearing fault frequencies onto the post processed spectra to calculate warning and alert levels.

In addition to the impressive list of post processing options available in the Analysis and Reporting Manager, SKF has also added Cepstrum, Power Cepstrum, and Power Spectrum to the list of available features. Cepstrum analysis is a tool for detecting periodicity in an FFT which is especially useful when diagnosing potential gear box failures. Power spectrum provides a plot of the portion of a signal's power (energy per unit time) for any given frequency in the FFT where the energy is measured at the cursor position.

The new License key support replaces the older style dongle technology with current SKF @ptitude License Keys that supports customer trials and product evaluations.

Operator Driven Reliability

Operator Driven Reliability (ODR), the framework for organizing an operator's activities, is key to an organization's reliability program. Being in close proximity to the machines 24 hours a day, 7 days a week, operators are often the first to notice even the smallest changes in machine condition.
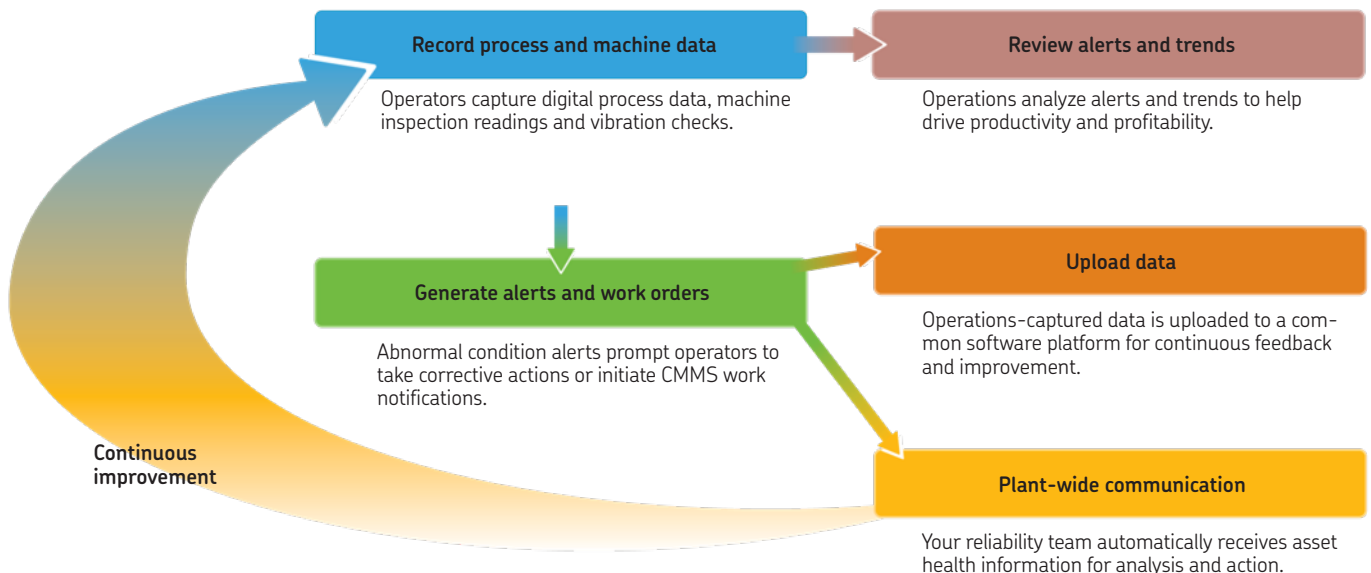
To help you develop your ODR programme, SKF offers Maintenance Strategy Review services that will evaluate your facility and systems, determine asset criticality, and formulate a maintenance strategy. Using the SKF Asset Management Support Tool (AMST), SKF can analyze your plant's dominant failure modes and the significant effect of those failures. AMST can then further recommend inspections and assign job tasks and actions for optimal asset efficiency. Once a maintenance strategy review has been performed using AMST, the data can be directly transferred to SKF @ptitude Inspector software and used to create your plant's asset hierarchy and operator inspection rounds.

SKF @ptitude Inspector is the SKF @ptitude Analyst software specifically targeted for ODR use. SKF @ptitude Inspector and the SKF Microlog Inspector, the next generation of hand held Windows Mobile based portable computer inspection system, enable operations personnel to make their rounds, collecting machine condition, inspection and process data easily and efficiently in the palm-sized unit. Data is trended, and when certain conditions are met, the SKF Microlog Inspector system alerts the operator, then provides instructions for immediate corrective action.

Operator Driven Reliability with SKF

SKF can help you tailor an ODR program that empowers your operators and enables sustainable, continuous improvements.

Record process and machine data
Operators capture digital process data, machine inspection readings and vibration checks.

Review alerts and trends
Operations analyze alerts and trends to help drive productivity and profitability.

Generate alerts and work orders
Abnormal condition alerts prompt operators to take corrective actions or initiate CMMS work notifications.

Upload data
Operations-captured data is uploaded to a common software platform for continuous feedback and improvement.

Plant-wide communication
Your reliability team automatically receives asset health information for analysis and action.

Continuous improvement

Operator Driven Reliability

Software tailored to the needs of the SKF Microlog Inspector user

SKF @ptitude Inspector incorporates a simple user interface to speed up system implementation.

- Easily create and modify databases in a hierarchical form, define data collection points and types, create routes and automatically sync with the SKF Microlog Inspector.
- Compliance reporting and scheduling allows a range of collection schedules that vary from day, week, month, day of year, and multiple or repeat collections per time period. Reports identify missed or overdue collection points or data collection that is out of compliance parameters.
- A variety of user specified views includes multi-pane plots, window sizes and positions, a customizable tool bar and more to help optimize user productivity and efficiency.
- Standardized notes can be used to document observed machinery and process conditions, then combined with machine data and images to create a variety of reports.

SKF Machine Condition Detector

SKF @ptitude Inspector fully supports the SKF Microlog Inspector, Machine Condition Detector as well as the Wireless Machine Condition Detector POINT type (velocity, acceleration enveloping, and temperature). All process data types are supported including: pressure, flow, RPM, temperature, and AC or DC current. Instantly access points in alarm or view alarm status for a specific machine. An Alarm Wizard helps calculate alarms for plant machinery, making this complex task almost effortless for the user.

- The Wireless Machine Condition Detector supports acquisition of Fast Fourier Transfer (FFT) data for the Acceleration Enveloping (gE) and Velocity measurements. SKF @ptitude Inspector uploads and displays these dynamic data types effortlessly.
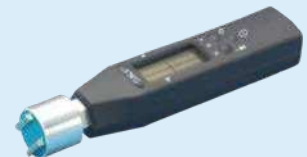

SKF's I-Pro
CMDM 6700 series

SKF's S-Pro
CMDM 5700 series

SKF's S-Pro
CMDM 5600 series

Wireless Machine
Condition Detector

SKF Machine
Condition Detector

Access and security

SKF @ptitude Analyst permits access on a customized basis, yet allows the effective exchange of detailed information across functional departments.

Advanced security system protects data

SKF @ptitude Analyst enables security through the use of security roles. A security role is comprised of many individual security levels that control access rights to data, viewing, reporting, graphing, and more. Assigning users a security role instantly defines the access rights for that user. Changing the security role definition updates the access rights for all assigned users; this is a time-savings feature when managing several users. SKF @ptitude Analyst comes with four default roles, however an unlimited number of roles can be defined.
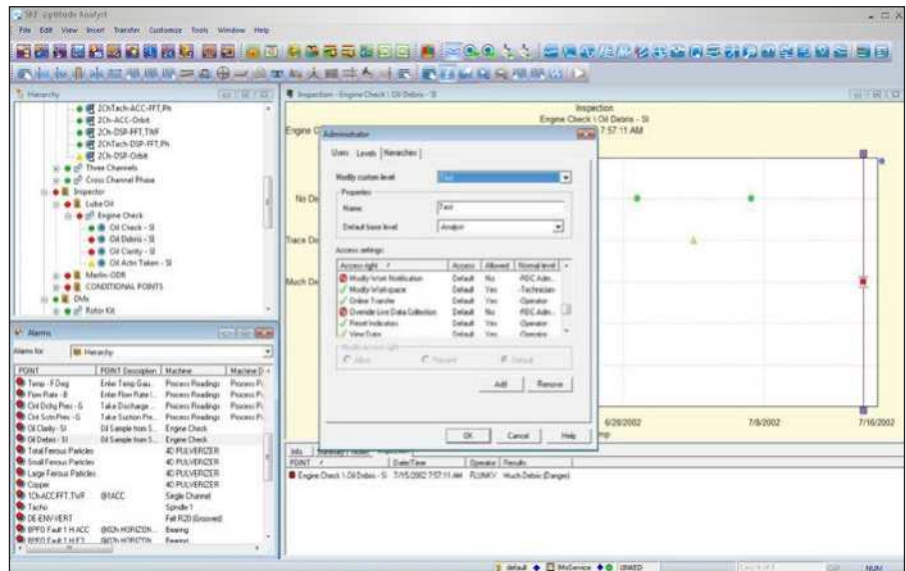
Personalized access rights allow the software administrator to protect against errors and enable traceability.

Setup data change log

Measurement setup greatly defines how effectively the entire system monitors your assets. For audit purposes, SKF @ptitude Analyst provides a log of changes made to the most important measurement setup details, logging date, responsible person and change detail.

Customized reports

Extensive report customization features let you control the specific kinds of machine information to be communicated throughout the organization. You can customize the templates or design an entirely new report including data plots, supplemental information and digital images. Additionally, the Report Manager allows you to maintain a history of reports, and pre-configure report content and format to share with selected users.

Reports are generated in HTML format, giving you the flexibility to view on-screen, print, edit using Microsoft Word or Excel, attach to an email or automatically post to your company's intranet when programmed into the Scheduler feature.

Predefined report templates make it easy to generate common reports such as Last Measurement, Exception, Overdue/Noncompliant, History, Route Statistics, and others.

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Features and capabilities

Features / capabilities		SKF @ptitude Analyst CMSW 7400 (■)	SKF @ptitude Analyst for SKF Microlog Analyzer CMSW 7300 (●)	SKF @ptitude Inspector CMSW 7200 (♦)
Device support				
SKF Microlog Inspector with Wireless machine condition detector (WMCD)		■	– – –	♦
SKF Microlog (AX series, GX series, CMVA 65 or CMVA 60)		■	●	– – –
SKF Multilog (DMx, IMx, CMU or TMU)		■	– – –	– – –
Wireless WMx, Wireless V/T		■	●	– – –
Human Machine Interface (HMI)				
Integrated HMI		■	– – –	– – –
Diagnostics				
Spectrum:	• Harmonic Activity Index (HAI). A spectrum post processor showing the likelihood of harmonic patterns being present • Spectrum plot keyboard shortcuts	■	– – –	– – –
Time waveform:	• Time domain statistics including standard deviation, skew, kurtosis, and crest factor	■	– – –	– – –
Analysis and Reporting Manager		■	●	– – –
Transient analysis:	• Transient event views • Live and trend mode graphs • Vector compensation • Damping cursor	■	– – –	– – –
Alarms				
Advanced functions including high level analysis functions such as CTA, HAL, Contribution, Statistical functions, etc.		■	– – –	– – –
View alarm status indicators directly at the hierarchy		■	●	♦
Alarm window:	• Acknowledge alarms and enter comments or recommendations • Quickly find and identify all points in alarm within the hierarchy, group, route, workspace, or machine	■	●	♦
Alarm details:	• Provides a summary of the type of alarms and status	■	●	♦
User defined alarm levels:	• Public alarms that can be shared with other users • Private alarms that can only be used by specific users • Unlimited number of alarms can be configured	■	●	♦
Overall alarm levels:	• Danger high, alert high, alert low, danger low • Level alarm, out of window, in window	■	●	♦
Alarm types				
Overall forecast		■	●	♦
Overall percent change		■	●	♦
Unlimited spectral band (overall and peak)		■	●	– – –
Spectral envelope		■	●	– – –
Phase angle		■	●	– – –
Overall		■	●	♦
Inspection		■	– – –	♦
Machine condition detector		■	– – –	♦
Variable speed alarms		■	– – –	– – –
Crash alarm (CMU, TMU only)		■	– – –	– – –
BOV alarming		■	– – –	– – –

Features and capabilities

Features / capabilities			SKF @ptitude Analyst CMSW 7400 (■)	SKF @ptitude Analyst for Microlog Analyzer CMSW 7300 (●)	SKF @ptitude Inspector CMSW 7200 (♦)
Alarm types (continued)					
Statistical alarm calculation wizard with outlier removal			■	●	♦
Statistical band alarm calculation wizard with outlier removal			■	●	♦
Harmonic Activity Locator (HAL) alarm			■	●	
Graph displays					
Trend			■	●	♦
Spectrum			■	●	♦
Time domain			■	●	– – –
Waterfall			■	●	– – –
Cascade			■	– – –	– – –
Topology			■	– – –	– – –
Orbit			■	– – –	– – –
Shaft centerline			■	– – –	– – –
Bode			■	– – –	– – –
Nyquist			■	– – –	– – –
HAL trend			■	●	
Combination graphs:	- Trend / spectrum - Trend / spectrum / time waveform - Trend / speed - Trend / speed / spectrum - Trend / speed / spectrum / time - Trend / speed / time - Spectrum / HAL trend - Contribution/ profile/ trend	- Waterfall / extracted trend / spectrum - Trend / time waveform - Spectrum / band trend - Bode / Nyquist - Speed / bode / orbit / spectrum - Speed / bode / spectrum	■	●	– – –
Live views / live bars (SKF Multilog)			■	– – –	– – –
Multiple hierarchy support			■	●	♦
Transient analysis graphs			■	●	– – –
Graph display overlays					
Trend:	- Single cursor - Notes indicators	- Exponential curve line - Curve fit	■	●	♦
	Statistical trend line		■	●	– – –
Spectrum:	- Single cursor - Harmonic cursor with Set Speed function		■	●	♦
	- Sideband cursor with dB and Delta values - Band cursor		■	●	– – –
	- Peak cursor - Frequency analysis cursor	- Diagnostics cursor - Spectral band alarm, spectral envelope alarm	■	– – –	– – –
Time wave-form:	- Single cursor - Band cursor	- CTA overlay - Frequency analysis cursor	■	●	– – –
	Band cursor with statistics		■	– – –	– – –
Display tools					
Baseline spectrum storage			■	●	– – –
Waterfall spacing (time / date) based or event			■	●	– – –
On-screen integration / differentiation			■	●	– – –

Features and capabilities

Features / capabilities		SKF @ptitude Analyst CMSW 7400 (■)	SKF @ptitude Analyst for Microlog Analyzer CMSW 7300 (●)	SKF @ptitude Inspector CMSW 7200 (♦)
Display tools (continued)				
WMx device view:	• Allows to add an edit WMx devices • WMx device diagnostics, battery status and channel information	■	●	– – –
Graph linking:	• Display information area • On-screen text annotation • Percent of full scale setting • Auto scaling • Spectrum cursor micro-manipulation • Date range setting	■	●	♦
Derived POINT *(For detailed information, refer to SKF publication CM3124 EN, "Derived POINTs and their Application")*				
Abs(x)		■	●	♦
Alarm_Status(p)		■	– – –	– – –
ArcCos(x)		■	●	♦
ArcSin(x)		■	●	♦
ArcTan(x)		■	●	♦
Average(Dynamic, c)		■	●	♦
Average(x, n)		■	●	♦
Ceil(x)		■	●	♦
Contribution2(iDynamic, iPeriod)		■	– – –	– – –
Contribution3(iDynamic, iPeriod, iSpeed)		■	– – –	– – –
Cos(x)		■	●	♦
Count_Spikes(Twf, c, Th, Bias)		■	– – –	– – –
CrestFactor(iDynamic)		■	– – –	– – –
CTA_PK_PK(iDynamic, iPeriod)		■	– – –	– – –
CTA_RMS(iDynamic, iPeriod)		■	– – –	– – –
CUSUM(x, m)		■	– – –	– – –
Deg2Rad(x)		■	●	♦
DeltaTime(x)		■	●	♦
DeltaValue(x)		■	●	♦
Energy_Value(iFFT, iBandIndex)		■	– – –	– – –
Floor(x)		■	– – –	– – –
Forecast_Exp(x, n, Alarm)		■	– – –	– – –
Forecast_Lin		■	– – –	– – –
HAL(iSpectrum, iFrequency)		■	– – –	– – –
Kurtosis(Dynamic, c)		■	– – –	– – –
Kurtosis(x, n)		■	– – –	– – –
LN(x)		■	●	♦
Log(x)		■	●	♦
Max(x, y)		■	– – –	– – –
Min(x, y)		■	– – –	– – –
Mod(x, y)		■	– – –	– – –

Features and capabilities

Features / capabilities			SKF @ptitude Analyst CMSW 7400 (■)	SKF @ptitude Analyst for SKF Microlog Analyzer CMSW 7300 (●)	SKF @ptitude Inspector CMSW 7200 (♦)
Derived POINT (continued)					
Operating Time			■	●	♦
PeakValue(iFFT, iBandIndex)			■	– – –	– – –
PercentChange			■	●	♦
Power(a, b)			■	●	♦
ROC(x, iDays)			■	– – –	– – –
Round(x)			■	– – –	– – –
Sin(x)			■	●	♦
Skew(Dynamic, c)			■	– – –	– – –
Skew(x, n)			■	– – –	– – –
Smax(iTwf)			■	– – –	– – –
Speed(iDynamic)			■	– – –	– – –
Sqrt(x)			■	●	♦
Stdev(Dynamic, c)			■	– – –	– – –
Stdev(x, n)			■	– – –	– – –
Sum Duration			■	●	♦
Sum Period			■	●	♦
Sum Since			■	●	♦
Tan(x)			■	●	♦
Total Operating Time			■	●	♦
Trunc(x)			■	– – –	– – –
XMag(Twf, cA, cB, spdFactor)			■	– – –	– – –
XPhase(Twf, cA, cB, spdFactor)			■	– – –	– – –
Storage, file formats and networking					
Oracle support			■	●	♦
Microsoft SQL Server support			■	●	♦
Binary importing and exporting (.MAB)			■	●	♦
CSV (Excel) exporting			■	●	♦
XML importing and exporting			■	●	– – –
Support for LAN and WAN			■	●	♦
Support for Thin Client (Terminal) environments			■	●	♦
Operates with Citrix, Terminal Server, and Microsoft Windows 2008 application server			■	●	♦
Unlimited number of:	• Hierarchies • Collection points	• Measurements • Workspaces	■	●	– – –
General					
Email and SMS support for:	• Scheduled events, i.e., a scheduled report is generated • Unscheduled events, i.e., an alarm condition change		■	●	♦
Multiple languages available:	• Standard languages: English, French, German, Portuguese, Spanish, Swedish • Non-standard languages: Russian, Simplified Chinese, Thai		■	●	♦

SKF

Features and capabilities

Features / capabilities		SKF @ptitude Analyst CMSW 7400 (■)	SKF @ptitude Analyst for SKF Microlog Analyzer CMSW 7300 (●)	SKF @ptitude Inspector CMSW 7200 (♦)
General (continued)				
True multi-processing operating environment allowing simultaneous background and foreground processing. Consistent with Microsoft Windows functions:	• "Right-click" functionality • Drag and drop • Cut / copy / paste • Context sensitive help	■	●	♦
Allows for complete integration of third party applications		■	●	♦
User preferences to allow customization		■	●	♦
Complete user and installation manuals included in the installation package		■	●	♦
Product Support Plans (PSP) available		■	●	♦
Optional interfaces available:	• OPC Client • CMMS (contact SKF Sales Representative for details)	■	●	♦
Measurement archiving		■	●	♦
Measurement types				
Acceleration, Velocity, Displacement		■	●	– – –
Amps, Volts (AC or DC)		■	●	– – –
Acceleration Enveloping (gE)		■	●	♦
Machine condition detector (MCD) Velocity, Acceleration Enveloping, Temperature		■	– – –	♦
Temperature (Celsius and Fahrenheit)		■	●	– – –
Flow (GPM, LPM)		■	– – –	♦
High Frequency Detection (HFD, DHFD)		■	●	– – –
Inspection (User definable)		■	– – –	♦
Operating hours		■	– – –	♦
Operating time (Elapsed and accumulative) (SKF Multilog)		■	– – –	– – –
Pressure (PSI and Bar)		■	– – –	♦
SEE		■	●	– – –
Machine speed		■	●	♦
Bias output voltage (BOV) (IMx)		■	– – –	– – –
Logic (IMx)		■	– – –	– – –
Measurement attributes				
Conditional POINTs:	• SKF Microlog Inspector	■	– – –	♦
Control POINTs:	• SKF Microlog Analyzer • SKF Multilog IMx, CMU, TMU, WMx	■	●	– – –
Support for Multi-Point Automation (MPA)		■	●	– – –
English or metric units		■	●	♦
Triax sensor support:	• SKF Microlog Analyzer • SKF Multilog CMU, IMx	■	●	– – –
Multi-channel support:	• SKF Microlog Analyzer AX series, GX series version 2.0 (or higher) • SKF Multilog DMx, IMx	■	●	– – –
Alternative time zone support for on-line devices located across a wide area		■	– – –	– – –
Display and storage of non-collection events:	• SKF Multilog IMx • SKF Microlog Inspector	■	– – –	♦

Features and capabilities

Features / capabilities		SKF @ptitude Analyst CMSW 7400 (■)	SKF @ptitude Analyst for SKF Microlog Analyzer CMSW 7300 (●)	SKF @ptitude Inspector CMSW 7200 (♦)
Reporting				
Preserved reports	• Enables you to maintain a history of reports	■	●	♦
Shared reports	• Allows you to share and preconfigure reports for selected users	■	●	♦
Emailing of reports with PDF attachment:	• Send reports to individuals or groups of contacts	■	●	♦
Send reports to screen, HTML file, printer		■	●	♦
HTML file can be posted to internet, intranet, emailed		■	●	♦
HTML files can be opened and modified further using Microsoft Office products, such as Word, Excel, PowerPoint		■	●	♦
Customizable report content		■	●	♦
Data plots, supplemental information, and digital images can be included in reports		■	●	♦
Report template types:	• Blank • Last measurement • Exception • Overdue / noncompliant • Pending overdue / noncompliant • Compliance • Collection status • Route history / route statistics • Set statistics • Upload statistics • History • Inspection • Work notification • User defined	■	●	♦
Report templates allow quick and easy report configuration for use and reuse		■	●	♦
Alarm acknowledgment comments / notes		■	●	♦
Security and stability				
Supports definition of user profiles / roles		■	●	♦
Unlimited number of user profiles / roles		■	●	♦
Fully configurable user rights that allow you to read, view, and have full access		■	●	♦
Access rights can be restricted to specific hierarchy or allow multiple hierarchy access		■	●	♦
Point setup change log. Maintains a log of what was changed by whom and when. Preference setting determines if a reason message is required before allowed to make setup changes.		■	●	♦
Communication with on-line devices is supported by Windows services. Multiple services may be used to provide a high degree of security. Service requires no user login.		■	●	♦
Communication services are auto-restarted in case of failures		■	●	♦
DAD services system – down e-mail alerts		■	●	♦
Templates and wizards				
Statistical alarm wizards with outlier removal use historical data to help refine overall alarms		■	●	♦
Hierarchy template wizard allows for rapid hierarchy creation and machine templates for reuse		■	●	♦
Report template allows for the custom configuration of reports and report template for reuse and sharing		■	●	♦
Scheduler wizard helps configure and preset recurring activities such as report generation, data archival and task reminders		■	●	♦

SKF

Hardware requirements

Stand alone configuration
- Running SKF @ptitude Analyst / SKF @ptitude Inspector
- Running Oracle or Microsoft SQL Server database management system
- Storing data

Configuration		Minimum requirements	Recommended requirements
Operating system (Note 1)		Windows 7, Windows 8.1, or Windows 10	Windows 7, Windows 8.1, or Windows 10
Processor (Note 2)		Intel 2.0 GHz, 32 or 64-bit, or better	Intel Quad-core processor 64-bit
RAM		6 GB	8 GB or more
Disk space available for standalone computer (Note 3)		10 GB	30 GB or more
Database support (Notes 5 and 6)	Oracle	Version 11g	Version 12c
	Microsoft SQL Server	SQL Server 2008 R2 SP1	SQL Server 2014 SP1 or SQL Server 2016 (SQL Server recommends NTFS file format)

USB port for SKF Microlog / SKF Microlog Inspector transfer and serial port for SKF Multilog IMx configuration.

Network configuration – Database server
- Running Oracle or Microsoft SQL Server database management system
- Storing data

Network configuration for up to 35 Clients and one database. Installations of 50 Clients or greater will require an on-site assessment by our Field Service Engineers.

Configuration		Minimum requirements	Recommended requirements
Operating system		Windows 2008 Server	Windows 2008 Server or Windows 2012 R2 SKF @ptitude Analyst V9 MR2 has also been compatibility tested with Windows Server 2016 and Windows Server 2019. To gain updated information on the compatibility of different SQL Server versions with Windows Server 2016 and Windows Server 2019, please visit Microsoft forums like https://support.microsoft.com/en-us/help/2681562/using-sql-server-in-windows-8-and-later-versions-of-windows-operating
Processor (Note 2)		Intel 2.0 GHz, 32 or 64-bit, or better	Intel Quad-Core I7 Processor 64-bit
RAM		8 GB	12 GB or more
Quantity of hard drives (Note 4)		3	5
Disk space available (Note 3)		10 GB	30 GB or more
Database support (Note 5)	Oracle	Version 10g or 11g	Version 12c
	Microsoft SQL Server	SQL Server 2008 R2 SP1	SQL Server 2014 SP1 or SQL Server 2016 (SQL Server recommends NTFS file format)

Note 1
Windows 7 (32 or 64-bit) Professional or Ultimate Editions (please visit the Windows 7 and UAC compatibility matrix in skf.com/cm [*Windows 7 and UAC compatibility*]), Microsoft.NET Framework 3.5, 4.0, Windows 4.5 Installer and Windows Mobile Device Center 6.1.

Note 2
These requirements apply to SKF @ptitude Analyst complete with database management system. Other applications running simultaneously may degrade performance. Hyper-threading should be disabled in some systems.

Note 3
These requirements ONLY apply to SKF @ptitude Analyst complete with database management system. Additional storage disk space is required for data.

Note 4
The major benefits of spreading Oracle across three or more hard disks at the server is the improved speed, and improved recoverability of a previously archived database. The recommended five disk configuration provides the optimal protection for backup, recovery, indexing, and speed. Disk / file configuration should ONLY be handled by a SKF Field Service Technician certified on SKF @ptitude Analyst. If using RAID, the combination of RAID 0 and RAID 1 is recommended over RAID 5.

Note 5
In a Network Client configuration you must install Oracle 32-bit Client Software. If using Windows 7 (32 or 64-bit), then Oracle 11g must be installed.

Note 6
Running SKF Multilog On-line System devices to monitor transient events requires full database support. Express versions will not support performance requirements for the system.

Notice
If running other system configurations, please contact your local SKF Representative to inquire about compatibility.

Hardware requirements

Network configuration – Network Client
- Running SKF @ptitude Analyst / SKF @ptitude Inspector
- Running database client software

Network configuration for up to 35 Clients and one database. Installations of 50 Clients or greater will require an on-site assessment by our Field Service Engineers.

Configuration		Minimum requirements	Recommended requirements
Operating system *(Note 1)*		Windows 7, Windows 8.1, or Windows 10	Windows 7, Windows 8.1, or Windows 10
Processor *(Note 2)*		Intel 2.0 GHz, 32 or 64-bit, or better	Intel Quad-Core 64-bit
RAM		6.0 GB	8.0 GB or more
Disk space available for each network client		10 GB	30 GB or more
Database support *(Note 5)*	*Oracle*	Version 11g	Version 12c
	Microsoft SQL Server	SQL Server 2008 R2 SP1	SQL Server 2014 SP1 or SQL Server 2016 (SQL Server recommends NTFS file format)

USB port for SKF Microlog / SKF Microlog Inspector transfer and serial port for SKF Multilog IMx configuration.

Network configuration – Application server
- Running SKF @ptitude Analyst / SKF @ptitude Inspector

Network configuration for up to 35 Clients and one database. Installations of 50 Clients or greater will require an on-site assessment by our Field Service Engineers.

Configuration	Minimum requirements	Recommended requirements
Operating system *(Note 1)*	Windows 7 **OR** Windows 2008 Server	Windows 7, Windows 8.1, Windows 10, **OR** Windows 2008 Server, Windows 2012 R2 SKF @ptitude Analyst V9 MR2 has also been compatability tested with Windows Server 2016 and Windows Server 2019.
Processor	Intel 2.0 GHz, 32 or 64-bit, or better	Intel Core 2 Duo, 3.0 GHz, 32 or 64-bit, or better
RAM	8.0 GB	12 GB or more
Disk space available	10 GB	30 GB or more

Note 1
Windows 7 (32 or 64-bit) Professional or Ultimate Editions (please visit the Windows 7 and UAC compatibility matrix in skf.com/cm [*Windows 7 and UAC compatibility*]), Microsoft.NET Framework 3.5, 4.0, Windows 4.5 Installer and Windows Mobile Device Center 6.1.

Note 2
These requirements apply to SKF @ptitude Analyst complete with database management system. Other applications running simultaneously may degrade performance. Hyper-threading should be disabled in some systems.

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These requirements ONLY apply to SKF @ptitude Analyst complete with database management system. Additional storage disk space is required for data.

Note 4
The major benefits of spreading Oracle across three or more hard disks at the server is the improved speed, and improved recoverability of a previously archived database. The recommended five disk configuration provides the optimal protection for backup, recovery, indexing, and speed. Disk / file configuration should ONLY be handled by a SKF Field Service Technician certified on SKF @ptitude Analyst. If using RAID, the combination of RAID 0 and RAID 1 is recommended over RAID 5.

Note 5
In a Network Client configuration you must install Oracle 32-bit Client Software. If using Windows 7 (32 or 64-bit), then Oracle 11g must be installed.

Note 6
Running SKF Multilog On-line System devices to monitor transient events requires full database support. Express versions will not meet performance requirements for the system.

Notice
If running other system configurations, please contact your local SKF Representative to inquire about compatibility.

Ordering information

- SKF @ptitude Analyst software for SKF Microlog Analyzer, SKF Microlog Inspector, and SKF Multilog Systems (DMx, WMx, IMx, TMU, CMU) [CMSW 7400]
- SKF @ptitude Analyst for SKF Microlog Analyzer and SKF Multilog On-line System WMx [CMSW 7300]
- SKF @ptitude Inspector [CMSW 7200]

All models are available in Single and Multi-client configurations. Please contact your local SKF sales representative for Multi-client model information.

Installation and training

Installation and training is available through your local SKF sales representative.

SKF Product Support Plans

SKF is committed to customer support excellence. The goal of a SKF Product Support Plan (PSP) is to help you increase and optimize your return on investment in SKF products. This includes extending the life of their product and facilitating the success of their program. This allows you to compete in your industry, save downtime and be on the cutting edge of technology.

SKF Product Support Plans give you full confidence that your equipment is maintained to the SKF quality standards. Condition monitoring products are an investment and there is no better way to protect your investment for years than with a SKF Product Support Plan.

Greater peace of mind

- Unlimited telephone technical support
- E-mail/web-based technical support
- Live chat technical support
- Software maintenance releases
- Software updates
- Remote Workstation access
- SKF Knowledge Centre subscription
- SKF Technical Support Self-Help Portal access
- Live webinar training notifications
- Web-based e-Learning courses