

Emonitor Odyssey™



Emonitor Odyssey™ is the next generation of Entek's complete Machinery Information Systems. This system features integration of the widest range of condition monitoring technologies and full 32-bit Microsoft® Windows® software architecture.

Emonitor Odyssey bridges the gap between portable monitoring systems and on-line Condition Monitoring. Integration of machinery monitoring technologies provides you with a complete picture of the health of your plant machinery. Vibration data from portable instruments, on-line intermittent monitoring devices (surveillance) and continuous protection monitors (API 670) are all integrated in a common database. Oil analysis data, motor current analysis, infrared thermographic images and process data can also be integrated into this same database. Results from other applications can be displayed using the unique Active-X display pane.

The 32-bit software architecture ensures growth and advancement of your reliability program through support of Microsoft's latest operating system advances. Features like better memory management, multitasking, and multithreading optimize performance and keep you ready for the future.

Emonitor Odyssey is available in a range of configurations from single user to full multi-user installations. It may be used with portable data collectors or permanently installed surveillance or continuous monitoring systems.

BENEFITS

Full Networking Capability.

Increasing numbers of Machinery Information Systems users are turning to Local Area Networks (LANs) as a way of making their programs more effective. Sharing a single database makes it possible to carry out routine data collection tasks at the same time as advanced fault diagnostics.

The LAN is also an effective medium for transfer of data from on-line instruments to the database, any number of On-line Load/Unload stations (nodes) may be connected. Remote sites are tied into the network via Load/Unload stations and accessed using modems or the internet.

Effective Internal Communications.

Networking allows you to easily communicate with other departments within your organization, helping you integrate maintenance and operational activities for increased productivity. In larger installations, the use of Wide Area Networks (WANs) allows this communication to easily take place between several different geographical sites.

Integrated Measurements Technologies.

As the complete source for condition monitoring information, Emonitor Odyssey integrates vibration data from portable instruments, on-line systems, oil, process and thermographic data into a common database. Emonitor Odyssey consolidates critical machinery information for all your plant machinery and allows you to access the information through a common user interface. Complete integration means that you can correlate different data types from different sources, e.g. vibration trends, spectrum, spectrum map, oil analysis trends, thermographic images, process and other automation data.

Open Systems Design.

EMONITOR Odyssey has been designed to meet the increasing demand for data sharing between systems and the need to communicate machinery condition and availability information enterprise wide. EMONITOR Odyssey is Machinery Information Management Open System Alliance (MIMOSA) certified and compliant. The Open Systems Architecture and software industry standards assure efficient integration with plant controls and information systems.



Plant Status at a Glance.

EMONITOR Odyssey features severity indicators that provide you with plant status information at a glance. Current status, including number of alarms and alarm severity, is shown in a hierarchy view.

The highest alarm severity is shown at all hierarchy levels for any underlying point. Problem areas are easily identified and isolated by expanding the hierarchy. The complete machinery and system alarm history is available through the Alarm Log and the Event Log. Direct access to diagnostic plots is provided from all of these panes.

Automated Diagnostics.

EMONITOR Odyssey Deluxe provides fast, accurate fault identification through a powerful array of diagnostic tools. By clicking on a single button, the user can label vibration spectrum plots with the source of the problem. Reports can be run automatically after data is acquired or manually. Reports can also identify the machines in alarm. EMONITOR Odyssey Classic can identify the frequencies exceeding those alarms, while Deluxe identifies the mechanical fault corresponding to the vibration peak.

**Rockwell
Automation**

Machinery Templates.

EMONITOR Odyssey offers fast, simple database setup. Unique machinery templates will completely change the way you think about database setup. By automating the setup process, templates put systems to work faster and make reliability programs more effective. Each template is a building block defining measurement locations and definitions, alarm levels, and storage intervals for specific pieces of equipment.

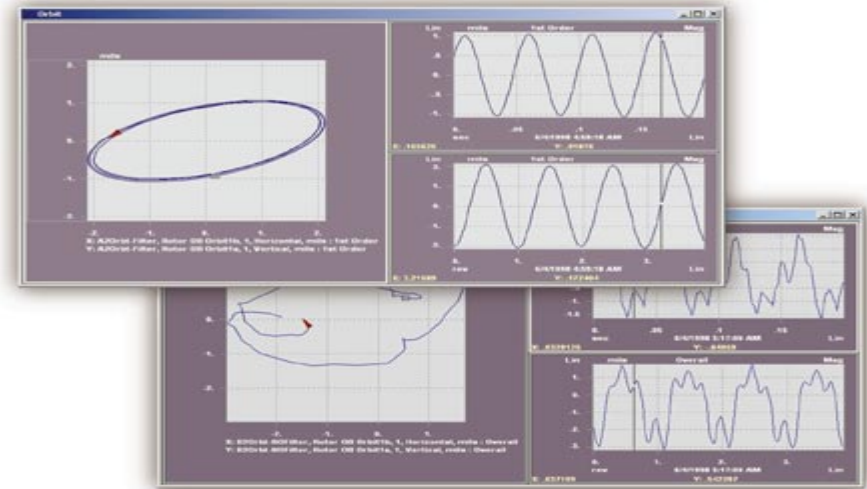
Multiple Alarm Definitions.

Well-defined alarms are one of the most important factors in the success of Machinery Reliability programs. Selecting the correct alarm or alarms to use with variable parameter type equipment (i.e. speed, load, paper grade) has never been an easy task primarily due to the fact that no one alarm ever fully satisfied all "states of operation" for this type of equipment. As the machine's variable changes (speed, load, etc...), the vibration characteristics also tend to change - in many cases so dramatically that the alarm levels that worked perfectly at the previous state have no relevance to the machine's "new state".

The multidimensional alarm capabilities of Emonitor Odyssey (up to 6 dimensions) help solve that problem. EMONITOR Odyssey provides the most powerful array of alarm definitions through a simple, automated setup function. Proper use of multiple alarms extend maintenance intervals without increasing risk, and minimizing false exceptions. Multiple alarms also act as an effective data filter that focuses your attention on machines with potential problems and assists in identifying the exact source of the problem.

Exception Based Data Storage.

The successful implementation of any Machinery Reliability program hinges on the ability to extract information from data. EMONITOR Odyssey employs advanced exception based data storage techniques to ensure that valuable machinery information is retained while other data is discarded. This is particularly important in an On-line Monitoring situation where potentially high storage rates can fill up the system with data in a relatively short time. The data storage scheme is optimized for each individual application by combining time, event, as well as a running average of collected data or tiered storage criteria.



Odyssey supports 2 channel measurements from portable and online systems

FEATURES

GENERAL FEATURES.

Contemporary software design based on the latest industry standards. With 32-bit support for Windows 95, Windows 98, Windows 2000 and Windows NT, EMONITOR Odyssey features a full CUA compliant, easy-to-use Windows interface using buttons, menus, and icons. EMONITOR Odyssey employs a SQL client server architecture for single-user, Local Area Network (LAN), and Wide Area Network (WAN) configurations, and offers multiple-server support (ORACLE™, MS SQL™, Centura SQL Base™ or others with compatible ODBC drivers) for compatibility with most plant information systems.

EMONITOR Odyssey allows the user to modify panes and windows for customized database views, plots and reports. Additionally, EMONITOR Odyssey offers MIMOSA certified file import and export capability for superior connectivity with other plant information systems.

DATABASE FEATURES.

EMONITOR Odyssey integrates data from a variety of condition monitoring technologies for more productive database management. EMONITOR Odyssey provides up to six-user named hierarchy levels and displays this hierarchy with icons and alarm severity indicators.

DATA COLLECTION FEATURES. Automated features reduce time and increase productivity in daily operations.

Portable Instruments.

Daily operations are graphically driven using EMONITOR Odyssey's load/unload icons, and EMONITOR Odyssey's automatic reports provide immediate feedback from collected data. EMONITOR Odyssey supports Entek's complete range of portable instruments, with 2 channel route and off-route mode, Order Normalized and Speed Referenced measurements, Downloadable Diagnostic Frequencies, and Remote Modem load/unload support, as well as other major manufacturers.

On-line Monitoring.

EMONITOR Odyssey's On-line module offers automated data collection. Data acquisition is schedule driven and requires no user intervention. The Manual Acquire function lets the user initiate data acquisition between scheduled storage intervals.

With optional Enlive feature in the Plantlink™ module, a user can select any channel to display on your work station for live-mode monitoring of Spectra, Time Waveform, Trends, Spectral Maps and Polar Plots.

LIST FEATURES.

Emonitor Odyssey lists are a powerful tool for optimizing data collection, plotting and reporting. EMONITOR Odyssey builds lists through interactive tagging on the hierarchy view, or automatic selection from the database. Recall list on condition can provide prioritized lists for analysis and follow-up.

PLOTTING FEATURES.

The full-range of EMONITOR Odyssey plots provides you with the most complete tools for machinery analysis. These plots feature flexible and interactive plot controls including: rubber band zoom; grids; autoscaling; linear, log or decibel Y scaling; linear or log X scaling; multiple cursor types; normalized trends; average trends; bar graph format; multiple unit plots; orbit plots; shaft centerline plots; bearing frequency access on Spectrum plots and more.

REPORT FEATURES.

Comprehensive reports provide fast and effective machinery information. Emonitor Odyssey offers over thirty standard reports as well as a custom report generator (in Classic and Deluxe). Plots of acquired data may be embedded into Emonitor Odyssey reports for a complete view of the machine's condition. These reports can be saved as RTF files for further customization within your word processor or for attachment to e-mails. All Emonitor Odyssey reports are interactive in the Preview mode. Clicking on a measurement in the report will take you to that point in the database or populate any plot window open with the relevant data for that point.

ALARM FEATURES.

Multidimensional or State based alarms add to EMONITOR Odyssey's already powerful statistically based alarms by allowing parameters such as Position, Direction, RPM, Load, Paper Weight or any process parameter that can be acquired by hand, instrument, DCS, or plant historian, into your alarm calculations. Variable state equipment can now be automatically compensated for, with these custom alarm types. With the new Grubbs and MAD methods for automatically excluding bad data from your statistical alarm calculations the ability to create very accurate and specific alarms has been made a snap. Just tag the points to use and run either method – the software will evaluate and exclude all the outliers so they don't skew your alarm calculations.

PRODUCT SUMMARIES

EMONITOR Odyssey Classic

The EMONITOR Odyssey Classic module adds advanced alarm detection capabilities to your machinery reliability system. The Classic module provides the user with a complete set of tools to automatically build meaningful frequency band and full spectrum alarms, and to use these alarms for the most thorough and rapid detection of changes in machinery

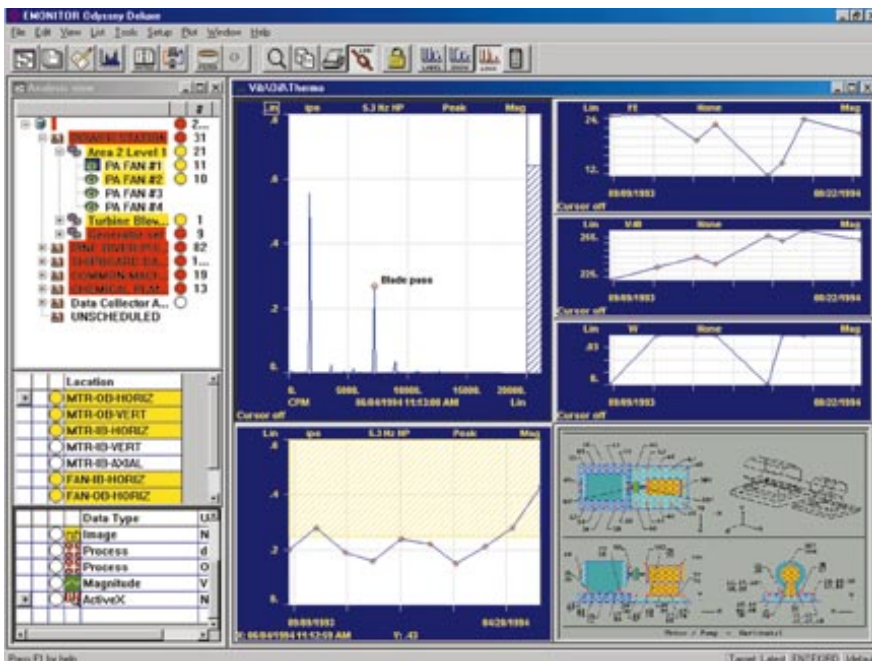
vibration. The key to this alarm approach is the EMONITOR Odyssey alarm severity. This module allows you to define band and spectrum alarms for up to ten alarm severities. These alarms can be generated automatically based on a comparison to baseline readings, percentage change from previous readings, or statistical analysis. Once constructed, these alarms can be used automatically as new data is acquired to quickly identify even the most subtle change in vibration. Armed with this information, your machinery reliability team will have advance warning of developing machinery problems. This gives you the opportunity to make the most cost-effective maintenance decisions. Band and spectrum alarms offer the added benefit of identifying the specific frequencies that have increased. This information is the fundamental knowledge needed to identify the mechanical cause of the machinery vibration, providing more key information to drive cost-savings decisions.

EMONITOR Odyssey Classic features:

- Automatic calculation of band or spectrum alarms
- Automatic comparison of acquired data to alarm limits to identify severity of machinery vibration
- Baseline, peak, percentage change and statistical calculation methods
- Order normalized or enveloped (constant percentage or bandwidth) alarms for optimum handling of variable speed machinery
- Reports and plots displaying acquired data, alarm limits and identification of alarm conditions
- Average Trend plot by list
- Normalized Trend Plot type
- Bar Graph Trend Plot type
- Multi Unit Single Date Plot type
- Bearing database access from spectrum plot

EMONITOR Odyssey Deluxe

EMONITOR Odyssey Deluxe provides your machinery reliability team with the diagnostic tools needed to make the most informed machinery maintenance decisions. Utilizing the pinpoint alarm recognition tools of EMONITOR Odyssey Classic, the Deluxe module identifies the most likely mechanical cause of the machine vibration. Deluxe uses a



The full range of EMONITOR Odyssey plots provides you with the most complete tools for machinery analysis.

	BASIC	CLASSIC	DELUXE
General Features			
Windows 32 bit design for Windows 95, Windows 98, and Windows NT 4.0	■	■	■
SQL Client Server Architecture for Single-user, LAN, and WAN configurations	■	■	■
Multiple Server Support (ORACLE, Centura, ODBC, MS SQL)	■	■	■
Full Windows user interface using buttons, menus, and icons	■	■	■
Full help system and on-line tutorial	■	■	■
Login with three security levels	■	■	■
Linking of database list and plot views for easy program navigation	■	■	■
Customizable panes and windows for user defined views of database and plots	■	■	■
Support for complete range of Entek's portable instruments and other major manufacturers.	■	■	■
Support for Entek's on-line surveillance instruments (Enwatch™/VIMP/IMP) and machine protection monitors (6600 series)	■	■	■
MIMOSA File Import and Export Capability	■	■	■
Double click and multi-select support in all dialog boxes	■	■	■
Alpha-numeric sorting in all drop down list	■	■	■
Database Features			
Up to six user named hierarchy levels	■	■	■
Hierarchy view with icons and alarm severity indicators	■	■	■
Exception and System event history logs (on-line module)	■	■	■
Multiple views of hierarchy, locations, measurements, alarms, data history, frequency setups, and diagnostic frequencies	■	■	■
Collection specs, storage specs, filter specs, and categories for fast database setup	■	■	■
Exception based data storage, including one or more of the following storage specifications: Time-based (On-line module only), Always, On Alarm (Spectrum envelope alarm), On Magnitude Alarm, On Alarm + Magnitude Alarm, On % change from previous reading	■	■	■
Tiered data storage (FIFO buffers) with the number of tiers, buffer size, and data storage rate configurable by the user.	■	■	■
Sorted Edit, Replace, and Delete functions	■	■	■
User definable units	■	■	■
User definable inspection codes	■	■	■
Hierarchy notepad	■	■	■
Hierarchy Images	■	■	■
Lubricant Library for storage of lubricant data, creation of alarm limits and categories	■	■	■
Data Collection Features			
Graphic-driven daily operation through load/unload icons	■	■	■
Automatic reporting of collected data after unload	■	■	■
Automatic data collection (On-line module)	■	■	■
2 channel portable and on-line support	■	■	■
List Features			
Interactive tagging from hierarchy view to build list	■	■	■
Sorting of database to create lists for data collection, reporting, and plotting	■	■	■
Storage of sort conditions	■	■	■
Arrange list in any order	■	■	■
Recall List on conditions	■	■	■
List scheduling for data collection on calendar or time basis	■	■	■
List grouping for MultiChannel and Triax support	■	■	■
Sorting by magnitude alarm severity	■	■	■
Sorting by band alarm severity	■	■	■
Sorting by spectrum alarm severity	■	■	■
Plotting Features			
Trend	■	■	■
Averaged Trend	■	■	■
Spectrum	■	■	■
Spectrum Map	■	■	■
Orbit Plot	■	■	■
Shaft Centerline Plot	■	■	■

	BASIC	CLASSIC	DELUXE
Plotting Features Continued			
Color coded data overlay of Spectrum and trend data	■	■	■
Information pain showing overlay legend	■	■	■
Time Waveform	■	■	■
Storage of images as data (i.e. Infrared images)	■	■	■
Frequency Trend	■	■	■
Polar Plot of Magnitude/Phase	■	■	■
X versus Y Plot	■	■	■
Spectrum Difference/Ratio	■	■	■
Active-X Object Support	■	■	■
Interactive plot controls including rubber band zoom; grids; autoscaling; linear, log, or decibel Y scaling; linear or log X scaling; and multiple cursor types	■	■	■
Spectrum plot access to bearing database	■	■	■
Hertz, CPM, or Orders Scaling	■	■	■
Integration and differentiation of spectrum	■	■	■
Trend projection	■	■	■
Band Trend		■	■
Spectrum/Band Alarm		■	■
Spectrum/Narrow band Alarms		■	■
Diagnosis of Cursor Frequencies			■
Diagnosis of Alarm Frequencies			■
Report Features			
Over thirty standard reports	■	■	■
Printing of report to screen, printer or file	■	■	■
Integrated plots in reports	■	■	■
Interactive report previews	■	■	■
Magnitude exception reports	■	■	■
Custom report generator		■	■
Band exception reports		■	■
Spectrum exception reports		■	■
Diagnostic reports			■
Alarm Features			
Unlimited number of alarms per measurement	■	■	■
Eleven levels of alarm severity - user configurable	■	■	■
Magnitude Alarms based on constant, category constant, in window, statistical, statistical indicator, peak, baseline, percentage change, or rate of change	■	■	■
Sorting of data based on alarm severity	■	■	■
Multidimensional/State based Statistical alarms	■	■	■
Grubs and MAD method exclusion of Outliers	■	■	■
Polar plot alarms based on Pie shape, Level Only, Phase Only, Relative to last magnitude measurement (not phase)	■	■	■
Band Alarms based on category constant, in window, peak, statistical, statistical indicator, baseline, percent change, or rate of change		■	■
Spectrum Alarms based on peak, statistical, statistical indicator, baseline, or constant		■	■
Spectrum Alarms enveloped at a constant bandwidth or percentage bandwidth		■	■
Min and Max Band Alarms Threshold		■	■
Visible Frequency Band alarms on Band Frequency Trend plot		■	■
Diagnostic Features			
Cross Channel Phase	■	■	■
2 Channel route and off route collection support	■	■	■
Time Waveform DeltaX Frequency cursor	■	■	■
User input and storage of diagnostic frequency items			■
Frequency calculation methods, constants, multiplication, division, ratios, addition, subtraction, harmonics, sidebands, belts, gearbox, planetary gearbox, bearings, or motors			■
Speed references from manual entry, setup RPM, measured RPM, current RPM stored with spectrum, or RPM extracted from spectrum			■
Bearing database containing bearings from 17 manufacturers including Barden, Cooper, FAG, Fafnir, Gamet, Link-Belt, MRC, NTN, SKF, Timken, and Torrington			■
Labeling of all diagnostic frequencies on plots			■
Labeling of band or spectrum alarm frequencies on plots			■
Identification of frequencies in reports			■

description of the machinery and its components to calculate a full set of diagnostic frequencies. Automatic alarm reports can be easily extended to include diagnosis of any alarm frequencies giving you the capability to quickly analyze large volumes of acquired data.

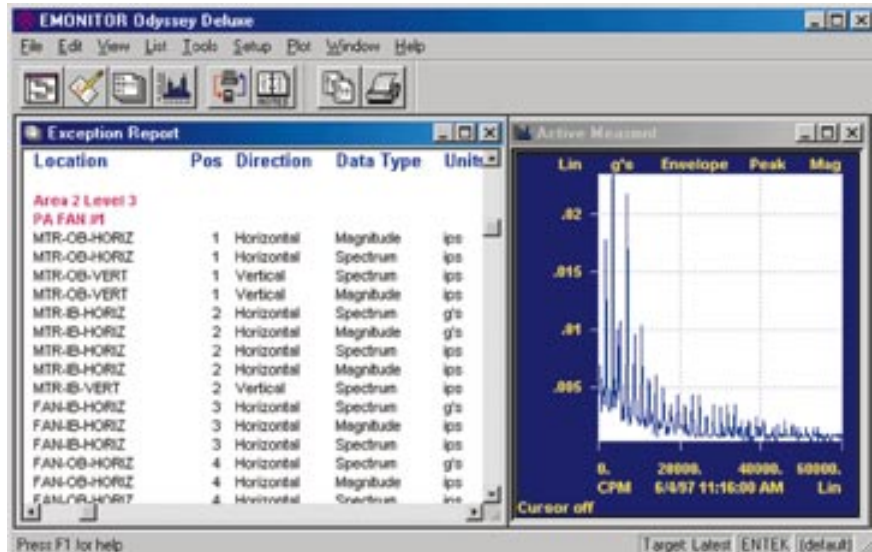
EMONITOR Odyssey Deluxe produces this diagnostic information utilizing a model of the plant machinery. This module includes tools to calculate the characteristic frequencies of machinery components including shaft speeds, bearing frequencies, gearboxes, motors, fans, pumps and other plant machinery. Variable speed machinery is readily handled because all diagnostic frequencies are referenced to the machine running speed and actual running speeds are used at the time of diagnosis. Variable speed... Variable "State" equipment has never been so easy to handle.

EMONITOR Odyssey Deluxe includes all Classic features as standard as well as:

- Automatic identification of mechanical defect frequencies presented in acquired vibration data
- Five methods of identifying machinery speed for accurate calculation of defect frequencies for variable speed machinery
- Bearing database with information from 17 manufacturers, and the ability for user to add more.
- Calculation of defect frequencies including rotating speeds, bearings, shafts, gears, belts, harmonics, sidebands, and motors
- Automatic linear to rotational speed conversions for rolling or continuous web processes
- Dynamic Speed reference column
- Diagnostic Frequency download to Entek Data collectors (that support this feature)

EMONITOR Odyssey On-line

EMONITOR Odyssey's On-line module bridges the gap between portable monitoring systems and On-line Condition Monitoring. EMONITOR Odyssey offers on-line Condition Monitoring of both your semi-critical and critical machines. Systems are scalable and ideally suited for monitoring of machines distributed throughout the plant, or plants, taking advantage of



Using interactive reports Odyssey makes viewing data in alarm as easy as a mouse click.

EMONITOR Odyssey's open architecture full networking capabilities, and ethernet enabled Enwatch device.

Monitoring of Semi-critical Machines.

EMONITOR Odyssey is a cost effective solution for monitoring of the semi-critical machines in your plant. When used in conjunction with the Enwatch™ series of data acquisition/processing instruments, it offers a powerful solution

to sequential monitoring of machines distributed around the plant. The data collection specification and schedule is user definable. Both dynamic (vibration) and static (process) measurement types are supported.

The following data types are returned from (Enwatch):

- Parameter trends
- Time waveforms
- Spectra
- .g/SE
- Order data (Amplitude and Phase)
- Alarm information

Monitoring of Critical and High Speed Machines.

Continuous monitoring systems are used to monitor and protect critical and high speed machines. In the past, these systems have been either stand alone or connected to a

dedicated condition monitoring computer. EMONITOR Odyssey combines your portable, surveillance, and continuous monitoring data in one system. Entek 6600 series machine protection monitors (API 670) link to EMONITOR Odyssey via a standard Serial/ Modbus interface.

Available information from the monitors include:

- Alarm/ System status
- Trends (most current 30 minutes)
- Current Spectrum
- Current vectors (1X, 2X, 3X amplitude and phase)
- Pre- Trip trend (the most current 30 minute trend at the time of trip)
- Trip spectrum (the most current spectrum at the time of trip)

Both dynamic (vibration) and static (process) measurement types are supported. EMONITOR Odyssey enables you to configure your machine protection monitors (DSP version) remotely.

The combination of all this power, and information into a user friendly Windows environment is what makes EMONITOR Odyssey the best condition monitoring program in its class on the market today.

Reach us now at www.rockwellautomation.com or www.entek.com

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Publication ENSOF-TD201B-EN-P – May 2001

