

Tx Monitor



User Manual

Version 1.1

For further support or enquiries contact:



support@txmonitor.com



+61 2 4946 2090

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ABOUT TX MONITOR

Tx Monitor is an innovative “whole of life” asset management database for transformer maintainers and owners.

Tx Monitor permits the following:

- archiving of discrete maintenance and monitoring data against individual assets,
- transformer knowledge management capabilities,
- easy graphing capability for analysis of condition monitoring data,
- benchmarking of transformers, company or site wide, by;
 - dissolved gases
 - degree of polymerisation
 - remnant life
- priority listings for maintenance
- ability to extend the asset management database to include bushings, circuit breakers, VTs, CTs and switchboards.

Utilising web based technology, Tx Monitor can permit timely peer review of all inspection, test and audit data, anytime, anywhere and becomes a conduit of specialist support directly into your business.



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☎ +61 2 4946 2090

DISCLAIMER

The machinemonitor® product *Tx Monitor* receives and stores transformer design, operational, maintenance and condition monitoring data. This data undergoes a process of peer review and aspects of transformer condition are made available for the asset owner to view.

machinemonitor® cannot be held liable for any representations through the *Tx Monitor* product that are affected by any matter outside the control of machinemonitor®, including, but not limited to:

- a failure from design or manufacturing faults in the initial manufacture of the transformer;
- a failure from design or manufacturing faults in any repairs, maintenance or modifications to the transformer;
- a failure resulting from the operation of the transformer other than in accordance with the manufacturer's recommendations;
- a failure resulting from the failure to comply strictly with any recommendations made by machinemonitor®; or
- a failure resulting from the use of the operational and machine data collected by machinemonitor® for a purpose other than for its intended purpose.

Note: Tx Monitor Disclaimer is available from every page of the website.

CONTENTS

GLOSSARY OF TERMS	1
<i>Dissolved Gas Analysis</i>	1
<i>Degree of Polymerisation</i>	1
<i>Furans</i>	1
<i>Partial Discharge</i>	1
<i>Corona</i>	1
<i>Gases</i>	1
GETTING STARTED	2
TX MONITOR NAVIGATION	3
Home.....	3
User Profile.....	3
Knowledge Monitor	3
Maintenance Monitor	3
Logout	3
HOME PAGE	4
Company/Site Summary.....	4
Satellite View	4
Transformer Qty (Site Subtotal)	5
Transformer Qty (Company Total).....	5
High Priority Tasks Outstanding.....	5
Upcoming Reminders	5
Tx Benchmark.....	6
<i>Degree of Polymerisation</i>	6
<i>Dissolved Gases</i>	7
<i>Estimated Remnant Life</i>	8
USER PROFILE	9
Change E-mail Address	9
Change Password	9
KNOWLEDGE MONITOR.....	10
Transformer Listing.....	10
Transformer Documents.....	11
<i>Transformer Data Sheet</i>	12
<i>Maintenance Task Due Reminder</i>	13

MAINTENANCE MONITOR.....14
Maintenance History..... 15
DP Graph 16
DGA Graph 17
 Gas Levels..... 17
 Deteriorated Paper Indicators..... 18
 Average Oil Quality..... 19
Maintenance Data.....20
LOGOUT21

GLOSSARY OF TERMS

DISSOLVED GAS ANALYSIS

Study of gases from transformers used to give an early indication of abnormal behaviour of transformer and may indicate appropriate action that may be taken on the equipment before it suffers great damage.

DEGREE OF POLYMERISATION

Degree of polymerisation (DP) shows the degradation of the paper insulation used in transformers by measuring the average number of glucose molecules contained in the cellulose chains.

FURANS

When the insulation materials within a transformer undergo degradation some of the products formed are derivatives of the compound furan. Furan is toxic and highly flammable.

PARTIAL DISCHARGE

Localised electrical discharge that only partially bridges the insulation between conductors and which can or cannot occur adjacent to a conductor.

CORONA

A form of partial discharge that occurs in gaseous media around conductors which are remote from solid or liquid insulation.

GASES

Hydrogen - Indication of low energy sparking (Partial Discharge, Corona)

Carbon Monoxide - Indication of overheated insulation paper (temperature range between 100-200 °C)

Carbon Dioxide - Indication of overheated insulation paper (temperature range between 100-200 °C)

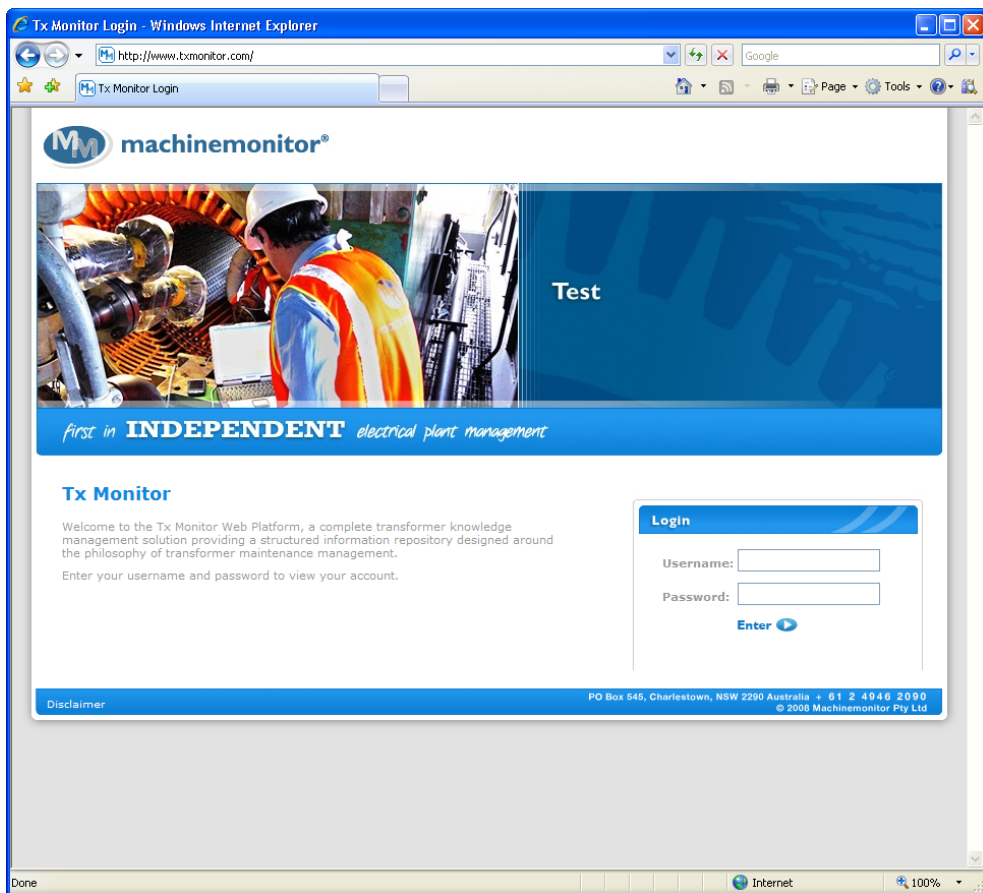
Methane - Indication of overheated oil (temperature range up to 150 °C)

Ethane - Indication of overheated oil (temperature range between 150-200 °C)

Ethylene - Indication of overheated oil (temperature range 200-300 °C)

Acetylene - Indication of high energy arcing or sparking.

GETTING STARTED



Open a web browser and navigate to <http://www.txmonitor.com>

Enter username.

Enter password.

Note: Your username and password will be provided to you by your Tx Monitor administrator.

Click the 'Enter' button.

TX MONITOR NAVIGATION



HOME

This is the main page and allows site selection.

USER PROFILE

This page allows you to update your account details.

KNOWLEDGE MONITOR

This page allows you to view information about your transformers.

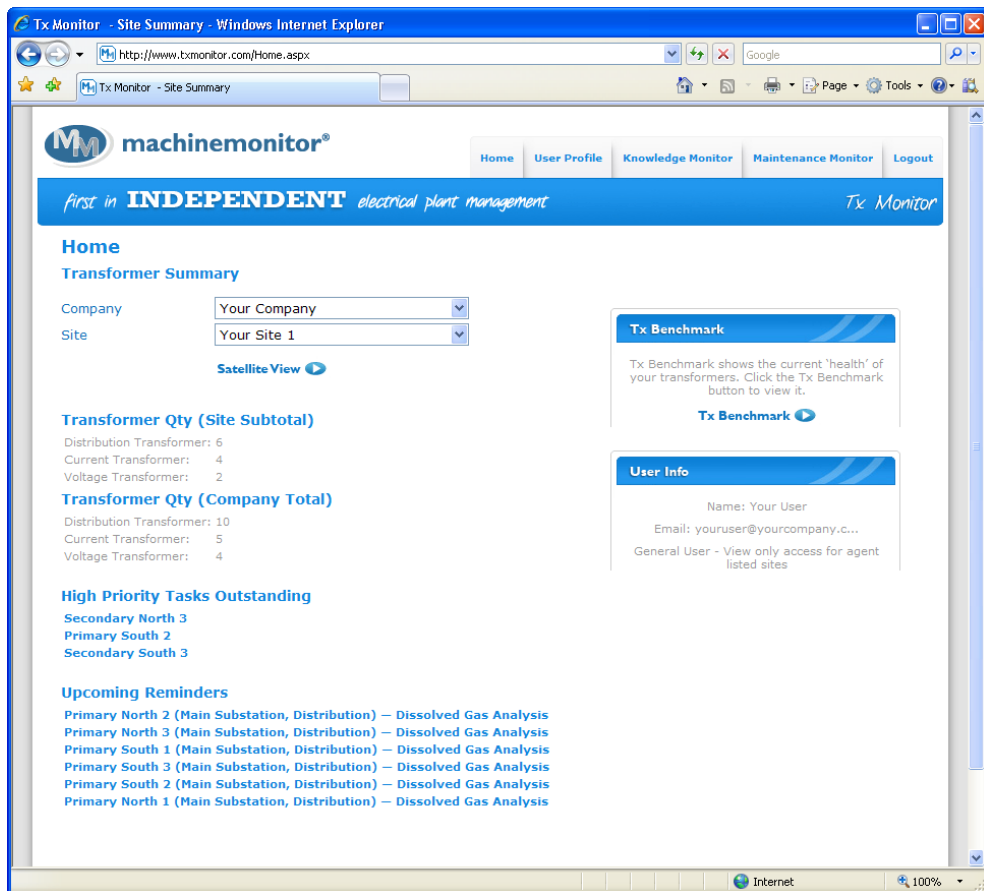
MAINTENANCE MONITOR

This page allows you to view specific maintenance information about your transformers.

LOGOUT

This page logs you out of Tx Monitor.

HOME PAGE



COMPANY/SITE SUMMARY

Select company from Company drop down list.

Select site from Site drop down list.

SATELLITE VIEW

Select company from Company drop down list.

Select site from Site drop down list.

Click on 'Satellite View' button to display an aerial image of transformer locations.

TRANSFORMER QTY (SITE SUBTOTAL)

A summary list of transformers in the Tx Monitor database is displayed for the selected site.

TRANSFORMER QTY (COMPANY TOTAL)

A summary list of transformers in the Tx Monitor database is displayed for the selected company.

HIGH PRIORITY TASKS OUTSTANDING

Select transformer from the High Priority Task list to navigate to the transformers Maintenance Monitor page.

Please see the Maintenance Monitor chapter for further information.

UPCOMING REMINDERS

Select transformer from the Upcoming Reminders list to navigate to the transformers Knowledge Monitor page.

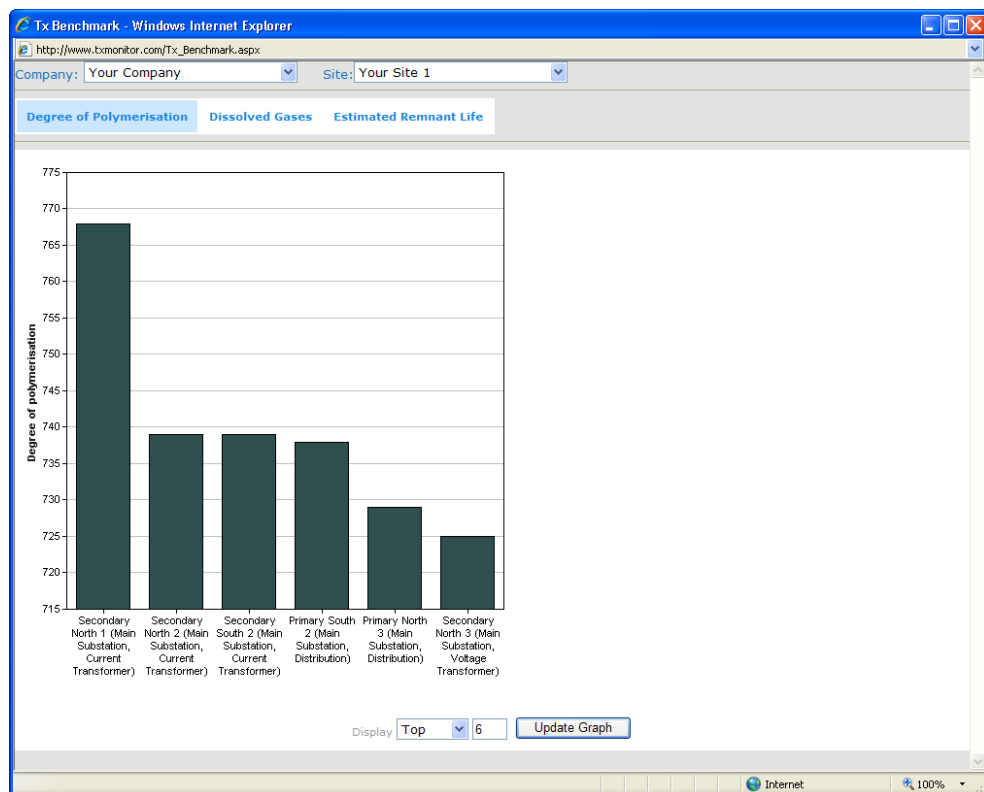
Please see the Knowledge Monitor chapter for further information.

TX BENCHMARK

Click on 'Tx Benchmark' button.

Note: Transformers can be benchmarked by Degree of Polymerisation, Dissolved Gases or Estimated Remnant Life.

DEGREE OF POLYMERISATION



Select company from Company drop down list.

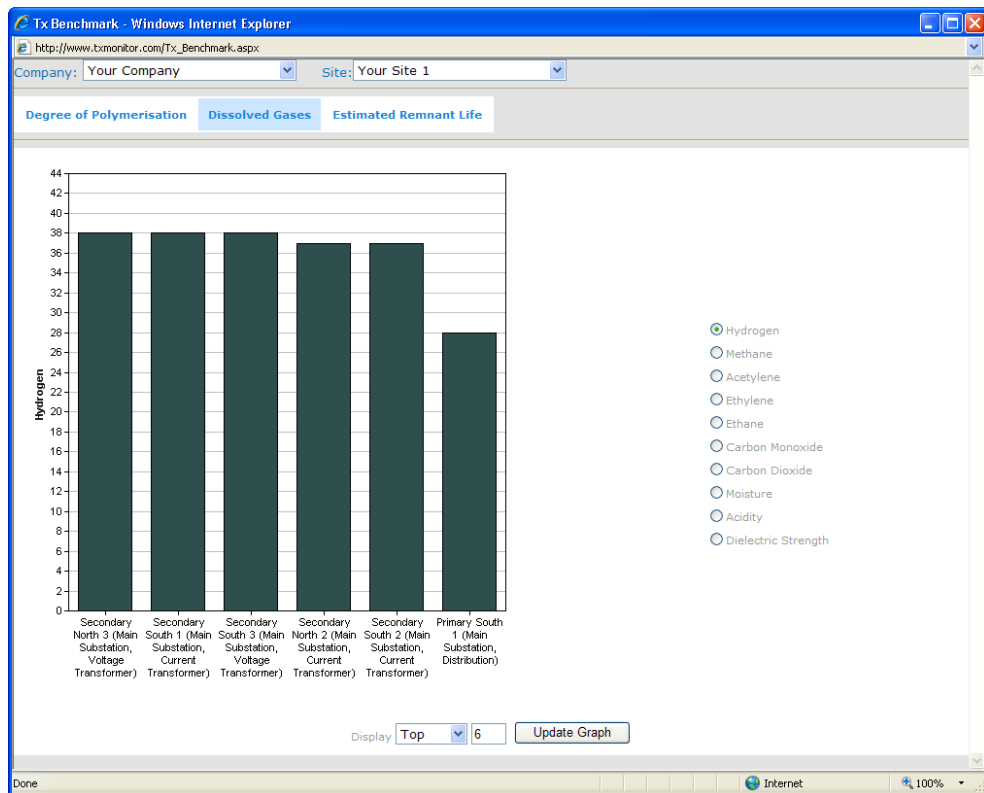
Select site from Site drop down list.

Select Top or Bottom ranked transformers from the Display drop down list.

Enter number of transformers to benchmark.

Click 'Update Graph' button.

DISSOLVED GASES



Select company from Company drop down list.

Select site from Site drop down list.

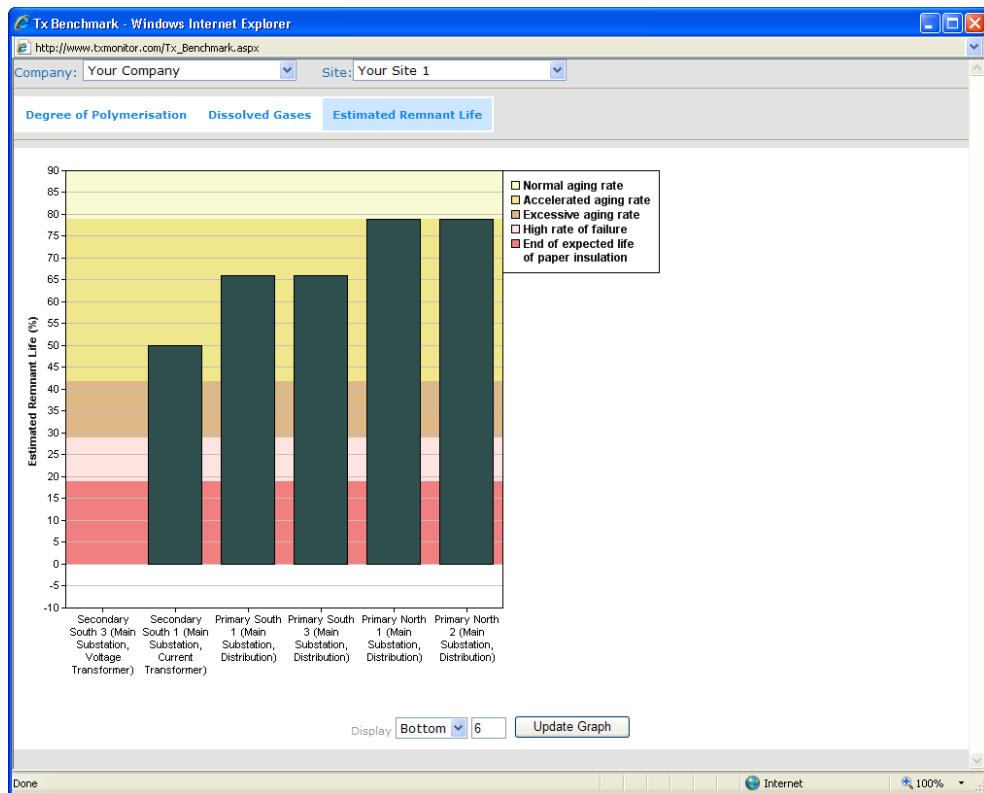
Select dissolved gas(es) from Dissolved Gases selection list.

Select Top or Bottom ranked transformers from the Display drop down list.

Enter number of transformers to benchmark.

Click 'Update Graph' button.

ESTIMATED REMNANT LIFE



Select company from Company drop down list.

Select site from Site drop down list.

Select Top or Bottom ranked transformers from the Display drop down list.

Enter number of transformers to benchmark.

Click 'Update Graph' button.

USER PROFILE

User Profile - Windows Internet Explorer
http://www.txmonitor.com/UserProfile.aspx

MM machinemonitor® Home User Profile Knowledge Monitor Maintenance Monitor Logout
first in **INDEPENDENT** electrical plant management Tx Monitor

User Profile

First Name	Your
Last Name	User
Username	youruser
E-mail Address	youruser@yourcompany.com
New E-mail Address	<input type="text"/>
Old Password	<input type="text"/>
New Password	<input type="text"/>
Re-type New Password	<input type="text"/>

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CHANGE E-MAIL ADDRESS

Enter new email address.

Click 'Update' button.

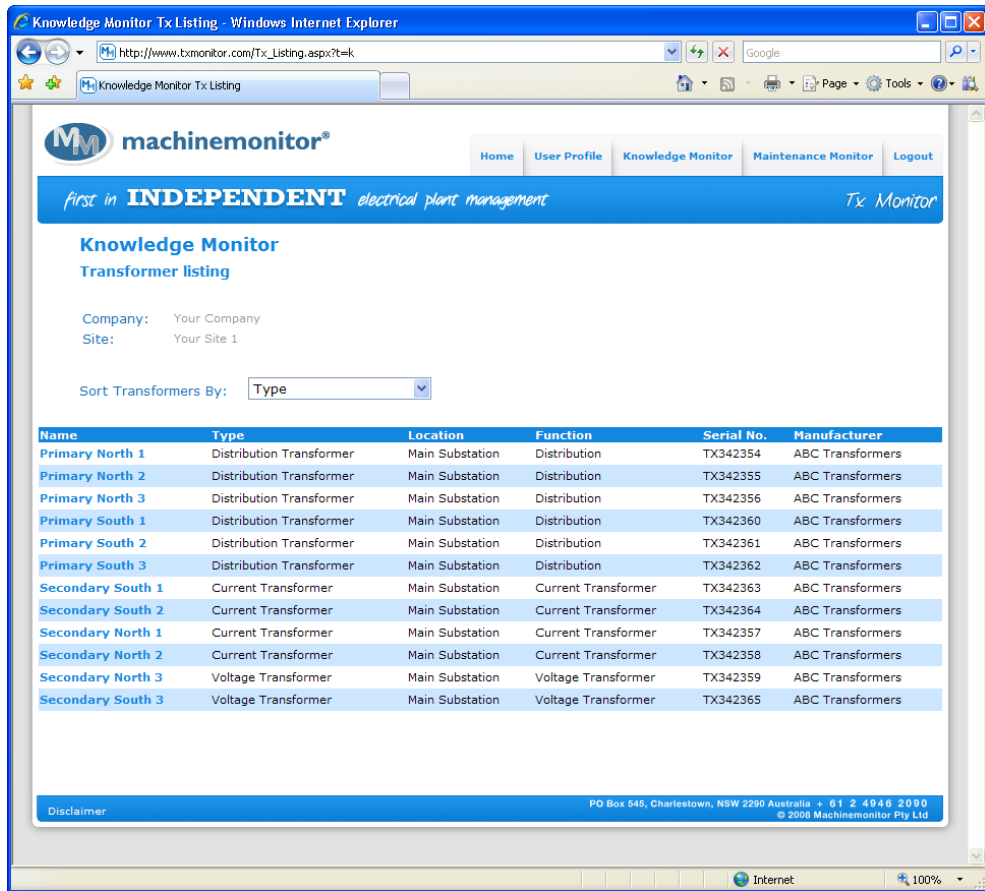
CHANGE PASSWORD

Enter old password.

Enter new password in both new password fields.

Click 'Update' button.

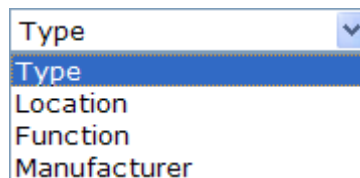
KNOWLEDGE MONITOR



TRANSFORMER LISTING

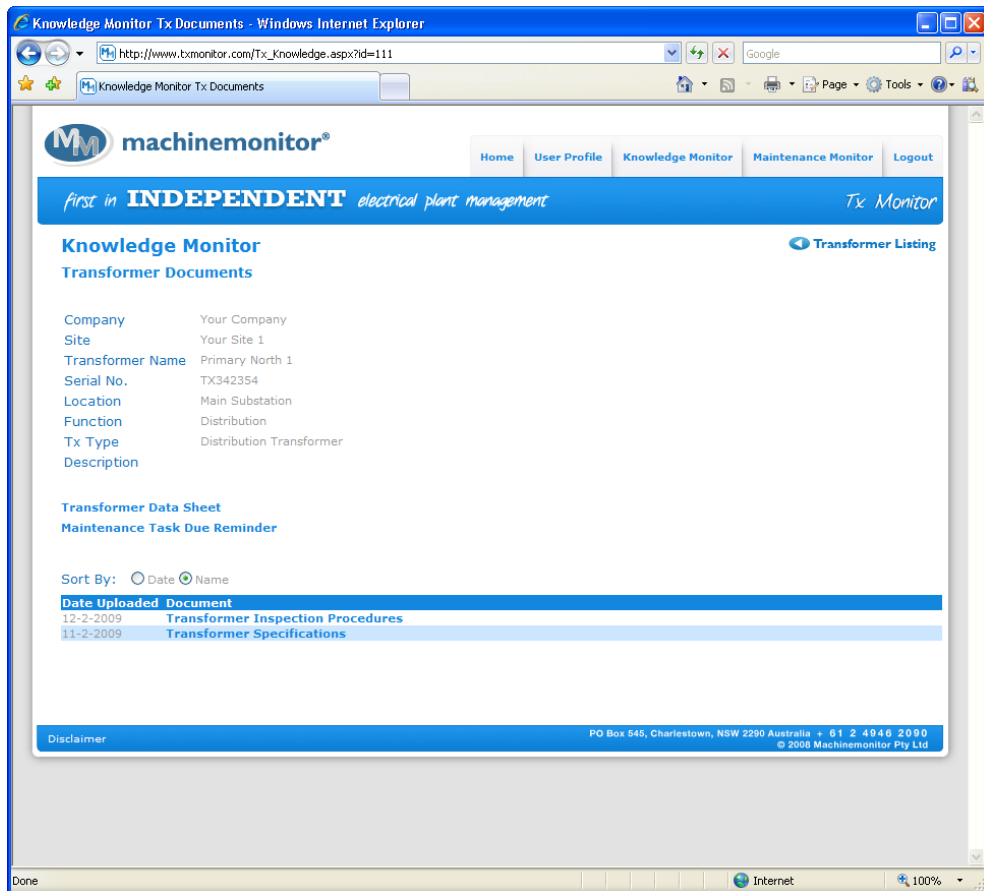
All transformers for the selected site are displayed in a list.

To change the way in which to display transformers, select from 'Sort Transformers By' drop down list.



Click on transformer to select.

TRANSFORMER DOCUMENTS



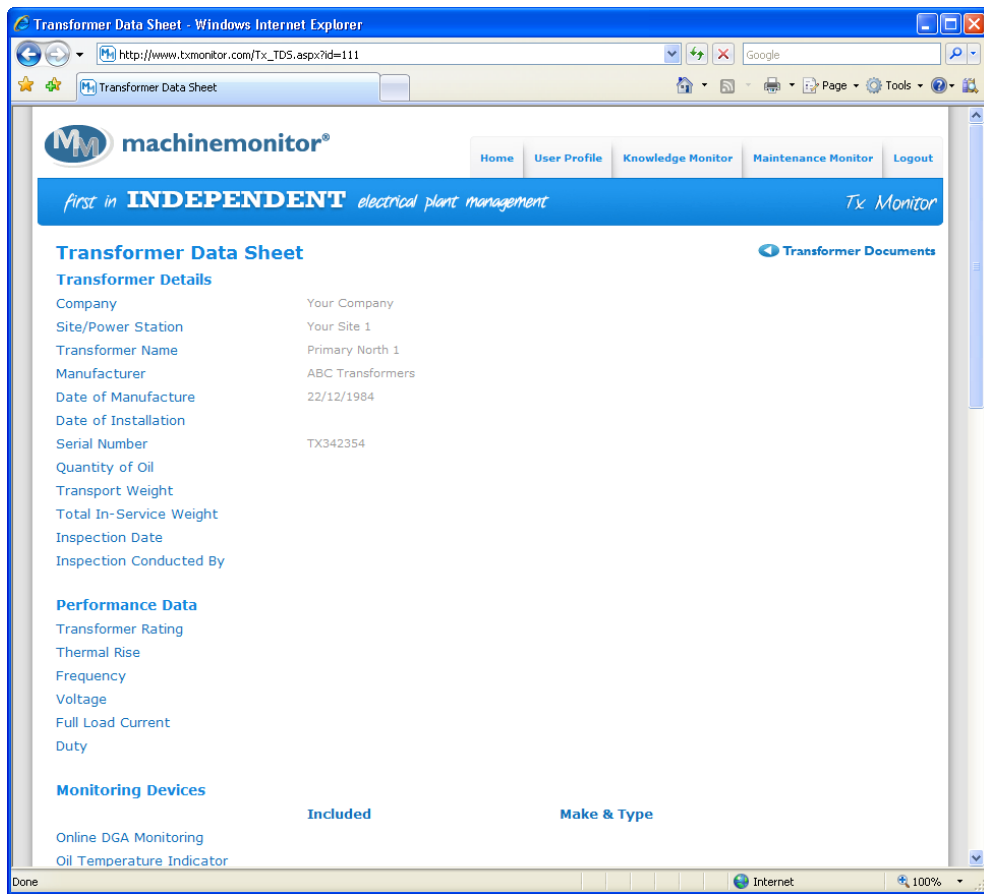
Note: From this page you can navigate to the Transformer Data Sheet and Maintenance Task Due Reminder pages by clicking the links.

A list of specific documents relating to the selected transformer will be displayed.

To change the way in which to display document list, select from 'Sort By' radio buttons to display by date or name.

Click on document to view/download document.

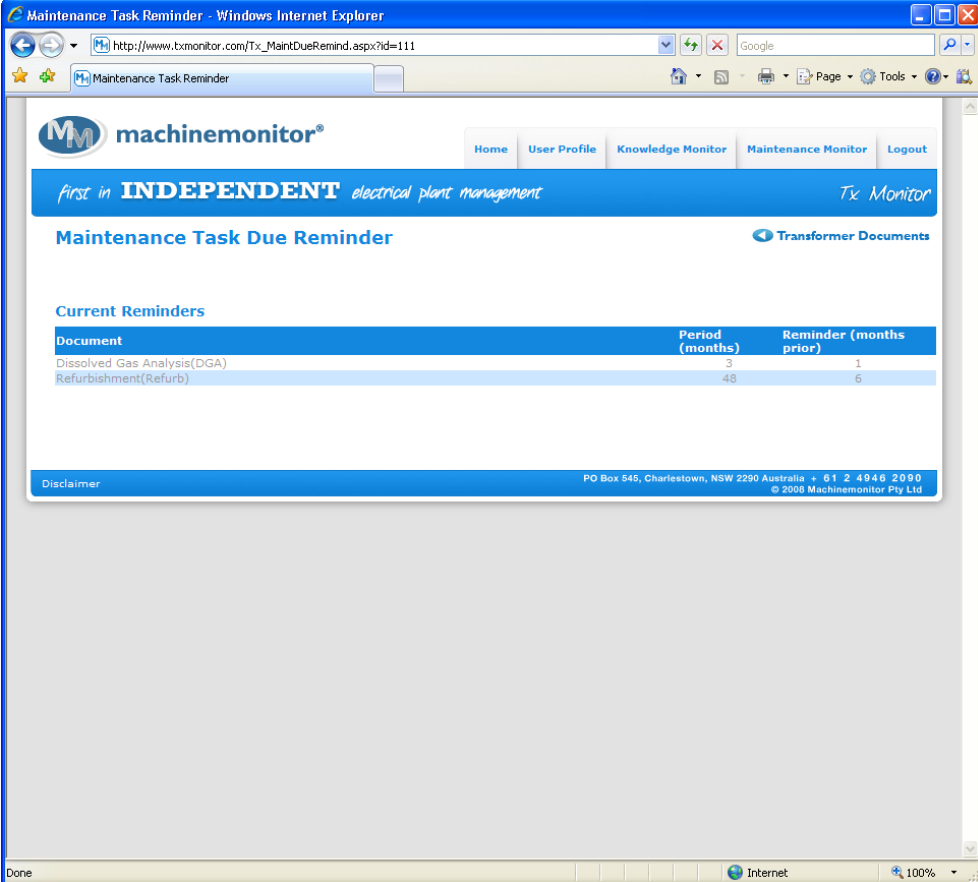
TRANSFORMER DATA SHEET



This page displays the Transformer Data Sheet.

Click 'Transformer Documents' button to return to the transformer documents page.

MAINTENANCE TASK DUE REMINDER



The screenshot shows a web browser window titled "Maintenance Task Reminder - Windows Internet Explorer". The address bar displays the URL "http://www.txmonitor.com/Tx_MaintDueRemind.aspx?id=111". The page content includes the Machinemonitor logo and the tagline "first in INDEPENDENT electrical plant management". Navigation links include "Home", "User Profile", "Knowledge Monitor", "Maintenance Monitor", and "Logout". The main heading is "Maintenance Task Due Reminder" with a "Transformer Documents" link. A table titled "Current Reminders" lists the following data:

Document	Period (months)	Reminder (months prior)
Dissolved Gas Analysis(DGA)	3	1
Refurbishment(Refurb)	48	6

At the bottom of the page, there is a "Disclaimer" link and contact information: "PO Box 545, Charlestown, NSW 2290 Australia + 61 2 4946 2090 © 2008 Machinemonitor Pty Ltd".

This page displays current reminders for transformer maintenance tasks.

Click 'Transformer Listing' button to return to the Knowledge Monitor page.

MAINTENANCE MONITOR

Maintenance Monitor Tx Listing - Windows Internet Explorer

http://www.txmonitor.com/Tx_Listing.aspx?t=m

Maintenance Monitor Tx Listing

MM machinemonitor®

Home User Profile Knowledge Monitor Maintenance Monitor Logout

first in **INDEPENDENT** electrical plant management Tx Monitor

Maintenance Monitor

Transformer listing

Company: Your Company
Site: Your Site 1

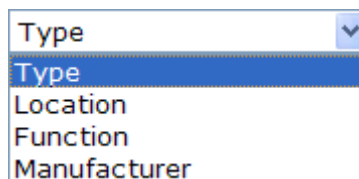
Sort Transformers By: Type

Name	Type	Location	Function	Serial No.	Manufacturer
Primary North 1	Distribution Transformer	Main Substation	Distribution	TX342354	ABC Transformers
Primary North 2	Distribution Transformer	Main Substation	Distribution	TX342355	ABC Transformers
Primary North 3	Distribution Transformer	Main Substation	Distribution	TX342356	ABC Transformers
Primary South 1	Distribution Transformer	Main Substation	Distribution	TX342360	ABC Transformers
Primary South 2	Distribution Transformer	Main Substation	Distribution	TX342361	ABC Transformers
Primary South 3	Distribution Transformer	Main Substation	Distribution	TX342362	ABC Transformers
Secondary South 1	Current Transformer	Main Substation	Current Transformer	TX342363	ABC Transformers
Secondary South 2	Current Transformer	Main Substation	Current Transformer	TX342364	ABC Transformers
Secondary North 1	Current Transformer	Main Substation	Current Transformer	TX342357	ABC Transformers
Secondary North 2	Current Transformer	Main Substation	Current Transformer	TX342358	ABC Transformers
Secondary North 3	Voltage Transformer	Main Substation	Voltage Transformer	TX342359	ABC Transformers
Secondary South 3	Voltage Transformer	Main Substation	Voltage Transformer	TX342365	ABC Transformers

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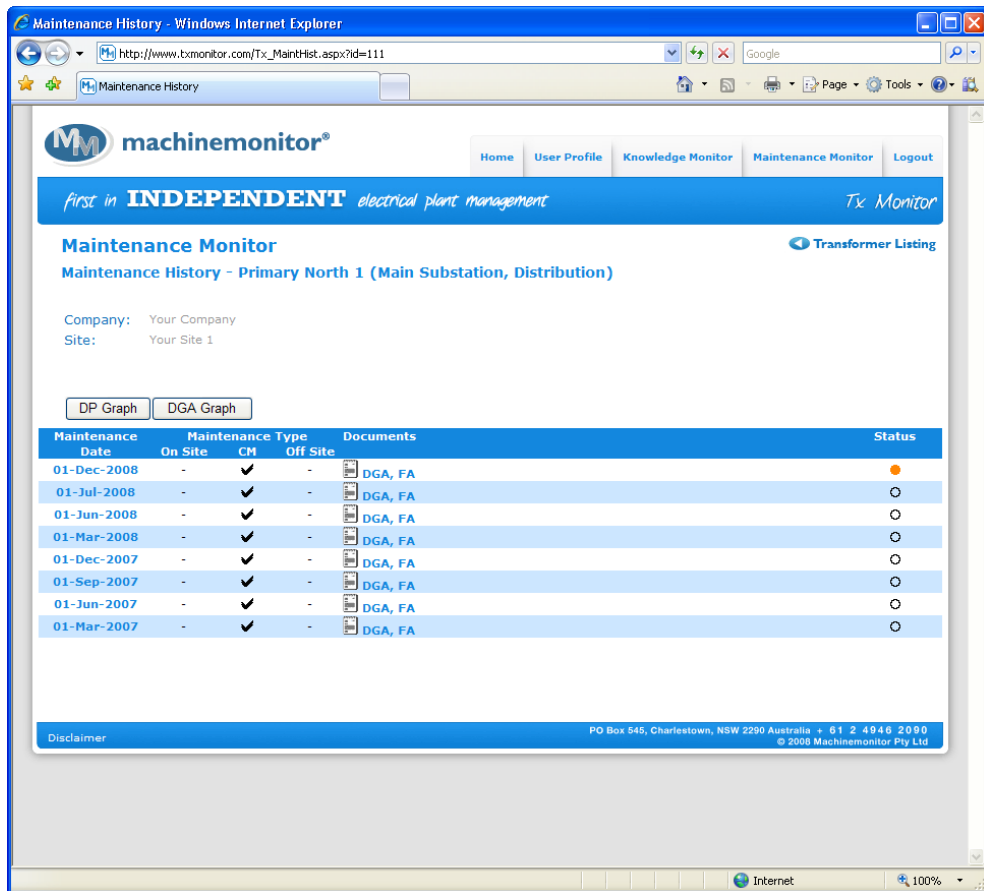
All transformers for the selected site are displayed in a list.

To change the way in which to display transformers, select from 'Sort Transformers By' drop down list.



Click on a transformer from the list to navigate to the Maintenance History page.

MAINTENANCE HISTORY



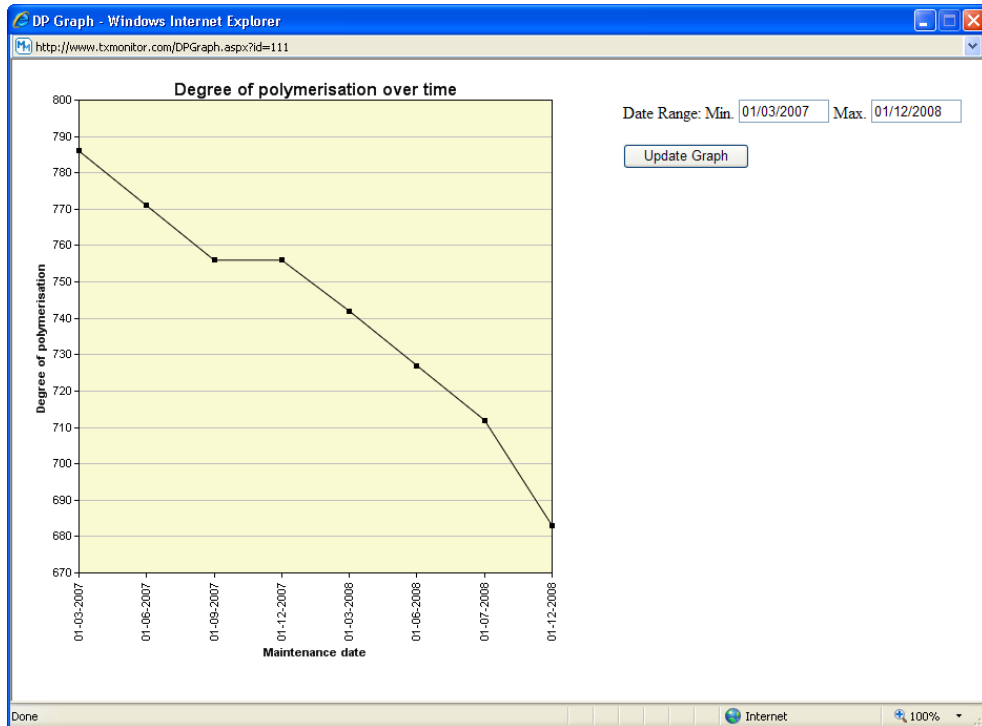
Note: From the Maintenance History page you can view the DP and DGA graphs.

To view Maintenance Data click maintenance task from maintenance date list.

To view or download required maintenance reports click on 'document icon'.

Click 'Transformer Listing' button to return to the Maintenance Monitor page.

DP GRAPH



Click on 'DP Graph' button.

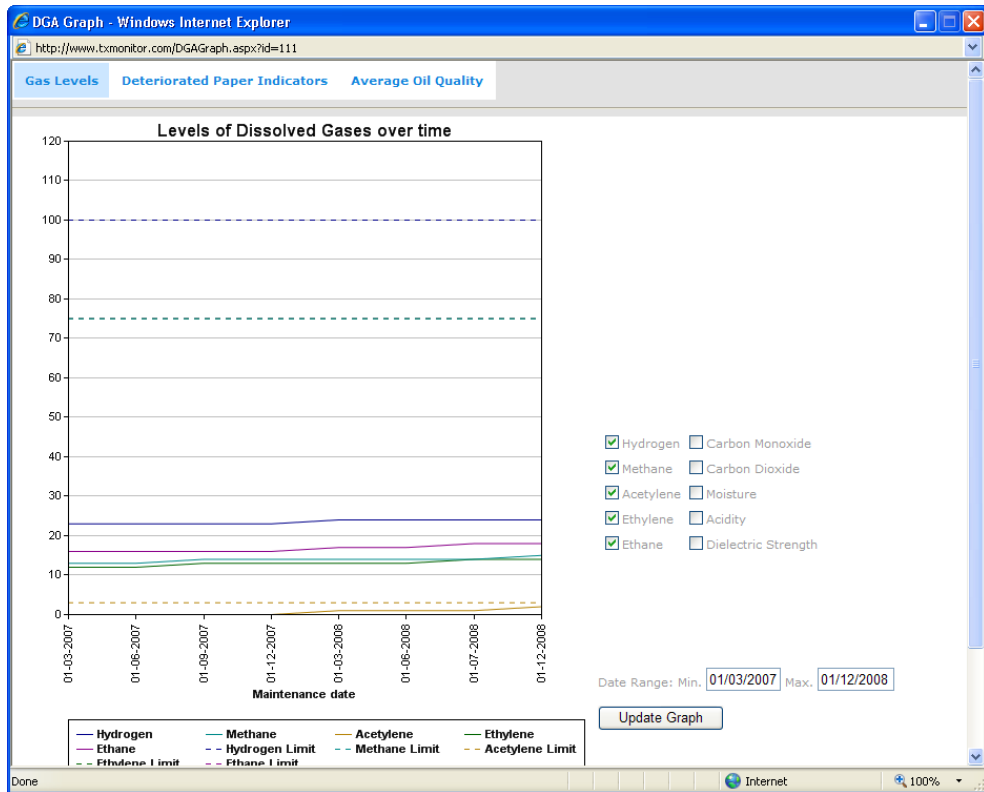
Enter date range – minimum to maximum.

Click 'Update Graph' button.

Note: *Hover the mouse over graph points to display degree of polymerisation, estimated remaining life and general comments associated with the maintenance date.*

DGA GRAPH

GAS LEVELS



Click on 'Gas Levels' link.

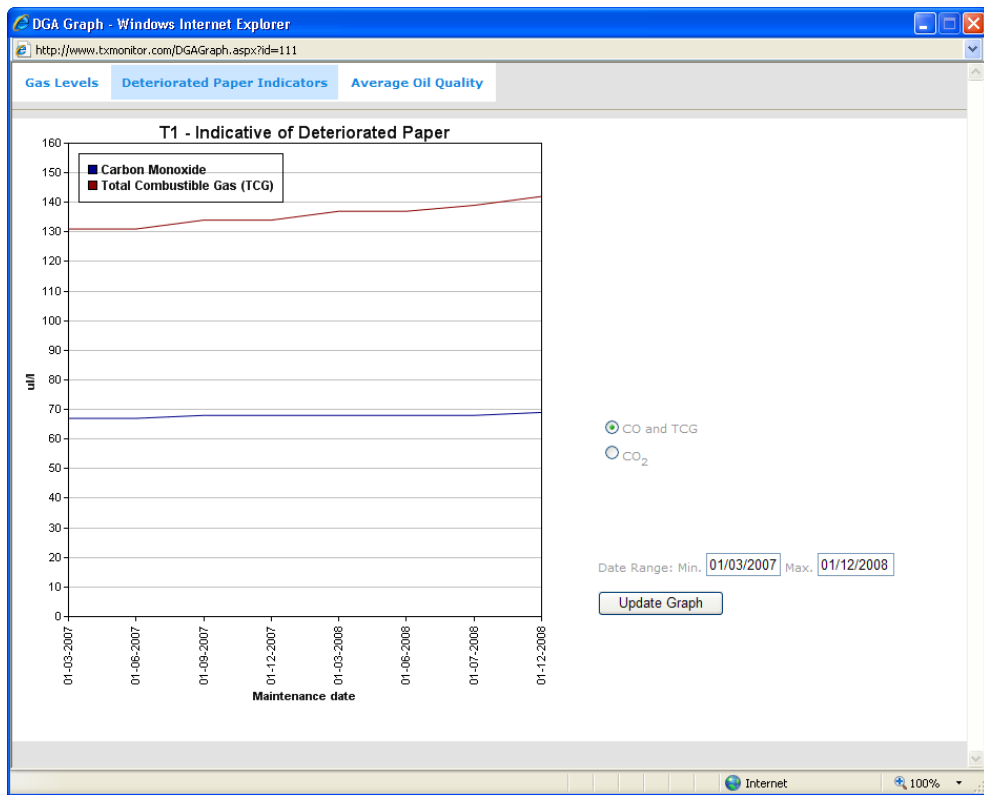
Select dissolved gas(es) by ticking appropriate boxes in dissolved gases list.

Enter date range – minimum to maximum.

Click 'Update Graph' button.

Note: Hover the mouse over graph points to display dissolved gas quantities, temperature, humidity, maintenance activities, and general comments associated with the maintenance date.

DETERIORATED PAPER INDICATORS



Click on Deteriorated Paper Indicators link.

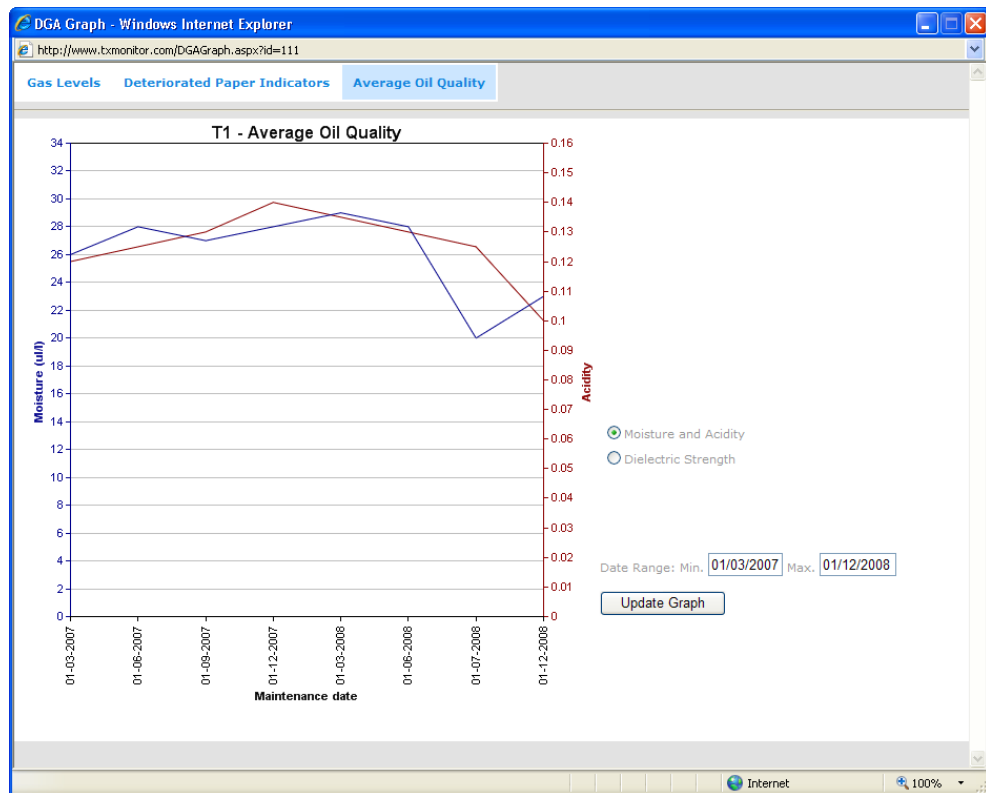
Select indicator from indicator list.

Enter date range – minimum to maximum.

Click 'Update Graph' button.

Note: Hover the mouse over graph points to display total combustible gas (TCG) quantity, temperature, humidity, maintenance activities, and general comments associated with the maintenance date.

AVERAGE OIL QUALITY



Click on Average Oil Quality link.

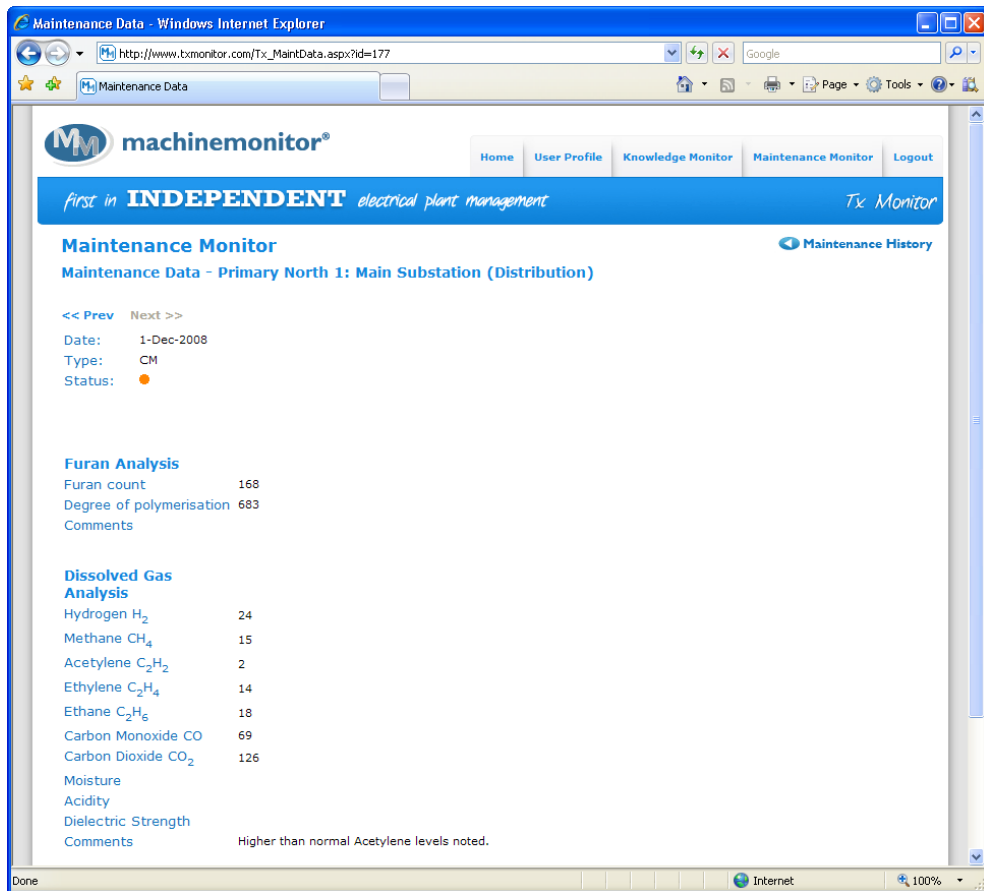
Select indicator from indicator list.

Enter date range – minimum to maximum.

Click 'Update Graph' button.

Note: Hover the mouse over graph points to display moisture and acidity levels, dielectric strength, temperature, humidity, maintenance activities, and general comments associated with the maintenance date.

MAINTENANCE DATA

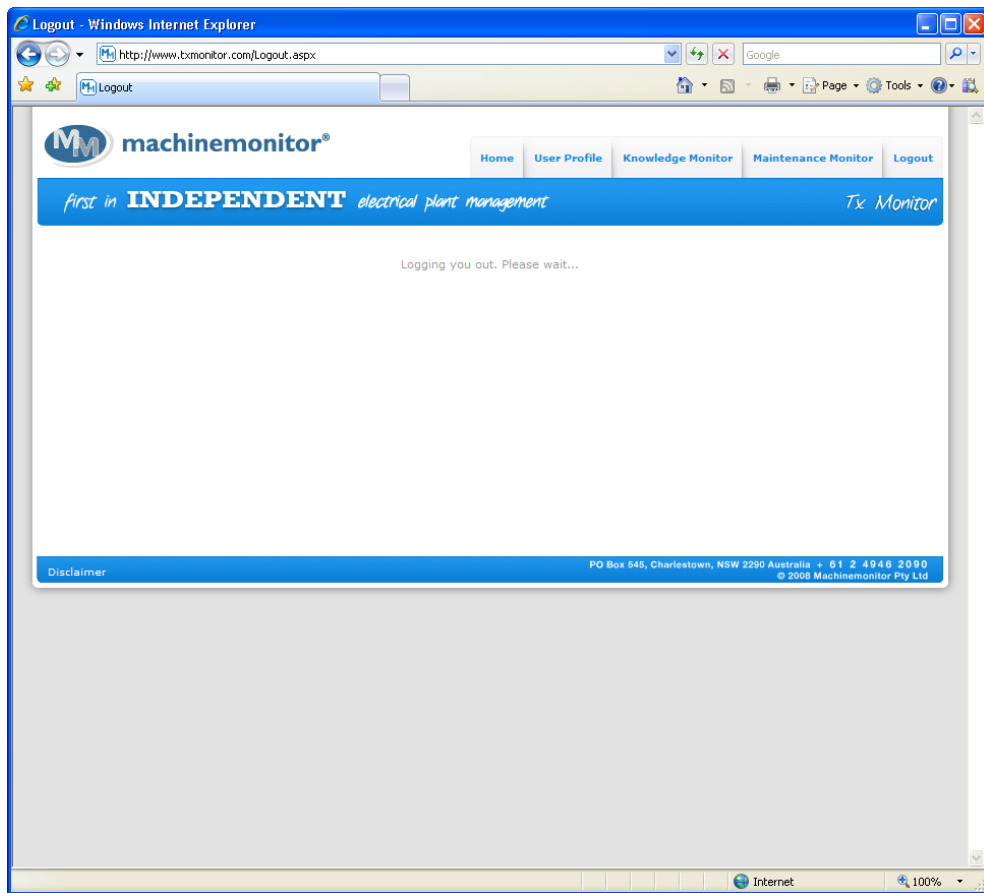


This page displays Maintenance Data including Furan Analysis, Dissolved Gas Analysis and associated comments.

Click 'Maintenance History' button to return to transformer maintenance history page.

Note: Use Previous and Next arrows to view other maintenance data.

LOGOUT



Click the 'log out' button to exit safely.