HYDROMX®

Energy Saving Solution

Installation Training For Space Heating Systems

HYDROMX® Technical Team February 2014

Contents

HYDROMX
Energy Saving Solution

Energy Efficiency with Hydromx ®

HYDROMX
Energy Saving Solution

- Thermostatic controls are required to translate heat transfer into energy savings.
- Where there are no thermostatic controls installation of appropriate thermostatic controls is recommended.
- For thermostatic recommendations see “Hydromx Instructions for Use” and Part L of the Building Regulations 2010 in England and Wales.
- Energy saving achieved by each Hydromx application will vary due to various factors such as system configuration, insulation of the building, changes in weather and lifestyle changes such as a change in the number of residents.

Typical Equipment

HYDROMX
Energy Saving Solution

- Centrifugal Pump (for pressurised systems)
- Portable Refractometer
- pH Meter
- Clean Glass Jar/Plastic Cup (for collecting sampl
- Spill Pads / Containment
- Drum Containers (Larger works)
- Non-return / Isolating Valves
- Pressure Reducing Valve
- 3M Sealing Tape or alternatives
- Mixing Tank (sized to installation)
- Measuring Bucket
- Suitable pipe work, hoses and tools for the works










NOTE: This is not an exhaustive list and other items may be required for the works.

Preparation

HYDROMX
Energy Saving Solution

Before enhancing a heating system through the application of Hydromx, it is essential to ensure that the system is in good working order.

- Inspect & Repair
  - boiler, pipe-work, fancoils and radiators for leaks and evidence of old leaks.
  - check for cold spots and to ensure even heat distribution.
  - agree with customer any identified repairs required to ensure the system is robust and fully operational.
  - Check heating characteristics for any pH special requirements.

- Identify & Plan
  - a filling point, either a Header Tank, or a location to insert an isolation valve (ideally in the boiler/plant room).
  - an area to load/mix the Hydromx : water appropriate to the volume estimates and the number of tanks/drums needed for the mixing operations if performed on site (this can be remote from the filling point subject to the use of flexible hose/pipes to connect the pump to the filling point, e.g. pump at ground level connected up to a plant room or header tank at high level)

Preparation

HYDROMX
Energy Saving Solution

Record checks

- Record pre-installation check and acceptance by the customer
- consider obtaining a flushing/refilling disclaimer signed by the customer before installation.

NOTE: The Warranty or Guarantee will be void and invalid if Hydromx becomes contaminated once the drum seal is broken.

Estimating and Measuring the Water Volume

HYDROMX
Energy Saving Solution

- The recommended and most effective energy saving ratio of Hydromx to water is 50:50 by volume.
- Hydromx will work effectively in a concentration ratio of between 60% to 45%.
- Accurately assess the volume of water contained in the heating system.
- If using a water meter drain the water at 20°C so expansion of water does not distort meter reading.
- Include a margin for error of 10-20% to ensure enough Hydromx is on site for the actual installation volume required.

Flushing the System

HYDROMX
Energy Saving Solution

- Flush the system if the discharged water shows significant signs of rust or sludge.
- Flush the system with clean water until all parts of the system have been cleaned.
- DO NOT use chemical cleaning agents to clean the system. Chemicals other than water (or another Hydromx product) will affect the patented chemical formula of Hydromx and it may not function as expected.
- Drain to maximum extent to avoid reduced concentration levels that will impair the energy efficiency of the system once Hydromx has been installed.

Mixing the solution

HYDROMX
Energy Saving Solution

- Make an allowance for water that may remain in the system and add enough Hydromx to result in the correct concentration.
    - Typically 60:40 concentration to give resulting solution of 50:50

Mixing the solution

HYDROMX
Energy Saving Solution

Measuring the Hydromx Concentration with a Portable Refractometer

- Use a Portable Refractometer with a G13 PROPYLENE scale.
- Take reading with fluid at 24-26 °C.
- De-ionised water should be used to calibrate the refractometer to zero.
- A 50:50 mix of de-ionised water and Hydromx gives a reading of -33 on the G13 scale.
  - 60:40 is -45 on the G13 scale.
  - 45:55 is -27 on the G13 scale.

NOTE: this will a vary with water source. A 50:50 sample should be tested and the scale adjusted if required – see slide 14

Mixing the solution

HYDROMX
Energy Saving Solution

Measuring the Hydromx Concentration with a Portable Refractometer (cont)

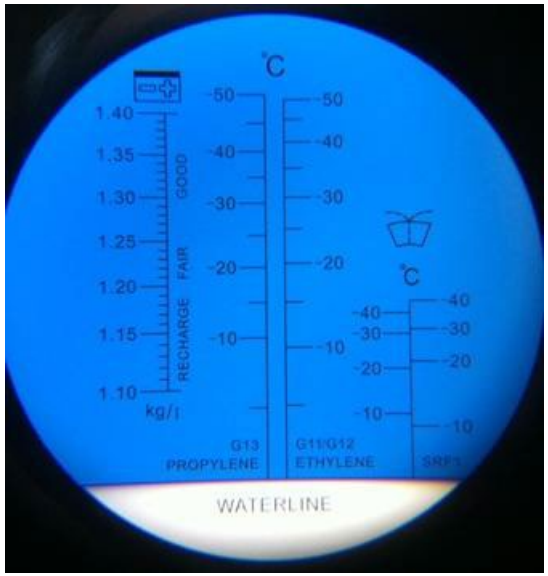
- Taking a Reading:
  - Mix the required ratio of Hydromx: Water mixture
  - Using the pipette place a one or two droplets on the prism and cover
  - Look through the eye-piece
  - Adjust the light if necessary to focus the line between light and dark.
  - Take a reading from the G13 Propylene Scale

Mixing the solution

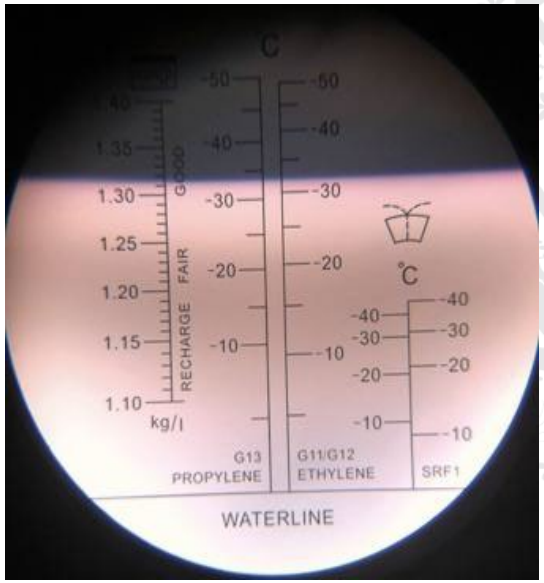
HYDROMX
Energy Saving Solution

- Example Refractometer Readings.

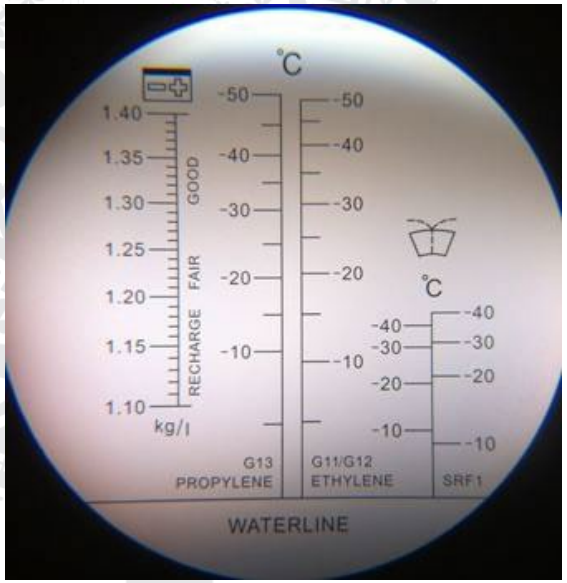
Water Only
Line is a Zero
on G13 scale



Hydromx: Water (50:50)
Line is at -33
on G13 scale



Hydromx Only
Line is off the
G13 scale



Mixing the solution

HYDROMX
Energy Saving Solution

Measuring the Hydromx Concentration with a Portable Refractometer (cont)

Assessing the G13 scale using the local water source

- Mix a small sample of 50:50 Hydromx and Water to assess the G13 scale using the local water source.
- Enter this value on the Installation Record and use this as a reference when mixing the volume to fill the system.

Mixing the solution

HYDROMX
Energy Saving Solution

Refractometer Readings versus Concentration

	Hydromx Concentration (%)
-26	44.44
-27	45.32
-28	46.19
-29	47.03
-30	47.86
-31	48.68
-32	49.50
-33	50.33
-34	51.16
-35	52.00
-36	52.85
-37	53.73
-38	54.60
-39	55.48
-40	56.37
-40	56.37
-40	56.37
-41	57.26
-42	58.15
-43	59.02
-44	59.89
-45	60.75

Too Low, below 45%

Optimum, 50%

NOTE: this may vary depending on the water used. Adjust the scale compared to a 50:50 test sample measurement with the solution at c.24°C

Too High, above 60%

Mixing the solution

HYDROMX
Energy Saving Solution

- It is recommended that automatic water supply controls are turned off during installation works and only turned on once system is stable.
- Bore hole or tap water below 7pH should not be used in applications
- Either mix water and Hydromx outside system and check for accuracy against 50% sample taken using refractomer

  OR

  In large systems add 1 unit of water, 1 unit of Hydromx and so on.

Mixing the solution

HYDROMX
Energy Saving Solution

- Installation of a separate Chemical Inhibitor is not required.
- Care should be taken during mixing of Hydromx with water to minimise bubbles and foaming.
- Pressurisation system tanks should be charged with a Hydromx mix to avoid future dilution

Filling the system

HYDROMX
Energy Saving Solution

- Open Vented Systems

  - Pour pre-mixed Solution into header tank and bleed system as normal.

    OR

  - Temporarily disconnect water feed to the tank and make pump connection to deliver pre-mixed solution to the system.

  - Properly cover and seal tank to avoid any contamination of the Hydromx mix. Record sealing has been done on Hydromx Installation Record.

Health & Safety

- Follow normal H&S procedures and guidance for handling Hydromx.
- Ensure appropriate spill control/mats are available should a spill occur.

Filling the system

HYDROMX
Energy Saving Solution

- Open Vented Systems

  - Pour pre-mixed Solution into header tank and bleed system as normal.

    OR

  - Temporarily disconnect water feed to the tank and make pump connection to deliver pre-mixed solution to the system.

  - Properly cover and seal tank to avoid any contamination of the Hydromx mix. Record sealing has been done on Hydromx Installation Record.

Health & Safety

- Follow normal H&S procedures and guidance for handling Hydromx.
- Ensure appropriate spill control/mats are available should a spill occur.

Filling the system

HYDROMX
Energy Saving Solution

- Once full circulation is achieved take a clear sample of the fluid in the system and test using a portable refractometer. Test result should match the test mix established prior to installation.
- Make any required correction to concentration to achieve a match within +/- 5%.
- Check system closely for leaks and good heat distribution - as normal best practice.
- Check all radiators/fancoils/emitters to ensure heat distribution is even and cold spots or circulation problems rectified.

Post Installation

HYDROMX
Energy Saving Solution

- A Hydromx Installation Record must be completed with:

  Installer, Customer and PBA Energy Solutions Ltd copies.

  The customer copy should be kept with the system and any operating manuals, including:

Installation Record – Customer Copy

HYDROMX
Energy Saving Solution

This completed Installation Record is evidence of your your warranty and should be kept in a safe place.

To register your warranty the yellow copy of this record MUST be sent to PBA Energy Solutions Ltd at the address printed on the back of this form.

Customer Name *			
Customer Address *			
Installer Company Name*			
Installer Company Address			
Installer Company Telephone/Email *			
Installer Name		Gasafe/CIPHE ID:	
Date of pre-inspection			
Date of installation: *			
Refractometer reading *	Baseline 50/50:	Post Installation:	
PH Reading:	Pre Installation:	Post Installation:	
Measured water volume in litres: (total fluid volume:)*		Volume of Hydromx used*	
Batch number(s) of Hydromx containers used: *			
Header tank lagged & sealed: (Yes / None) *		Photographic Records (Y/N)	
Installer Signature: Date: *	Customer Signature: * Date: *		

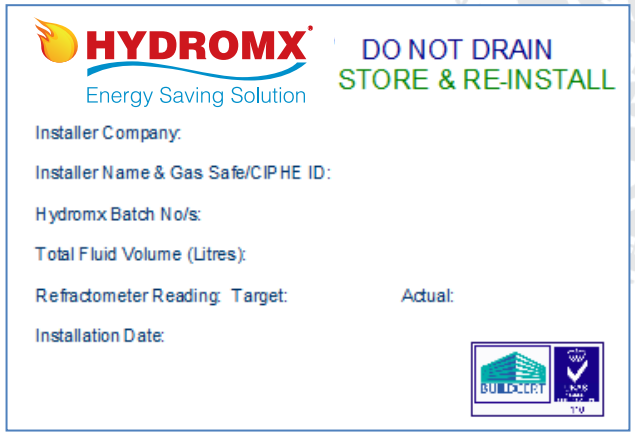
* Mandatory

Post Installation

HYDROMX
Energy Saving Solution

A Hydromx Installation Sticker must be completed and placed on EACH boiler:

- Ensure customer is aware Hydromx is a valuable asset which is most effective at saving energy in the correct concentrations.
- Therefore any works on the heating system should be completed by a suitably qualified plumber or heating engineer and any Hydromx solution taken out of system during maintenance activity should be stored and re-installed/re-cycled.



Regular Maintenance

HYDROMX
Energy Saving Solution

- Regular maintenance checks of the heating system is highly recommended on an annual basis.

- A sample of the Hydromx: water solution in the system should be tested using a portable refractometer and compared with the amount recorded at installation.

- If the measure does not match the record, additional Hydromx should be added to bring the measure back to the installation record.

Health and Safety

HYDROMX
Energy Saving Solution

To avoid risk to man and the environment, comply with these instructions for use.

- Wear suitable protective clothing, gloves and goggles.
- Keep out of the reach of children.
- Store in a secure location and protect against tampering.
- Empty packaging should be disposed of as hazardous waste.
- Do not use empty Hydromx containers for any other purpose.
- Do not mix Hydromx with any other chemicals other than water.
- Do not use Hydromx with acids.
- Do not drink Hydromx.
- Do not put Hydromx in any containers that have been used with other chemicals or may contaminate the patented formula.

Health and Safety

HYDROMX
Energy Saving Solution

- If Hydromx is spilled in small amounts, for example a small puddle valve or pipe, liquid absorbent pads or paper can be used to soak up the spill.
- In fact it is good practice to spread several pads around and under the valves, tanks and pumps during works in the equipment / plant room and to consider spill control prior to installation.
- After Hydromx is absorbed place used pads in plastic bag and dispose of properly. Any remaining Hydromx can be flushed with water and drained in very dilute quantities.

Light weight chemical absorbing pads

Spill Containment Pallet

Health and Safety

HYDROMX
Energy Saving Solution

- If Hydromx is accidentally ingested or swallowed take immediate medical advice.
- Do not induce vomiting.
- If Hydromx comes into contact with eyes of bare skin wash with clean water immediately. Do not use soap. Hydromx may cause minor irritation.
- If Hydromx is accidently inhaled move to a fresh air source and seek medical advice if symptoms develop.
- See the Material Safety Data Sheet for full advice , which can be downloaded from www.hydromx.com , About Hydromx, Installer Information.
- In case of a medical emergency following exposure to a chemical, the public should call the NHS 111 service in England or Wales - dial 111

  OR

- NHS 24 in Scotland 08454 24 24 24 (UK only).

  Referenced from: http://www.hse.gov.uk/chemical-classification/classification/poison-centres.htm

HYDROMX®

Energy Saving Solution

Thank You...