Cool Flash

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Editorial

First of all I want to take the opportunity to wish you a healthy and prosperous 2008, not only for you and your family but also for your business.
The first month of the new year has already gone by, New Year celebrations are in the past… and we are moving again into a year full of challenges. Let's hope we can overcome those challenges as successful as last year.

Enjoy reading this new edition of the Cool Flash!

Katelijne Boens

In this edition :

15 Years of Gasco Netherlands

By Mr. Alistair Tas (Gasco Nederland NV))

Gasco Europe has branches in six counties in Europe. 15 years ago Gasco Belgium started a depot in Holland with one employee Anné Bos.
Goal was to sell our unique way of gas distribution and the refrigerant gasses.

In 1997 we moved to our current office and warehouses because due to the growth we needed space for storage, you can't miss it, it's the ugliest building in Delft..
In that time we started with tools and components for the refrigeration market and now have three full time sales reps for this market.

Heat transfer fluids were introduced by Nina Liem of Kemira chemicals, she brought Freezium in our life. Kemira decided to join hands with Arteco and from then we had the opportunity to sell the Zitrec products.
With taking on the heat transfer fluids Gasco has been turned into a wholesaler with a very complete range of articles for the refrigeration market.

Gasco customers vary from the small one-man company to the HTF using global based companies.

Gasco Netherlands now is a fully independent operating branch with ten employees and looking fore more.

I would like to take the opportunity to thank the Arteco team for their excellent support.


The Gasco Netherlands team

From Arteco to Zitrec

Monopropylene glycol has as IUPAC (International Union of Pure and Applied Chemistrys) name propane-1,2-diol and is commonly also referred to as propylene glycol. The product is less toxic than MEG (Monoethylene glycol) and is used in Zitrec L and F.

Agenda

- 5 Feb — 8 Feb '08.
  Interclima 2008
  Paris — France
- 11 Feb — 15 Feb '08
  VSK2008
  Utrecht — The Netherlands
  Visit Gasco
- 11 Mar — 14 Mar '08
  Climate world
  Moscow — Russia
- 11 Mar — 15 Mar '08
  Mostraconvegno
  Milano—Italy

FRAGOL presents Zitrec at the WTT Expo 2007

By Mr. Krakat

From 9th to 11th October 2007, Karlsruhe hosted the WTT Expo, the trade fair for heat exchanger and heat transfer technology.

With 160 exhibitors from fifteen countries and roughly 5,500 trade visitors, the trade fair was a resounding success once again.

FRAGOL presented the entire spectrum of heat transfer fluids at a joint stand with Arteco and Solutia. The stand was well attended and a large number of promising contacts was made with manufacturers of heat exchangers who were interested in how OAT technology works, and who intend to use the Zitrec material data from the Prozit CD in the future.
Many discussions were also held with plant planners and constructors about specific projects.

As part of the supporting events, FRAGOL gave a specialist talk on the topic "Cooling brines – Improvement in heat transmission using new additive technology". This talk proved extremely popular and many listeners subsequently visited the stand in order to receive further information on Zitrec S.
The next WTT Expo is expected to take place in March 2010

Read in the Press

Gasco acquires SWM

The acquisition of SWM by Gasco Europe will allow them to concentrate on growing the business and becoming a major force across Europe in all forms of RAC products.

Source : ACR News, November 2007

Existing installations with R22 get in the danger zone

Following European legislation (2037/2000) commitments have been made to phase out the use of R22 (Freon). Until 2010 you can still top up your system with fresh R22, from 2010 forward you can only use regenerated R22. After 2015 R22-installations can no longer be topped up. This means the first crucial date is January 1st, 2010, only 24 months away.

Source : Koude en Luchtbehandeling, December 2007.

"Our profession requires unity"

As Jean Jacquin ends his roll as president of Snefcca and AREA ('Air conditioning & Refrigeration European association') he insists on going further in the unity and in overall mobilisation.

Source: RPF, October 2007

Automotive antifreeze for industrial cooling/heating systems!

By Tom Lansbergen

It is a commonly encountered practice: for an industrial cooling or heating system people tend to select an automotive antifreeze to have freeze protection in their systems. Most of the time this selection is driven by the mere fact that the user doesn't know there are better alternatives, or doesn't see the advantages of an industrial heat transfer fluid versus plain automotive antifreeze.
We hope this article will help to clarify some of the differences!

There is a first, quite obvious difference in the **applications** of both of the cooling agents: a car antifreeze is put into a car engine, a heat transfer fluid is put into a variety of different applications such as ice rinks, freezer cabinets, domestic or industrial heating, heat pumps and solar panels to name but a few.
While a car engine is fairly small and has very specific metallurgy, an industrial system typically consists out of a variety of metals, and in a different ratio. Usually we will find relatively more plastics and elastomers in car engines, whereas in industrial applications most of the elements are made out of metals.
One will find small, fine-tubed aluminium radiators (up to three) in a typical car, whereas in industrial systems one will find a multitude of different heat exchangers – usually made out of copper; plated, fully welded, brazed, … .
It is clear that heat exchangers – prone to blockages and corrosion damage – will need to be protected in a different way!

If one considers the **temperatures** in car engines and their radiators it will be noticed that most of the time they are on temperatures above 90°C, with some peaks of 130°C or slightly more. In industrial heat transfer fluid applications, temperatures may range anywhere from -40°C up to peak temperatures of 200°C in solar panel heat exchangers.
Supposing an industrial system would run at similar fluid conditions as a car engine, you still need to account for the relatively large metal surfaces of varying composition as well as the large number of different metals used in an industrial system, typically a car engine uses basically three to four different metals and a lot of hoses from different elastomers.
All this means that inhibitors used to expand the life time of the system and of the fluid are loaded very differently – and therefore require different composition. In other words, a common car coolant inhibitor package will simply not do enough!

A third big difference is in **operation time** of the fluids. In a car engine, the coolant will very rarely function at the same operation time as an industrial fluid. The large part of heat transfer fluids will be working almost around the clock, during which they are continuously subjected to large temperature differences, different pressures and metallurgies. Using a car coolant in such an application typically leads to fast depletion of inhibitors and degeneration of the glycol, creating corrosive acids.

Last but not least, most of the car manufacturers have introduced **specific requirements** for coolants : the relationship between car engine components and the car coolant have become quite specific and therefore require tailor-made coolant engineering. Sometimes these coolants have been designed to focus performance under conditions only seen in car engines, and will therefore have no added value at all in a totally different circumstance such as industrial systems!
Considering this, – using an industrial heat transfer fluid in a car engine – will make no sense either!

To conclude, the best choice for an industrial system is a fluid that is especially designed to cope with the specifics of that system. A car cooling system is best equipped with the coolant specifically recommended and tested by the car manufacturer!

More about corrosion inhibitors — Part 1 : Passivators

By Jurgen De Kimpe

Mixtures of corrosion inhibitors are widely used in heat transfer fluid and cooling water treatment. A corrosion inhibitor is a chemical substance added to the heat transfer fluid to reduce the corrosion rate of one or more metals in the secondary cooling system.
Inhibitors function by interacting with specific metal surfaces in a variety of modes. The most common molecular mechanisms include:

- Passivation of the metal or reinforcement of the passive metal oxide layer.
- Formation of a thin barrier of the inhibitor on part of, or the full metal or metal oxide surface by varying extent of physi- and/or chemisorption.
- The formation of thick barriers of inhibitor or inhibitor metal reaction product.

There exist various way to classify inhibitors, but in this article a classification based on mechanism is attempted.

Passivators

Passivators may work in different fashions. They stabilize the natural passive oxide film present on many metals; they repair such oxide layers when they become damaged; they may reinforce the passive film by being incorporated into it and they may hinder the absorption onto the metal surface of aggressive ions as e.g. chloride by simple competition.
Passivators require a minimal amount to be effective corrosion inhibitors as they need to shift the metal surface corrosion potential sufficiently to reach the potential interval required for passivating metal oxides to be stable. As a result the concentration of passivator has to be monitored frequently.
As a general rule one can say that the critical passivator concentration increases with increasing chloride content, increased temperature, decreasing pH and decreasing amount of soluble oxygen. These general rules do not always apply however, for aluminum: an increase in pH would also require increased passivator content.

Direct Passivators or Oxidizers

Direct passivators or oxidizers are anions that react themselves with the metal surface and generate and/or reinforce the passive layer. Some of these oxidizers are so strong that they do not need any dissolved oxygen to be active. The best know examples are chromate and nitrite as oxidizers of ferrous metals. Other oxidizers will require a small amount of dissolved oxygen or the presence of a second i.e. strong oxidizer to be able to passivate the metal. The best known example among these is molybdate, which can act in synergy with nitrite.
A major objection against passivators, especially those that are powerful oxidizers, is that their chemical nature will make then often toxic substances. Chromate or chromium VI components in general are carcinogenic substances, while nitrite is considered a toxic substance. Their reactivity, again especially of those that are strong oxidizers, can also cause unwanted side reactions and rapid depletion.

Indirect Passivators

Indirect passivators do not passivate the metal surface themselves, but improve the absorption of dissolved oxygen onto the metal surface. As such these substances will only prevent corrosion if oxygen or a direct passivator is present. Indirect passivators are alkaline substances that react with protons absorbed on the metal surface, thereby rendering these locations available for the absorption of oxygen. The best known examples of indirect inorganic passivators are hard water stabilized phosphate, hydrogenphosphate and borate. Benzoate and benzoate derivates are considered organic indirect passivators.

Many coolant inhibitor packages will use the combined synergetic action of indirect and direct passivators to improve corrosion protection.

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