



Cool Flash

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Editorial

First of all, I would like to wish you a healthy and prosperous 2009.

During the last quarter of 2008, we can look back at a successful participation in the Chillventa exhibition in Nürnberg, but unfortunately we also see the economic crisis.

Construction is going down, and new projects are being delayed. Competition will most probably become more aggressive. All the more reason to focus on the strengths and benefits of the Zitrec range.

Enjoy reading this year's first edition!

Katelijne Boens

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BRENTAG NORDIC — DANISH BRANCH

By Jens Brandt

Brenntag Nordic is a part of the Brenntag group, which distribute commodity- and speciality chemicals in Europe, North- Central and South America and recently acquired a big distributor business in Asia. Brenntag Nordic has a close interaction between the Nordic countries, resulting in an excellent availability of products: stock is at hand, short delivery times and effective distribution all to the benefit of the customers. Total number of employees is approx. 300 people, where 130 people are located in Denmark. Our main facility is in Vejle where bulk deliveries are made by trucks, railcars and vessels. A smaller plant is located to the south of Copenhagen, where mainly refrigerant gases; HFC/HCFC and Ammonia are filled from bulk to bottles.

Brenntag has been distributing HTF products for more than 30 years and today have a market leading position. Brenntag Nordics' main HTF products include ethylene- and propylene glycol based coolants, HFC/HCFC gases, ethanols, ammonia gas, potassium formate (Freezium) . A substantial volume realized by our department is in antifreeze for automotive application, as after market product.

On both our sites we are able to mix and blend on customer recipe's and we do private label filling as well.

The Danish HTF team consist of 4 persons:

Ulla Pedersen: Internal Sales mainly with refrigerant gases for the Danish and the other Nordic countries.

Lene Olson: Internal Sales mainly with glycol based products.

Robert Hansen: Sales Manager with sales of all HTF products in Denmark.

Jens Brandt: Brenntag Nordic Product and Supplier Responsible

Within Denmark sales is direct to end users/contractors and via a few distributors.

Brenntag has a solid position on the Danish market, due to an effective production and logistic set-up, wide range of HTF products, dedicated sales force and strong back-up from the management.

Cooperation with Arteco started 5-6 years ago. Before this time,

(Cont'd page 2)

From Arteco to Zitrec

OAT (or short for Organic Acid Technology): This technology is used in most of our Zitrec products. We use a unique combination of mono and dicarboxylic acids. This type of technology gives a number of advantages compared to traditional technologies.

Agenda

- 24 — 26 Feb '09 RAC 2009
Birmingham — UK
- 24 — 27 Feb '09 Climatización
Madrid — Spain
- 10 — 13 Mar '09 Climate World
Moskow — Russia
- 10 — 14 Mar '09 ISH 2009
Frankfurt — Germany



From left to right : Robert Hansen, Lene Olson, Ulla Pedersen and Jens Brandt

BRENNTAG NORDIC — DANISH BRANCH

By Jens Brandt (Brenntag Nordic)

Brenntag did not offer branded products as Zitrec, Freezium or Longlife Coolant. Neither did the competitors. Given this history, end users, contractors and engineering companies were used to ask for "Blue Coolant/MEG" or "Red Coolant/MPG". Price was all that mattered.

The Zitrec range has made it possible to lift the quality level for HTF coolants.

Especially with the unique product, Zitrec F, Brenntag has a clear advantage to competitors.

More and more Food and Pharma manufacturers will only accept safe and approved products in their cooling systems. A leakage in a production environment can be very costly for these type of companies.

Main customers for Zitrec F are Danisco Ingredients, where we have supplied more than 150 tons in a custom dilution, Grundfos, using Zitrec FC as coolant for their groundwater pumps sold worldwide. Grundfos purchase approx. 100 tons per annum. Arla Foods has started with a few of their smaller sites. We trust that this will spread to all their sites, where HTF is used.

Above branches are a focus area in the strategy to implement Zitrec F. It has been an "up hill" challenge, as contractors are very much focused on prices for HTF. However, there is a clear trend that price is not the most important issue, when safety is discussed.

With a continued good support from Arteco, Brenntag see potential for increasing marketshare in the years to come.

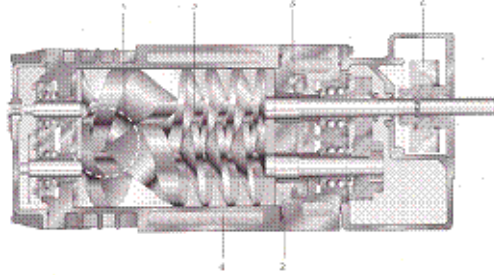


Zitrec M-40 in dry screw vacuum pumps

By Matteo Valoti (Pietro Carini)

An interesting application that we have found in Italy (but this kind of pumps are all over the world!) for Zitrec are the dry screw vacuum pumps.

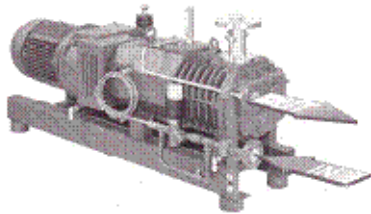
In this section we can see that the vacuum pump contains two screw rotors which rotate inside a cylinder.



There is no contact between the two screw rotors and there is no need for an additional lubrication. Clearly the movement of rotors creates a lot of heating and therefore there are four cooling water jackets.

The pump needs to be cooled down and this is achieved by two different systems:

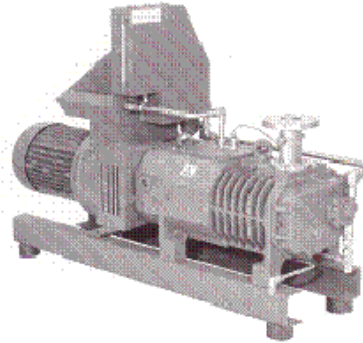
1. Direct cooling system: the pump has a direct non-recirculating cooling system with external cooling water connection



2. Direct cooling system

Direct cooling system

2. Recirculating system without adding external cooling water but with a radiator cooling with liquid coolant.



Radiator cooling with liquid coolant

In the cooling water jackets the film temperature is 125 °C, but with overheating till 170 °C!

With glycol inhibited with the traditional inhibitors they used to have several issues:

1. Corrosion: the radiator is made by aluminium and the pump body in cast iron.
2. Fouling as result.
3. Bad heat transfer efficiency after a while!

The pump's manufacturing company tried for 6 months Zitrec M-40 at the worst conditions they could, and at the end they found NO CORROSION, NO FOULING and the most important thing was that during the whole trial they had PERMANENT AND GOOD heat transfer efficiency!

And now they are reselling Zitrec like first fill for every pump!"

Where winter never stops

In 1934, Amsterdam got its first artificial ice-skating rink.

Already then, a system with secondary cooling system using a heat transfer fluid was used. The first circuit, where the cold was produced, was a closed system which used ammonium. The second circuit was also closed and was filled with brine. This circuit was used to transport the cold to the ice surface, by pumping it through a extensive network of tubes.

Source: RCC Koude & Luchtbehandeling, December 2008

READ IN THE PRESS



More about corrosion inhibitors — Part 3

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.
- Oxygen & proton scavengers
- Vapor phase inhibitors

In previous editions we've handled 'Passivators' and 'Thin barrier inhibitors'.

In This edition of Coolflash:

C. Precipitation Inhibitors

Some inhibitors form thick insoluble layers by interaction with the environment or metal surface. A well known example is bicarbonate that forms insoluble carbonate on many surfaces when heated in an alkaline environment. Unstabilized phosphate and biphosphate form thick FePO_4 and FeHPO_4 containing layers on iron surfaces after combining with iron ions. Although considered often primitive in their functioning, scale formation can be the most effective way of protecting equipment (e.g. cast iron piping in water supply systems) if for example design limits take into account the reduction of internal diameter.

D. Oxygen & Proton Scavengers

In cooling water treatment oxygen scavengers are sometimes used to reduce the corrosion rate. As corrosion is often oxygen driven, removal of the available oxygen will stifle the most common cathodic corrosion reaction ($\text{O}_2 + 2\text{H}_2\text{O} + 4\text{e}^- \rightarrow 4\text{OH}^-$) and thus reduce the corrosion rate. Sulfite and bisulfite are cheap O_2 -scavenger used to reduce the oxygen content to 0.1% of its initial concentration in fresh water. Hydrazine is an O_2 -scavenger that does not produce any sulfate precipitate and that is more often used in high temperature systems. Important to note is that O_2 -scavengers will have no effect on the reduction of protons ($2\text{H}^+ + 2\text{e}^- \rightarrow \text{H}_2$), which is the most important cathodic corrosion reaction in an acid environment. Counteracting the reduction of protons, is often accomplished by feeding alkaline buffer agents into the system, which can be seen as H^+ scavengers.

E. Vapor Phase Inhibitors

Vapor phase inhibitors protect metal surfaces that are not directly in contact with the bulk of the liquid. Vapor phase inhibitors have the additional property that their vapor pressure is relatively high at the application temperature so the inhibitor can be released in sufficient amount to the vapor phase. The evaporated inhibitor, then subsequently absorbs into the thin water film that is adsorbed to metal surfaces, even in relatively dry environments. Once absorbed to the metal surface the vapor phase inhibitor can act as an organic thin barrier inhibitor like most volatile amines or even as an oxidizer (e.g. in the case of organic nitrite compounds).



Distributor Workshop November 2008

By Tom Lansbergen

Quite regularly Arteco organises a workshop for its distributors, to share the latest developments in technology and markets. Below you'll see a picture of the growing number of distributors that consult our customers in choosing the right heat transfer fluid! At the last page of this newsletter you will find the companies that work with us and some more information on how you can reach them.



The workshop treated important topics such as REACH and how Arteco has prepared and is following up on the developments related to it. Also biodegradability was discussed and how Zitrec products fit in the picture.

A large part of the presentations treated some of the questions that came from the real life applications and projects.

Every distributor also presented a project or multiple projects and the lessons learned from these projects. This makes the workshop extremely valuable: our end customers should see that the distributors selling Zitrec distinguish themselves in their up-to-date expertise on the subject.

This year, guest speakers Bill Griffiths and Mitchell Holmes gave an overview of the use of ABS piping in secondary refrigeration systems. Interesting were the parts where the advantages of this system were treated over normal carbon or stainless steel pipework, the different parts that one needs to assemble it and also the explanation regarding the quite straightforward assembly.

It was noted how compatibility with the heat transfer fluid plays an important role in the whole system, and that from extensive testing it was found that the whole Zitrec product range is compatible with Durapipe ABS.





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