

# Blygold®

Australia

## BLYGOLD AUSTRALIA

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Dear Reader,

2009 has for some been a trying and difficult year, for others a year of new-found opportunity and challenges. In general it has been a year with mixed emotions.

Whatever the outcomes are for you, now in coming to the end of this year Blygold wishes you all a well deserved break which will give you the opportunity to re-charge, enjoy the holidays and hopefully the good company of family and friends. Maybe a time for reflection and contemplation or just good fun and relaxation.

Either way, we'll see each other back in 2010 in the hope and expectation that it will bring a year of meaningful business relationships in a good environment.

We would like to take this opportunity to thank all of our clients for their custom. For those of you who haven't had the opportunity yet to experience the benefits of our products and services, give us a go in the new year and see for yourself what we have to offer.

All Blygold staff and management wish you and your loved ones a Merry Christmas and a bright, healthy and prosperous 2010.

Best regards,



**Ray Van Haven**  
Director



## WHAT IS CORROSION AND POLLUTION'S INFLUENCE ON HEAT EXCHANGE CAPACITY?

Heat exchangers are designed to exchange heat between media without direct contact between those media. Aluminum and copper are good materials for this purpose as they have high heat conductivity ratings. Standard liquid-to-air heat exchangers are made with copper tubes and aluminum fins. A weakness in this design is potentially the joint between the copper and aluminium. As long as the fins are tightly joined to the copper tube, without gaps or interference of organic layers or corrosive products, the heat transfer will be optimal. Pollution on the fin material will also influence the heat transfer of a heat exchanger.

### Corrosion

The joint between the copper tubes and aluminum fins is one of the more corrosion sensitive parts of an air-conditioning unit. Aluminum and copper are incompatible metals. What we mean by this is that the metals have a different potential. When these metals touch each other and there is an electrolyte in the form of a conducting fluid present, a current (flow of electrons) will flow from the less noble metal (aluminum) to the more noble metal (copper). Once aluminium starts losing electrons it begins to dissolve easily and reacts into an aluminum corrosion product. The joint that existed between copper and aluminum is now replaced by a copper aluminum oxide joint. Heat conducting capacity of aluminium oxide is much lower than that of un-corroded aluminum. Therefore, the heat transfer between copper tubes to aluminum fins is significantly decreased.

### Pollution

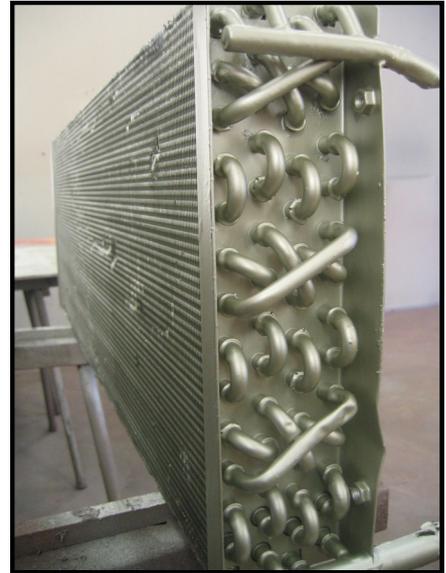
If pollution on the fins is limiting the airflow through the heat exchanger, the temperature of the air that is passing over the aluminum fins will increase (the same kW in less kg of air). This will cause the temperature difference between the liquid/gas in the copper tube and the air passing over the fins to decrease. A smaller temperature difference will result in reduced heat transfer.

**Our attitude toward life determines life's attitude towards us.**

Earl Nightingale



**ANOTHER YORK CHILLER DELIVERED FOR TREATMENT AT BLYGOLD QUEENSLAND.**



Queensland Rail coil in different stages of the Blygold treatment process. 1. Before treatment and cleaning process. 2. After thorough cleaning and Refamac application. 3. After PoluAl XT application. End result: Ready to go for another couple of years without problems.

**“Ability is what you are capable of doing. Motivation determines what you do. Attitude determines how well you do it.”**

## WHAT IS THE THERMAL INFLUENCE OF COATING SYSTEMS?

Heat exchangers are designed to exchange heat between media without direct contact between those media. Aluminum and copper are good materials for this purpose as they have high heat conductivity ratings. Standard liquid-to-air heat exchangers are made with copper tubes and aluminum fins. A weakness in this design is the joint between copper and aluminum. As long as the fins are tightly fixed to the copper tube without interference of organic layers or corrosion products the heat transfer will be optimal.

Coating protection to heat exchangers is realized by applying organic coatings to the metal surfaces. The different systems can be divided into two types: pre-coat and post-coat.

organic layer seals the copper-aluminum joint and the rest of the metals.

Pre-coated aluminum consist of a thin organic (usually vinyl or epoxy) layer that is applied to the aluminum sheets before fin fabrication. After cutting, bending and assembly there will be an organic layer between the copper tube and the aluminum

It is accepted that this pre-coat layer results into a capacity loss ranging from 10 -15 % of heat exchange capacity.

**Post coat systems consist of an organic layer that is applied after the heat exchanger is produced. An organic layer seals the copper-aluminum joint and the rest of the metals. This is what the Blygold coating does.**

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Your partner in corrosion prevention.

