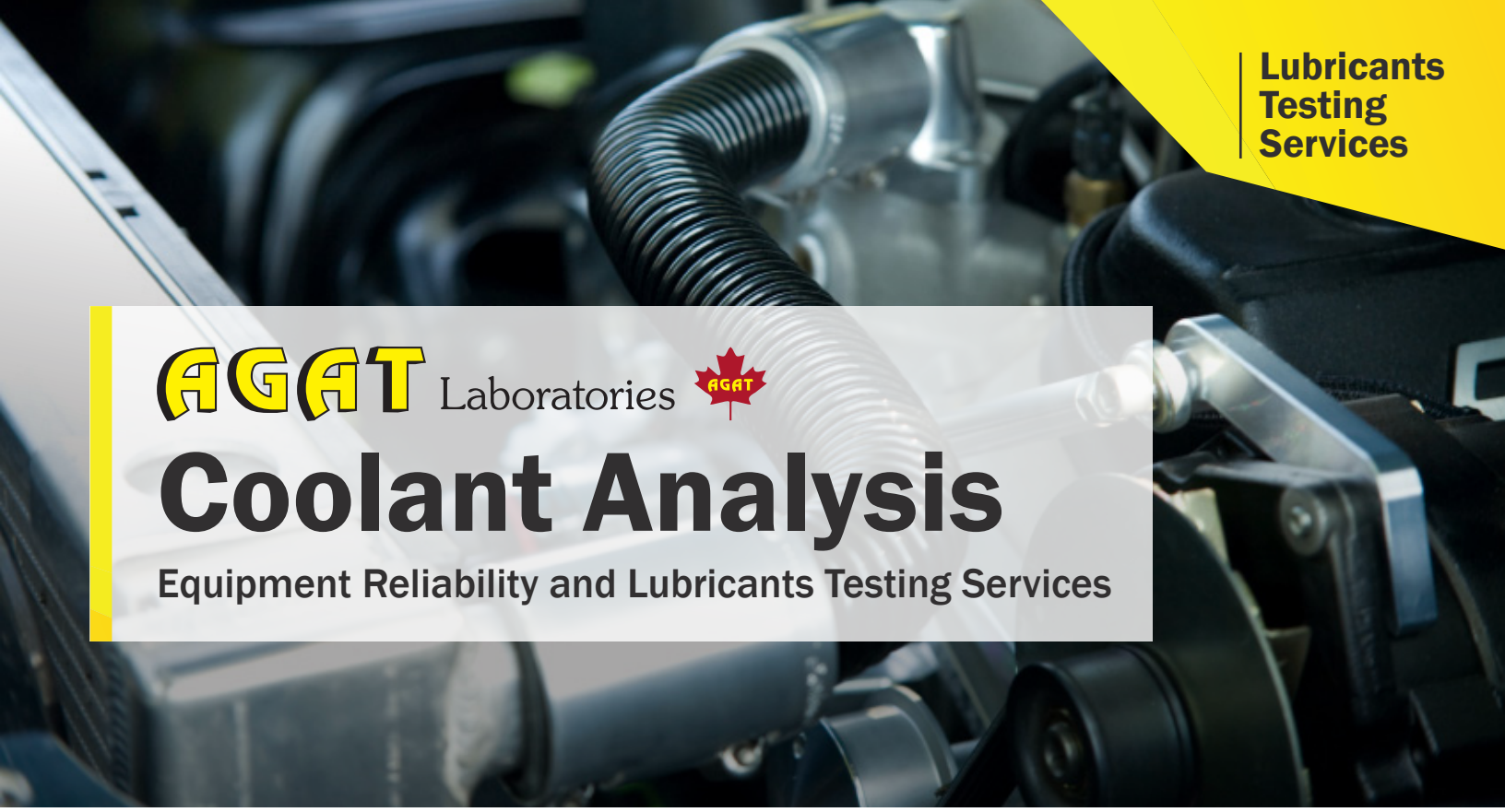

Lubricants Testing Services

AGAT Laboratories

Coolant Analysis

Equipment Reliability and Lubricants Testing Services

Cooling systems require as much care and maintenance as any other component of a machine. If a coolant is not chemically correct for the application temperature, the rates of corrosion, erosion, pitting and scale formation will almost double for every 150 increase in temperature above 71.10C (1600F).

This means that a poor quality coolant will corrode approximately 100% more metal surface on liners, coolers, heat exchangers, radiators and other affected components in any given time period at temperatures of 86.10C (1750F).

Carbon dioxide will convert to carbonic acid. Chlorides will convert from salt to hydrochloric acid, while sulphate will not only form scale, but will form sulphuric acid, all of which can seriously affect cooling systems.

A coolant analysis program that is recommended as part of a regularly scheduled condition based monitoring program for cooling systems should include the following analysis:

- Appearance
- pH Number
- Conductivity
- Ion Chromatography
- Freeze Point
- Boiling Point
- Glycol Percentage
- Spectrographic Metals (iron, copper, lead, aluminum)
- Reserve Alkalinity
- Recommended Coolant Analysis Package 30-493

A Note on Cooling System Operating Conditions

As water temperature increases, particularly at temperatures above 82.20C (1800F) water becomes more acidic. Coolant analysis is recommended at least annually, whenever a cooling system problem is suspected, or when the source of the water used is changed. Many natural water sources have unacceptable levels of naturally occurring contaminants.