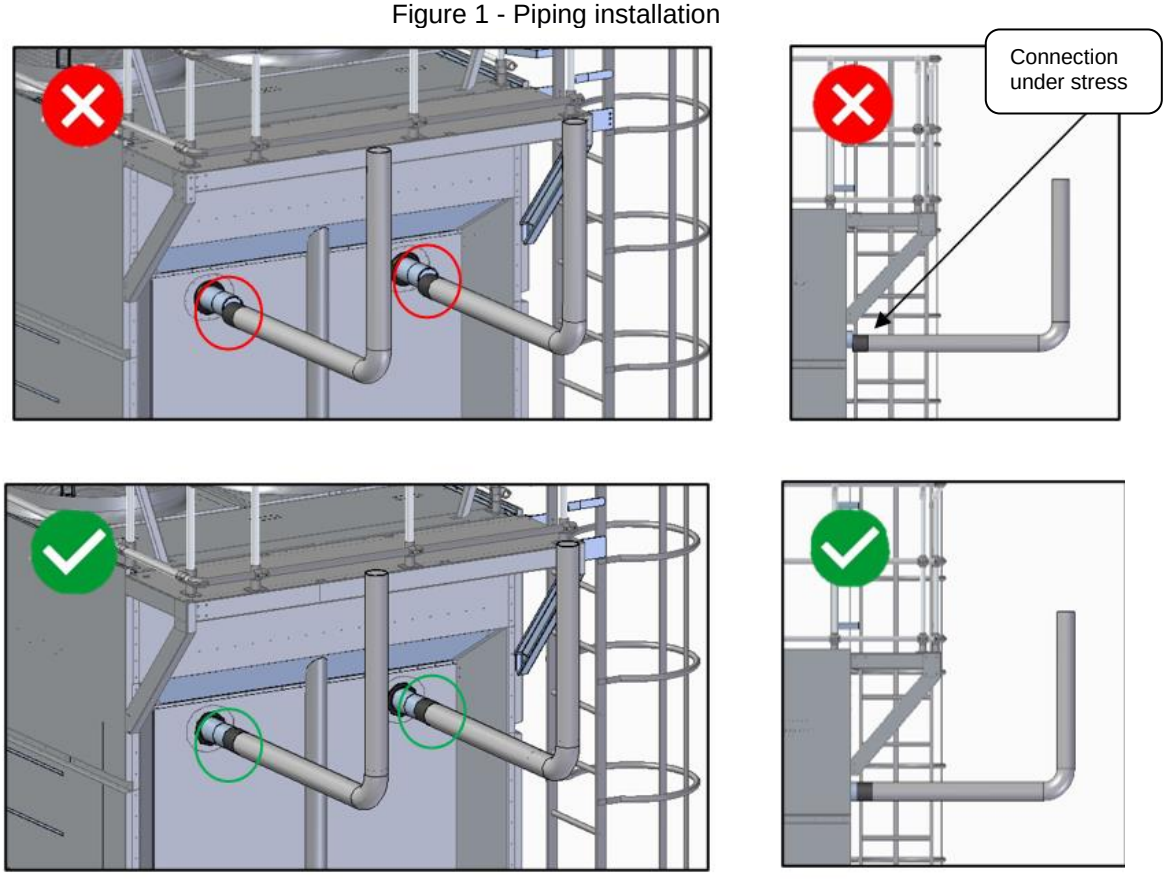
STRESS CORROSION CRACKING (SCC)
ECOSS STAINLESS STEEL EVAPORATIVE CONDENSER

Stainless steels are alloys of high corrosion resistance, due to the high concentration of chromium in their alloy, and a passive layer for protection of the metal against corrosion.
Stress corrosion cracking is the result of the interaction between mechanical stresses and corrosion reactions, causing the spread of cracks.

The main cause of stress corrosion cracking in evaporative condensers ECOSS is the unevenness of pipes at the inlet of refrigerant fluids. During the installation of the condenser, it is essential that the pipes are aligned with the output of the equipment connections to integrate them or use flexible connections for this connection.

In cases where the pipes are misaligned, according to Figure 1, and the welding of the pipes is carried out in the same way, a mechanical stress occurs, and consequently and when combined with the contamination factors it is possible that stress corrosion cracking occurs.

Figure 1 - Piping installation



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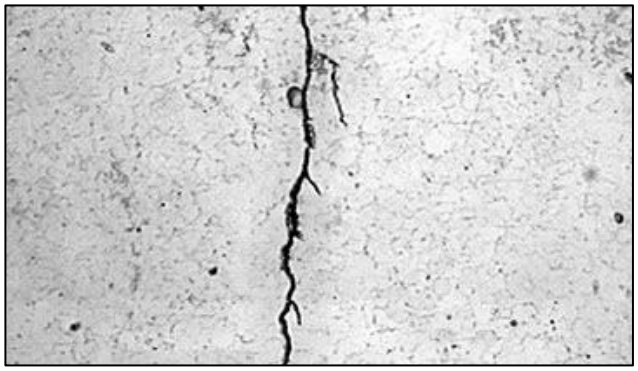
This corrosion happens in a combined way, fatigue caused by excess stress and contaminants. This stress applied to the material generates a crack that propagates, in general, in the direction perpendicular to the stress

applied, as shown in Figure 2. The crack will be exposed to the environment and more susceptible to accumulation of contaminants, such as halogenated ions (Cl -, Br -, I -, F -), as shown in Figure 3, usually coming from the system water, resulting in pitting corrosion (see BT-006) near the crack.

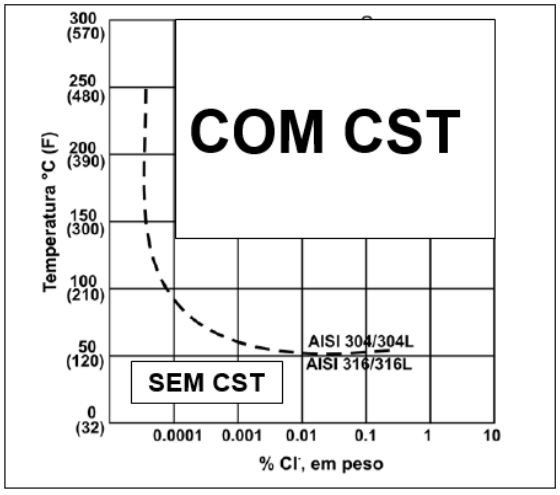
Figure 2 - Stress corrosion cracking



Variables that influence the formation of a stress corrosion cracking

- Temperature;
- Applied stress;
- Presence of halogens in the tray water and feed.

Figure 3 - SCC and the influence of chlorides



Important!

Stress corrosion cracking does not characterize a manufacturing failure. It is the responsibility of the installer to carry out the alignment of the pipes before welding and of the customer to maintain the maintenance plan (chemical treatment of water/cleaning).

For more information, refer to our technical department.

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