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REFRIGERATION

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because performance counts

LIQUID PUMP RECIRCULATION SYSTEM

The liquid recirculation system is the most advanced and energy efficient technique in ammonia refrigeration terminology. The ammonia liquid from surge drum (accumulator) is forced circulated in the evaporators of cold storages, or freezer, blast freezers air-cooling units through liquid-feed-pumps. For multiple cold rooms and freezers it is supposed to be the best choice to save electric energy as well getting the highest efficiency of the refrigeration systems.

AADVANTAGES OF LIQUID PUMP RECIRCULATION SYSTEM

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Ten – Special Reasons

The main advantages of liquid-recirculation systems are high efficiency and reduced operating expenses. These forced-feed ammonia circulation technology has lower energy cost and less operating hours of the ammonia gas compressors.

Increase in Efficiency: The internal surface of cooling coils (evaporator) is completely wetted and therefore provides much better efficiency of the refrigeration system.

Protection to Compressor: The compressors are protected from liquid slugs resulting from fluctuation system load or controls malfunctioning of multiple units.

Lower Discharge Pressure: Low-suction superheat is achieved where the suction line between the low pressure receiver (accumulator) and compressor is short. This causes a minimum discharge temperature, preventing lubrication breakdown and minimum condenser fouling.

Elimination of Control Valves: Multiple number of control valves are eliminated of individual ammonia air cooling units of cold storages & freezers because of one central system of ammonia gas accumulation.

No need of Accumulators: There is no need of individual accumulator for every ammonia air cooling unit because one large accumulator (surge drum) of liquid circulation system.

Simple Control Adjustment: Refrigerant feed to evaporators is unaffected by fluctuating ambient and condensing conditions. The flow control regulators do not need to be adjusted after the initial setting because overfeed rates are not critical.

No Extra Pressure Drop: Flash gas resulting from refrigerant throttling losses is removed at the low-pressure receiver before entering the evaporators. This gas is drawn directly to the compressors and eliminated as a factor in the design of the system low side. It does not contribute to increased pressure drops in the evaporators or overfeed lines.

Increase in Compressor Life: Because of ideal entering suction gas conditions, compressors last longer and there is less maintenance and fewer breakdowns. The oil circulation rate to the evaporators is reduced as a result of the low compressor discharge superheat and separation at the (surge drum- accumulator) low-pressure receiver.

Easy & Simple Control of System: Refrigerant level controls, level indicators, refrigerant pumps, and oil drains are generally located in the plant rooms which are under operator surveillance or computer monitoring. Ammonia Liquid Recirculation Systems are more convenient for automatic operation and easy to maintain.

Overall Benefit: Liquid Recirculation Systems are most useful for multiple number of cooling units as well as having multi temperature cold rooms or freezers.

Liquid Feed – Ammonia Systems: Generally, the more evaporators used, the more favorable are the initial costs for liquid overfeed compared to gravity recirculated or flooded system. Easy operation and lower maintenance are attractive features for even small ammonia systems.

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