



INTERPRETATION: IIAR SC 2024-1. For IIAR 2-2021 and IIAR CO2.
Capacity Factors and Engine-Driven Compressors

FINALIZED: Jan 10, 2024

SUBJECT: Relief Valve Capacity Factors when Engine Drive Compressors are Present.

BACKGROUND: IIAR 2-2021, Section 15.3.9 states that where combustible material is stored or installed within 20 ft. of an ASME stamped vessel or heat exchanger, the capacity factor (f) used in the formulas for calculating the capacity of relief valves shall be increased from 0.5 to 1.25 (for ammonia refrigeration systems). This is equivalent to 2.5 times the normal capacity factor for ammonia. IIAR-CO2-2021, Section 11.3.8 also states that the capacity factor shall be increased by a factor of 2.5 where combustible materials are stored within 20 ft of an ASME stamped vessel or heat exchanger.

QUESTION 1:

Does the requirement that an additional factor of 2.5 be multiplied times the "f" factor apply to the sizing of relief valves for ASME pressure vessels or heat exchangers, when an internal combustion engine is utilized as a prime mover for refrigeration system equipment within 20 feet of the ASME vessel or heat exchanger?

ANSWER 1: No.

QUESTION 2:

Does the requirement that an additional factor of 2.5 be multiplied times the "f" factor apply to the sizing of relief valves for ASME pressure vessels or heat exchangers, when flammable refrigerant is in a closed-circuit refrigeration system within 20 feet of the ASME vessel or heat exchanger?

ANSWER 2: No.



QUESTION 3:

Does the requirement that an additional factor of 2.5 be multiplied times the "f" factor apply to the sizing of relief valves for ASME pressure vessels or heat exchangers, when flammable secondary coolants are in a closed-circuit refrigeration system within 20 feet of the ASME vessel or heat exchanger?

ANSWER 3: No, if there is no condition where the secondary coolant is open to atmosphere.

QUESTION 4:

Does the requirement that an additional factor of 2.5 be multiplied times the "f" factor apply to the sizing of relief valves for ASME pressure vessels or heat exchangers, when piping containing flammable fuel for internal combustion engines or space heating equipment is located within 20 feet of the ASME vessel or heat exchanger?

ANSWER 4: No. However, if there is a fuel tank or storage vessel within 20 ft. of the pressure vessels or heat exchangers, a 2.5 multiplier would be applied.

COMMITTEE
ACTION: None.