Title (en)

Defrost control method and device for heat pumps.

Title (de)

Verfahren und Vorrichtung zur Abtauregelung von Wärmepumpen.

Title (fr)

Procédé et dispositif de commande du dégivrage pour pompes à chaleur.

Publication

EP 0142663 A2 19850529 (DE)

Application

EP 84111031 A 19840915

Priority

DE 3333907 A 19830920

Abstract (en)

1. A defrosting control method for heat pumps, a defrosting operation being controlled in dependence upon the temperature difference between the evaporator temperature and the ambient or supply air temperature of the evaporator, the actual temperature difference (DELTA T) being compared with a set-value temperature difference (DELTA Tm) which varies in dependence upon the ambient or supply air temperature (Tm), a defrosting signal being delivered on the basis of such comparison when the actual temperature difference exceeds the set-value temperature difference, characterised in that the continuously detected actual value signals of the ambient or supply air temperature (Tm) and the evaporator temperature (Tk) are supplied to a subtractor (60) determining the temperature difference DELTA T = Tm -Tk , the actual value signal (Tm) is also supplied to a function former (62) which forms the set-value temperature difference (DELTA Tm) from the actual-value signal (Tm) and an adjusted temperature difference signal (Uv), the actual-temperature difference signal (DELTA T) output by the subtractor (60) and the set-value temperature difference signal (DELTA Tm) output by the function former (62) are supplied to a hysteretic comparator (61) which when DELTA T > DELTA Tm produces an output signal transmitted as first instruction signal (54) to a facility (65, 66) for triggering different defrosting signals, the actual value signal (Tm) is also supplied to a hysteretic comparator (72) and compared therein with a signal (Uk) corresponding to a fixed temperature above 0 degree C, more particularly 5 degrees C, and an output signal supplied as second instruction signal (56, 57 respectively) to the facility (65, 66) is produced, the actual value signal (Tk) is supplied to a hysteretic comparator (71) and compared therein with a signal (Uo) corresponding to a temperature of 0 degree C, and only when (Tk) is below 0 degree C is an output signal produced which is supplied as third instruction signal (55) to the facility (65, 66) and when the first instruction signal (54) and the third instruction signal (55), the latter signalling a temperature Tk < 0 degree C, are present, the facility (65, 66) : a) if the second instruction signal (56, 57 respectively) signals a temperature Tm < Tuk , triggers a switching process whereby the heat pump drive is stopped and accelerated defrosting with heating gas is started or b) if the second instruction signal (56, 57 respectively) signals a temperature Tm > Tuk triggers a switching process whereby the heat pump drive is stopped and a normal defrosting process started.

Abstract (de)

Verfahren und Vorrichtung zur Abtauregelung von Wärmepumpen 10, wobei die Temperatur Tk des Verdampfers 11 und der als Anergiequelle dienende Umgebungsluft 12 des Verdampfers gemessen wird. In einem Differenzbildern 20 wird die Temperaturdifferenz ΔT aus den beiden gemessenen Werten errechnet und mit einem Sollwert ΔTs verglichen, der in Abhängigkeit der Umgebungstemperatur Ta veränderbar ist. Hierdurch wird vermieden, daß bei höheren Umgebungstemperaturen unnötig oft abgetaut wird, während bei niedrigen Umgebungstemperaturen die Abtauung rechtzeitig eingeleitet wird. Durch zusätzlichen Vergleich der Verdampfertemperatur mit einem 0°C-Signal wird der Abtauvorgang gesperrt, wenn die Verdampfertemperatur den Gefrierpunkt übersteigt.

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Cited by

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