TECH TIP # 59

HARDI
HEATING, AIRCONDITIONING & REFRIGERATION DISTRIBUTORS INTERNATIONAL

One of a series of dealer contractor technical advisories prepared by HARDI wholesalers as a customer service.

Heat Loss Through Cold Partitions

A wall, floor or ceiling that is not exposed directly to the out-of-doors, but is adjacent to a space that is unheated, will lose heat energy --- albeit at a lower rate than if fully exposed. One common example is a family room wall between a connected unheated garage.

Tech Tip #41 details a procedure to estimate the temperature in an unheated space given the heat loss factors (U values) of the building members involved. Using the estimated temperature in the garage at design conditions and the heated room temperature, a new smaller design temperature difference can be used to estimate the heat loss through the common wall. This is the basic procedure used in the Manual J heat loss method.

In the H-22 Heat Loss Guide published by the Hydronics Institute, the full design temperature difference is used throughout with adjustments made to the *heat loss factors* for cold partitions. The Table of Heat Loss Factors used in hydronic heating includes special (adjusted) U values for cold partitions (Construction No. 13 in the table) and for floors over unheated spaces (No. 17).

TABLE A

Computed Heat Loss Factor	CORRECTED FACTOR: Partitions and Ceilings	CORRECTED FACTOR: Floors
.04	.04	.02
.05	.05	.03
.06	.06	.03
.07	.07	.04
.08	.08	.04
.09	.09	.05
.10	.10	.05
.11	.10	.06
.12	.11	.06
.13	.12	.07
.14	.12	.07
.16	.13	.08
.18	.14	.09
.20	.15	.10
.25	.18	.13
.30	.20	.15
.35	.22	.18
.40	.23	.20
.45	.25	.23
.50	.27	.25
.55	.28	.28
.60	.30	.30
.65	.33	.33
.70	.35	.35

In earlier guides, H-21 for example, a Table A (left) was included so that any specially calculated U values (for construction not listed in the heat loss factor table) could be corrected when used as a cold partition, ceiling or floor. For example: if a wall heat loss factor was calculated to be 0.35, using Table A, the corrected heat loss factor would be 0.22 if the wall was a cold partition. This value would be used with the regular design temperature difference to estimate the heat loss through the partition.

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