

Putting Radiant Heating to the Test

In less than one year of operation, WarmRite Floor® proves to be the economical system of choice for industrial heating.

The cost and efficiency of radiant floor heating was put to the test when IPEX built its new production and warehouse facility in Edmonton, Alberta. The new construction used WarmRite Floor® radiant heating for the warehouse and office area of the building and a traditional, natural gas-fired overhead tube heating system for the production area. The situation presented an ideal opportunity for IPEX to compare under carefully controlled conditions, the heating costs and efficiencies of radiant heating to traditional, industrial heating.

In less than a year, the cost-savings and results were nothing short of spectacular. Though the initial cost for purchase and installation of WarmRite Floor heating was higher than for the traditional system (at \$1.67 per square foot compared to \$1.18), in less than a year, the radiant floor heating system proved to be the less expensive choice overall. WarmRite Floor was so efficient and inexpensive to operate relative to the traditional heating system, that the overall cost (including purchase, installation and operation) was less. After four full years, the cost-savings are even more dramatic, as the lower operating costs for WarmRite continue to make it the economical system of choice for commercial and industrial heating.

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The new IPEX building of steel and brick construction, with a 32-foot ceiling height, features both production and warehousing areas. The 45,000 square foot production floor accommodates numerous pipe extrusion lines. IPEX needed the flexibility to add still more capacity in the future, which would require cutting or otherwise disturbing the floor. This eliminated the possibility of in-floor heating in this part of the building.



The production area was equipped with 10 natural gas-fired overhead tube heaters creating an output of 1,500,000 BTU. A makeup air unit provides 80,000 CFM in the area. Considerable waste heat is added to the production area from the pipe extrusion equipment. The total door area in this portion of the building is 512 square feet.

The larger 84,000 square foot warehouse and office area was constructed with 57,000 feet of 5/8" Kitec® XPA radiant heating pipe in the floor—acting as the primary heat source for this part of the building and keeping the warehouse and office areas at a constant and even 70°F. The eight-bay warehouse loading dock was also constructed with an automated Kitec XPA pipe snowmelt system to improve winter access and increase safety. A total of 928 square feet of door space presents a significant source of heat loss in the warehouse. Significant heatloss during the opening and closing of these doors is rapidly overcome by the radiant heat from the concrete floor's thermal mass. The warehouse, office and snowmelt system receives heat from two natural gas-fired boilers while a makeup air unit supplies 40,000 CFM.

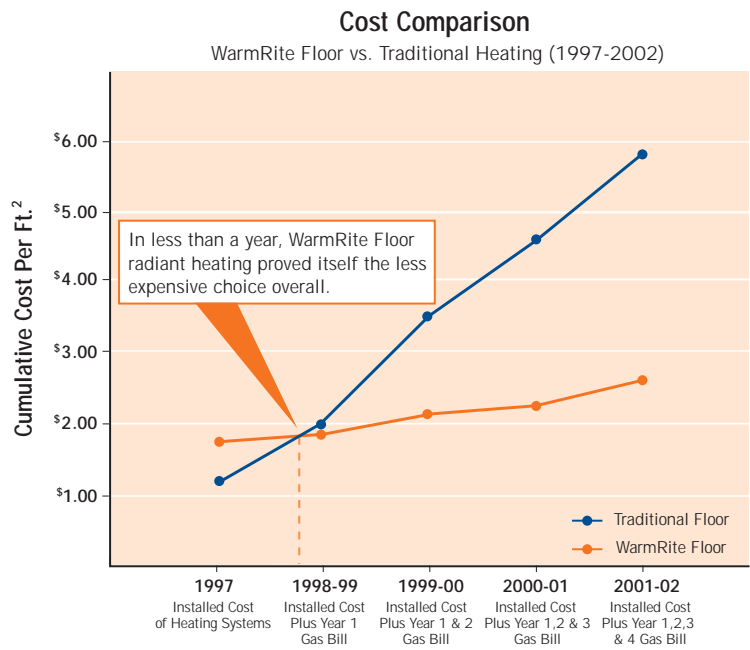
A variable water supply temperature based on outdoor air temperature efficiently matches the heating output load to the heat demand load thus maximizing cost savings.

In order to compare the cost of heating for these two separate areas within the building, each area has its own gas meter and receives separate billing.

WarmRiteFloor®
IPEX RADIANT SYSTEMS

The larger warehouse and office area, including an eight-bay snowmelt system, is clearly drastically less expensive to operate than traditional overhead gas-fired heating used in the production area.

Edmonton, Alberta-based Lehmann Plumbing installed both systems for IPEX and provided detailed installation costs. Though the initial cost for the purchase and installation of WarmRite Floor heating was higher than for the traditional system (at \$1.67 per square foot compared to \$1.18), in less than a year, the radiant floor heating system proved the less expensive choice. Rapid response to heatloss, a higher degree of comfort, energy efficiency and a lower system operating cost all combine to make the Warmrite Floor system a must for large buildings. After four full years of substantial savings the Warmrite Floor system has proven to be the economical choice for commercial and industrial heating. Contact your IPEX representative for further details.



NATURAL GAS HEATING BILLS

Heating System	1998 - 1999	1999 - 2000	2000 - 2001	2001 - 2002
WarmRite Floor System 84,000 ft ² warehouse/snowmelt	\$19,590.84	\$25,094.00	\$13,646.25	\$22,514.68
Traditional heating system 45,000 ft ² manufacturing	\$35,707.23	\$73,972.47	\$47,596.77	\$50,272.58

WAREHOUSE TEMPERATURE IN DEGREES CELSIUS

	Mar.3	Mar.4	Mar. 5	Mar. 6	Mar.7	Mar.10	Mar.11	Mar.12	Mar.13	Mar.14
5' Level	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5	21.5
10' Level	22	22	22	22	22	22	22	22	22	22
15' Level	22	22	22	22	22	22	22	22	22	22
20' Level	22	22	22	22	22	22	22	22	22	22
Outdoor Temperature	-13°C	-13°C	-16°C	-21°C	-23°C	-12°C	-17°C	-13°C	3°C	5°C

Measurements conducted to gauge temperature stratification in the warehouse further demonstrated the comfort of this system. Temperature measurements taken during March 2003 at various heights in the building confirmed an even temperature at various levels within the warehouse.

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