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Project Study: Fire Station No. 1
Location: Red Deer, Alberta, Canada

The task of heating Firehalls present the designer with several interesting problems. Here we have a building that combines a garage, warehouse, office and residential area all into one common heating area. Each of the separate zones requires a different temperature, with several zones having very specific issues to resolve. The Firehall designer is also faced with the necessity of easy access under all weather conditions. HeatLink® Radiant floor Heating has been successful in meeting all design criteria.

Starting from the street, HeatLink® has the answer. A common problem in our North American Environment is SNOW and ICE! Fire Trucks must be able to safely leave the Firehall and enter traffic under all road conditions; ice and snow on the driveway must be dealt with. The common approach has been the shoveling of snow together with a liberal application of salt; (while this has historically been successful) the solution has created it's own problems. What to do about salt and gravel dragged into the Firehall? Constant cleaning, washing down the floor surface has been the only answer…which created more problems! Wet floors are unsafe, water under the overhead doors has been known to freeze and seal the doors, and Fire trucks have been driven right through doors in emergency response! HeatLink® Snowmelt Systems are the solution. By placing pipe into the apron in front of the doors, a water and glycol mixture can be circulated in the concrete, melting the snow and evaporating the moisture! The system is controlled by a moisture sensor, which activates the boiler and pumps only when snow is present.

Inside the Garage area, besides issues with wet floors, we have other problems. The huge overhead doors when opened allow a tremendous movement of air and if the only heat source is a furnace, all your energy investment is lost. When the doors are closed there is the need for large capacity recovery. In order to give this recovery, high output forced air furnaces have traditionally been used. While they are sized for the extreme, the standard heat demand of the area is much less, so in many cases you either had great temperature swings between firing or energy wasted due to "short cycling" of these oversized units. The past answer has been to use two types of heating, one high, and one low. HeatLink® Radiant Floor Heating has successfully addressed all of these issues as well as given added benefits!

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With the installation of HeatLink® below the doors we eliminate the ice! The Radiant Energy Principle ("Radiant" heats surfaces not air) allows the doors to be opened under all except the most extreme wind conditions without huge air loss. As soon as the doors are closed the floor as well as all other hard surfaces radiate heat and people are again comfortable *remember Radiant Comfort is not dependent on air temperature! As an added benefit the floors dry much faster, Firetrucks will warm up and thaw as soon as they are parked, (no longer is this dependant on "hot air" recovery) Even more! Equipment, such as boots, coats and hoses thaw and dry out much quicker! This has actually reduced recovery time for equipment, allowing quicker Emergency response times! All this and lower energy costs as well! Since a properly designed Radiant Floor Heating System is not heating air the high ceilings in the garage are not accumulating the energy output, rather the efficient heating target level is below 8' (no longer are fans needed to push your energy dollars off of the ceiling).

The offices, with Radiant Floor Heating allow the use of one common heat source; one boiler for the entire building, while giving separate temperature levels for each area. Obviously the level of comfortable temperature will vary between garage and office. HeatLink® Floor Heating Systems (through the use of zone valves and thermostats) can give individual control settings for each individual room, and/or floor as desired! This attribute can directly relate to the bedrooms and common areas of the living quarters as well, thus work areas can have one temperature while rest areas can be kept at a different "comfort" level.

Where in the past (with hot air) there was the need for many doors to control "air movement" we are able to separate zones by Radiant Heating Temperature rather than doors! The added benefit to this again is swifter response in an Emergency; even a swinging door provides an obstruction to movement.

Further on the single heat source,- one boiler issue. The use of water as a heat transfer medium is much more efficient than air. Water can carry far more BTUs than air allowing for much smaller sized distribution system (no huge ducts *no large bulkheads). Boiler energy efficiency (including emissions – now becoming a key issue) are much better than forced air. One central Boiler, with the HeatLink® Radiant Floor Heating System to distribute the heat will satisfy all separate heat demands, including indirect fired domestic water heating. With the need to constantly wash the trucks a good energy efficient source of hot water is an important benefit.

In reading this application review several words have been repeated many times, they are Energy, Efficiency and Comfort. These are the criteria in which HeatLink® excel, please contact our office or your local agent for any further information.

HeatLink® Canada
Manufactured & Distributed by HeatLink Group Inc.
Head Office:
4603E - 13th Street NE
Calgary, AB, T2E 6M3
Toll Free: 1-800-661-5332 Phone: (403) 250-3432
Fax: 1-866-450-1155
Mississauga Office:
1555 Bonhill Road, Unit #7
Mississauga, ON, L5T 1Y5
Toll Free: 1-800-661-5332 Phone: (905) 795-8289
Fax: 1-866-450-1155

HeatLink® China
Distributed by Cathy-Links International
Phone: 852-25693213
Fax: 852-25359271

HeatLink® Ireland
Distributed by Jamoni Ltd.
Phone: 057 - 932 4062
Fax: 057 - 932 4063
Free Phone: 1800-311338

HeatLink® Mexico
Distributed by Distributora Caisa S.A. de C.V.
Phone: (52) 3300-4400
Fax: (52) 3300-4406

HeatLink® USA
Distributed by HeatLink Group Inc.
Toll Free: 1-800-661-5332
Fax: 1-800-869-6098

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