Radiant Heat Quote System

Master Project Report

Presented By

Kinjal Khamar (Student ID#725740)

Graduate Advisor: Dr. Ausif Mahmood

Submitted to the Graduate School of

University of Bridgeport, in partial fulfillment

of the requirements for the degree of

MASTER OF COMPUTER SCIENCE

September 2008

Department of Computer Science and Engineering

© Copyright 2007 All Rights Reserved
ABSTRACT

In today’s world where machines are replacing or minimizing human effort, development of specialized or tailor made application to meet once special requirements has become very important. Various new systems facilitated by computerization are being evolved which are to a certain extent replacing the human effort.

My undergoing project named “Radiant Heat Quote Web System” is one such development. In normal office environment an administrator or office executive normally guides the employee of company and customer gives information about the organization and various activities underway. I have tried through my project to provide such information and guidance to the employee and customer with the Web Portal System. So Customer can buy online from the site. And employee will see the data that has been enter by customer.

The information has been divided into different modules so that retrieval of the same becomes very easy and user friendly. I have tried to make the project interactive so that the users do not have to navigate through unwanted information. I have also put one small feedback form through which user can convey their opinion about the organization and the software itself.
TABLE OF CONTENT

1) Introduction of the my system 3-7
   - Radiant Heat Manifold
   - Radiant Heat Control
   - Radiant Heat Insulation
   - Radiant Heat Panels
   - Pex Fittings
   - Pex Tools
   - Radiant Heat Installation Parts
   - Electric Radiant Fuel.

2) What is Portal? 7-8

3) Objective Of The System 8-9

4) Flow Chart 9-10

5) Description of the System (Customer Side) 10-40
   - Quote-type. Asp 10-13
   - Basic Information 13-25
   - Room1.asp 25-33
   - Submit-Quote. Asp 33-39
   - Final. asp 39-40

6) Description of the System (Admin Side) 40-48
   - adm.asp 40-43
   - admquote.asp 43-46
   - admlastpart.asp 46-47

7) Bibliography 47-48
INTRODUCTION OF MY SYSTEM

It is Completely maintained and managed by the Administrator, It is kind of Intra net Portal, use for displaying Information of detailed product of the radiant heat quote or other relevant information for an Organization.

The Radiant Heat category includes the products needed to properly install a Radiant Heat system. These products include PEX Tubing, Radiant Heat Controls, PEX Fittings, and more. Radiant Floor Heating represents the fastest growing segment of the hydronic heating industry. If you are looking for a list of material for your radiant heat job try our radiant heat calculator.

PEX Tubing

PEX Tubing is used to distribute heat via water in Radiant Heat and Hydronic Heating Systems. Most radiant heat systems require PEX Tubing with an oxygen barrier. ThermaPEX Tubing and Wirsbo hePEX tubing have an oxygen barrier and are ideal for radiant heat systems. PEX-al-PEX tubing has an aluminum layer that acts as an oxygen barrier. This tubing is not quite as common but is gaining in popularity for systems such as Warmboard. The Wirsbo Aquapex tubing and other non-oxygen barrier PEX tubing may only be used in radiant heat systems that don’t contain any cast iron components(pumps, valves, boiler...). Otherwise these cast iron components will rust.

PEX Tubing Information

PEX stands for cross linked polyethylene. PEX Tubing is the most advanced and tested material available on the market today. PEX Tubing is designed for use in Radiant Floor Heating Systems and PEX Plumbing systems. It is gaining in popularity due to its ease of installation and durability.

We sell several types of PEX Tubing. Click on each of the categories to get more detail on each type of PEX Tubing. The PEX Tubing brands listed below are all designed for radiant heating. However, if ferrous components are present, Wirsbo Aquapex should not be used.

Radiant Heat

PEX Tubing has revolutionized the Radiant Heat market. The combination of strength, flexibility, and memory make PEX the perfect product for Radiant Heat Installations.

Oxygen Barrier PEX Tubing such as Uponor Wirsbo HePEX, LK PEX’s ThermaPEX, Wirsbo’s Multicor, or Safelink’s PEX-Al-PEX should be used unless no ferrous (metal) components are involved in the system. If the system is free of metal components then Wirsbo Aquapex may be used as an alternative to the PEX Tubing mentioned above.

Other ways to refer to PEX Tubing include PEX Pipe, PEX Tube, PEX Piping, PEX, Plumb PEX, Heat PEX, and PEX Piping. All of these names refer to the same product.
Radiant Heat Manifolds

Manifolds play an important role in Radiant Heat applications. Manifolds are the place where supply water from the heat source is separated into smaller lines and dispersed throughout the Radiant Heat System.

Radiant Heat Manifolds
PEX Manifolds act as a hub in a radiant heat system. A supply manifold has a supply line coming in to the manifold and secondary lines exiting the manifold. With a return manifold, secondary PEX lines gather at the manifold and the water exits through a single return line.

Radiant Heat Controls
Radiant Heat Controls include actuators, thermostats, and zone valves. These radiant heat controls will operate the flow of water in a radiant heat system.

Radiant Heat Controls
Radiant Heat Controls are the "brains" behind a Radiant Heat System. They control the functioning of the system. This includes on/off mechanisms and temperature control. There are many possibilities when considering which controls to use for a Radiant Heat System. Click on the items below for more information.

Radiant Heat Insulation

Insulation lowers the heat loss of a Radiant Heating System. Therefore in the long run it will save money in the form of lower energy bills. Heating systems will perform better if insulation is used. The insulation listed below is ideal for under-slab Radiant Heat installations.

Radiant Heat Panels

Radiant Heat Panels will improve the efficiency of a radiant heat system. These panels include Wirsbo Quik Trak which can be used above a subfloor, and Wirsbo Joist Trak which should be placed in between the joists below the space to be heated.
PEX Fittings

PEX Fittings and valves play an important role in radiant heat systems. PEX Fittings can be used to make PEX to PEX Connections, to connect PEX to a manifold, or to connect PEX to another material.

**PEX Fittings**

PEX Fittings make connections Radiant Heat applications. We sell three types of PEX Fittings. These are the Wirsbo QS-Style Fittings (compression), the Wirsbo SSC PEX Fittings (Clamp style), and the Wirsbo ProPEX Fittings (Expansion style). Each of these systems has advantages over the other. Also included in PEX Fittings are Fitting assemblies. These will allow you to connect PEX to a manifold, or to use compression fittings to connect PEX to copper or NPT.

The valves included in this category include PEX Ball Valves, PEX Stop Valves, and PEX Washing Machine Boxes & Ice Maker Boxes. These valves are designed for use in PEX Plumbing and Radiant Heat systems.

PEX Tools

PEX Tools are used to install PEX Tubing in a Radiant Heat System. These tools include the Clamp Tool, Crimp Tools, and Wirsbo Expander tools to make PEX Connections, a PEX Tubing Uncoiler, PEX Tubing Cutters, and more. The uncoiler is an optional tool for radiant heat systems that allows for faster and easier uncoiling of PEX Tubing.

**PEX Tools**

PEX tools are designed for installing PEX Plumbing and Radiant Heat systems. These tools include Cutters and chamfering tools to work with PEX Tubing as well as the Expander Tools and the Clamping Tool.

The Wirsbo Expander Tools are required for use with ProPEX fittings. These come in several different models including the manual and air expander tools. Different size heads are attached to the tools in combination with PEX rings of different sizes to make connections with PEX Tubing.

The Wirsbo Clamping tool is required when using SSC Fittings. It is used in PEX Plumbing and Radiant Heat applications. Different size clamps are used for each size of PEX Tubing.

Radiant Heat Install Parts

Installation accessories include the items needed to install PEX Tubing for Radiant Heat Systems. These include tube talons for PEX Tubing, Bend Supports for PEX Tubing, and several Radiant Heat Books.
**Installation Accessories**
These parts include Bend supports for making turns with PEX Tubing, parts for attaching PEX Tubing to different surfaces, and insulation. We have also added several books that provide information on radiant heat systems.

Proper insulation can mean the difference between a successful radiant heat job, and one that does not perform that well. Insulation ensures that the heat being created will heat the spaces where the heat is required. Insulation should always be used for slab and joist heating applications. Insulation also aids in the efficiency of all hydronic and radiant heating applications, and will save you money in the long run.

**Electric Radiant Heat**

Electric Radiant Heat is one of the fastest growing methods of heating space, or floor warming. Electric radiant heat has grown in popularity due to ease of installation, cost of installation, and the comfort it produces. Electric Radiant Heat is often found in bathrooms, bedrooms, and kitchens, but may also be used for a full house.

Suntouch is a leader in the manufacturing of electric radiant heat products. Suntouch Mats are simple and easy to use and are also sold as all inclusive kits. Suntouch Mats are not the only form of electric radiant heat, WarmWire Cable is also available and sold in spools as well as all inclusive kits. Controls for the Suntouch Mats and electric radiant cable are also available including the Sunstat Thermostats.
What is Portal?

Usually used as a marketing term to describe a web site that is or is intended to be the first place people see when using the web. Typically, a portal site has a catalogue of web sites, a search engine, or both. A portal site also may offer messaging services and other service to entice people to use that site as their main “point of entry” (hence "portal" to the web).

But my portal definition gets restricted to intra organization purpose, wherein a multi branches organizational structures spread across the globe can use it effectively. It is a great common platform for sharing information and communication.

It is a system by which we can manage among the various activities of a company. Since long time there was a need of excellent and robust software that could take care of the complexity of various administrative works.

The Salient features of system are:

- It is completely automated.
- The data can be entered and retrieved at the click of the mouse button.
- It eliminated duplication of efforts across the office, thereby increasing the efficiency.
- It provides ready and correct information for immediate decisions.
- It generates desired reports at the click of a mouse button.
- It is the step towards paperless office work for Office.
- Can be understood easily by a non technical person also
OBJECTIVE OF THE SYSTEM

The project is related to the automation of an Information System of the company. There are many objectives of this E-commerce Company, but one of the main objectives is to reduce the labor work and to automate the current Information system used by organization to maintain the organizations and industries various news and Information. In the existing system all the documents are maintained on paper [product news letter, mails etc]. So that paper work is increases. Our main goal is to decrease the paper work and save the time and money. It is user friendly. And the system will be efficient to use.

Project’s scope is very wide in the sense that it can be used at all the levels of the management to retrieve and enter Company’s and market information.

The main objectives of our system are as follows:

⇒ the number of users is restricted (employee only) and the scope of the information is also restricted to the organization.

⇒ To share industry news and trends.

⇒ to educate employee about new product of radiant heat quote launches, product features and competition analysis

⇒ HR benefits and information & policies.

⇒ A common platform for employees views and communicates with fellow employees
Flow Chart

Start

Select radiant heat material quote

Next

No

Go back and select compulsory field.

Yes

Select basic information of quote.
DESCRIPTION OF THE SYSTEM (Customer Side)

Main site- www.pexsupply.com
Quote_type.asp:-This is the main page of the radiant_heat_quote. From this page customer will select what kind of radiant heat material quote they want.

Everything in this system has been created using ASP(Active server pages),VBSCRIPT,JAVASCRIPT.

Everything that has been selected by the User will save in SQL Server 2000 in pexsupply database system, and what ever as when User will submit the whole Quote from last page and what ever credit card information has been filled out from there it will cut from their account through pay pal system.

Quote_type.asp:-This is the First page of the system where people will choose what kind of radiant heat material quote they want to design.

My system offers a custom radiant heat design service to fit the needs of your individual system. The radiant heat design is performed by a certified radiant heat designer and is fully customized to your individual home or building. Upon completion of the quote or drawing the designer will be available to answer any questions that arise. Before filling out this form you will need to gather the necessary
information for your system including room dimensions, zoning preferences, window dimensions.

you have to select one of the radiant heat quote options below. *

:-Radiant Heat Materials Quote ($25)
-List of materials needed for your job with pricing
-Heat Loss Report - heat loss per room, tube spacing, and total heat loss
-Loop Mapping - length of each loop, which manifold each loop will be attached .

:-Radiant Heat Materials Quote & Loop Cad ($150) - **Requires .dwg file
-Loop Cad Drawing - shows your home/building with loops drawn to manifold locations
-List of materials needed for your job with pricing
-Heat Loss Report - heat loss per room, tube spacing, and total heat loss
-Loop Mapping-length of each loop, which manifold each loop will be attached

-This is java script alert box, All kind of error handling is done in JavaScript, if person this is compulsory field, so if person will not select any of that radio button, then system will not go further and I will keep sending you this error.
-If you will select any of them you will go to the another page that will open the basic information of your home system.
Basic information.asp:- This page contains the basic information of the radiant heat quote. Here customer will select what kind of the brand of the pex they want, they can select what kind of supply line they want, can select the tools, what kind of fuel type, control level, and they will select in how many rooms they want heating system.

-Basic Information is the page where people has to select the basic information from their home have.

**Expected Date Of Purchase:** - Here user has to enter the Approximated time when they want the design ready. one week, Three weeks or three months.

This is compulsory Field so if you will not select any of them the system will give you the JavaScript Alert box, and will not allow you to go further.
**Preferred Brand Of Pex:** * - User have to select here Which Brand of Pex they Preferred for their radian heat system.
- ThermaPEX
- Uponor Wirsbo
- HydroPEX
- Mr. PEX-al-PEX

-This is also compulsory field ,If User will not select any of them then the system will not go further.

**Supply Line: [More Info]** * - Here User will select what kind of Supply line they have.and they have choice of three things.
- Copper
- Pex
- Pex-al-pex

-This is also compulsory field ,If User will not select any of them then the system will not go further. and it will give you the Alert that Please Select Supply line.

-If User want to know more about the supply line they can click on More Info that is the link to the description of what is supply line, and it’s detailed information.
More Info Of Supply Line:

Is your System: [More Info]*

- Here User has to select that they have Open System or Close system, According to it the RPA designer will design their system.

- This is also compulsory field, If User will not select any of them then the system will not go further, and it will give you the Alert that Please Select your system.

- Here also if User want to know in detailed they can click on the More Info that is the link to the page where we have description of the system.
More Info of the IS Your System:-


Radiant Heat Design

What is an open system?
A circulating hydronic system exposed to atmospheric conditions. Open systems require components resistant to oxidative corrosion. Open systems are the result of continual introduction of fresh water, open vessels or oxygen diffusion through non-metallic components.

What is a closed system?
Any closed-loop hydronic piping system which prevents atmospheric oxygen from entering the system to a degree, which effectively protects component from excessive oxidative corrosion.

More Notes:- This the field where User can give the instruction to the deigned how they want it and some extra note they want to tell the deigned to design the quote, And this will save in database. and as Admin can see it on my admin site.

Installation Method: [More Info] * - In this field User can select from the dropdown menu which Installation method they want it in their design.
- Slab on Grad
- Slab below Grad
- Pour Underpayment Over suspended floor
- Quik Trak
- Joist Trak
- Suspended Pipe
- This is also compulsory field, but it will not give any JavaScript error, if person will not select anything it will automatically select the first one slab on Grade from drop down box.

- If User want to much in detail about all of them they can select on More Info link that will open new page with detailed about it. All the links are done in HTML.

**More INFO IN Installation Method:**

---

**Radiant Heat Learning Center**

- Advantages of Radiant Heating Systems.
- Installation Methods.
- How to install a radiant heat system.
- How to install a radiant heat floor.
- History of Radiant Heat.

**Advantages of Radiant Heating Systems**

Radiant Heat is an efficient way to heat your home. It is an energy efficient system that can save you money on your energy bills. There are many advantages to radiant heat systems, but one of the most significant is the energy efficiency. A radiant heat system distributes heat evenly throughout your home, which results in lower energy bills. Additionally, radiant heat systems can be used to heat large spaces, which can help to reduce the amount of energy used to heat your home.

**Installation Methods**

- Radiant Floor or Radiant Grade

To install a radiant floor, you will need to follow the instructions provided by the manufacturer of the radiant floor system. The installation process will typically involve the following steps:

1. Prepare the area for installation. This may involve removing existing flooring, preparing the subfloor, and installing any necessary insulation.
2. Install the radiant floor system. This may involve installing radiant floor panels, connecting the panels to a heating system, and waterproofing the installation.
3. Install the finish floor. This may involve installing tile, carpet, or other flooring materials over the radiant floor system.

---

To install a radiant grade, you will need to follow the instructions provided by the manufacturer of the radiant grade system. The installation process will typically involve the following steps:

1. Prepare the area for installation. This may involve removing existing flooring, preparing the subfloor, and installing any necessary insulation.
2. Install the radiant grade system. This may involve installing radiant grade panels, connecting the panels to a heating system, and waterproofing the installation.
3. Install the finish floor. This may involve installing tile, carpet, or other flooring materials over the radiant grade system.

---

**Radiant Heat Learning Center**

- Advantages of Radiant Heating Systems.
- Installation Methods.
- How to install a radiant heat system.
- How to install a radiant heat floor.
- History of Radiant Heat.

**Advantages of Radiant Heating Systems**

Radiant Heat is an efficient way to heat your home. It is an energy efficient system that can save you money on your energy bills. There are many advantages to radiant heat systems, but one of the most significant is the energy efficiency. A radiant heat system distributes heat evenly throughout your home, which results in lower energy bills. Additionally, radiant heat systems can be used to heat large spaces, which can help to reduce the amount of energy used to heat your home.

**Installation Methods**

- Radiant Floor or Radiant Grade

To install a radiant floor, you will need to follow the instructions provided by the manufacturer of the radiant floor system. The installation process will typically involve the following steps:

1. Prepare the area for installation. This may involve removing existing flooring, preparing the subfloor, and installing any necessary insulation.
2. Install the radiant floor system. This may involve installing radiant floor panels, connecting the panels to a heating system, and waterproofing the installation.
3. Install the finish floor. This may involve installing tile, carpet, or other flooring materials over the radiant floor system.

---

To install a radiant grade, you will need to follow the instructions provided by the manufacturer of the radiant grade system. The installation process will typically involve the following steps:

1. Prepare the area for installation. This may involve removing existing flooring, preparing the subfloor, and installing any necessary insulation.
2. Install the radiant grade system. This may involve installing radiant grade panels, connecting the panels to a heating system, and waterproofing the installation.
3. Install the finish floor. This may involve installing tile, carpet, or other flooring materials over the radiant grade system.

---

**Radiant Heat Learning Center**

- Advantages of Radiant Heating Systems.
- Installation Methods.
- How to install a radiant heat system.
- How to install a radiant heat floor.
- History of Radiant Heat.

**Advantages of Radiant Heating Systems**

Radiant Heat is an efficient way to heat your home. It is an energy efficient system that can save you money on your energy bills. There are many advantages to radiant heat systems, but one of the most significant is the energy efficiency. A radiant heat system distributes heat evenly throughout your home, which results in lower energy bills. Additionally, radiant heat systems can be used to heat large spaces, which can help to reduce the amount of energy used to heat your home.

**Installation Methods**

- Radiant Floor or Radiant Grade

To install a radiant floor, you will need to follow the instructions provided by the manufacturer of the radiant floor system. The installation process will typically involve the following steps:

1. Prepare the area for installation. This may involve removing existing flooring, preparing the subfloor, and installing any necessary insulation.
2. Install the radiant floor system. This may involve installing radiant floor panels, connecting the panels to a heating system, and waterproofing the installation.
3. Install the finish floor. This may involve installing tile, carpet, or other flooring materials over the radiant floor system.

---

To install a radiant grade, you will need to follow the instructions provided by the manufacturer of the radiant grade system. The installation process will typically involve the following steps:

1. Prepare the area for installation. This may involve removing existing flooring, preparing the subfloor, and installing any necessary insulation.
2. Install the radiant grade system. This may involve installing radiant grade panels, connecting the panels to a heating system, and waterproofing the installation.
3. Install the finish floor. This may involve installing tile, carpet, or other flooring materials over the radiant grade system.
a)

From Front: Padding Tab

The front is an untrimmed triangle, which is easily and conveniently located for marking and removing. After removing the triangle from the front, the user can immediately place the triangle in its correct position and make the necessary notes. It should be carefully removed by tearing off the triangle.

b)

Quick Link to a Word Document or a Language Tab

Quick Link to a Word Document or a Language Tab, which is used to display the user's document or language. It can be used to display the user's document or language. It can be used to display the user's document or language. It can be used to display the user's document or language. It can be used to display the user's document or language.

c)

Side Sections using PVC Tube

These sections can be used to display the user's document or language. They can be used to display the user's document or language. They can be used to display the user's document or language. They can be used to display the user's document or language.

d)

Joint Mounting Using Adobe File

• Slab On or Below Grade

In this installation method the PEX Tubing may be either tied to a wire mesh or rebar using wire or zip ties. If under-slab in being used, the PEX Tubing may be stapled to the under-slab insulation. Edge Insulation should be used in this application around the perimeter of
the slab. Under-slab insulation should be used when there is a high water table or the soil is moist, bedrock is present, floor covering values exceed 2.0, or the linear feet of the perimeter is high in comparison to the gross feet area.

To install the tubing without under-slab insulation, first place the wire mesh or rebar on the compacted base material. Using wire or zip ties secure the tubing to the rebar or wire mesh. Space the ties every three feet along straight runs. When making 180-degree turns, tie the tubing at the top of the arc and once on each side, 12 inches from the top of the arc. This prevents the tubing from floating up into the pour. The tubing should be pressure tested to 60psi.

To install the tubing when there is under-slab insulation, you can use PEX Staples to secure the tubing to the insulation. Staples should be placed every 3 feet along straight runs, and when making 180-degree turns it should be treated similar to wire mesh installation.

- **Pour Over Existing Slab**

  This application is used in residential retrofit situations. An example of this is finishing an existing basement. Under-slab insulation should be used in this application, and the pour should be at least 1-1/2" thick. The pour should be 3/4" over the top of the tubing, so if 1" tubing is used, the pour should be greater than an 1-1/2" thick. In this application tubing is secured to a wire mesh or rebar in the same manner as a slab installation. An alternative would be to staple the tubing to the under-slab insulation. However, when making 180-degree turns, a tie or staple should be placed at the top of the arc and 6" from the top of the arc (one on each side). Tubing should be pressure tested to a minimum of 60psi.

  Cap pours are possible in different applications and situations. Pours may be made over a pre-cast plank, steel decking, a suspended wood floor, or a suspended wood floor with sleepers. While these are not as popular as an over slab pour, they are still possible.

- **Quik Trak Over a Wood Subfloor or Existing Slab**

  Quik Trak panels are plywood panels that have an aluminum underside. The panels have a built-in groove for tubing to be placed in. This application is in residential construction as an alternative to joist heating and over-pours. A minimum of R-19 insulation should be used between the floor joists beneath the floor. An air space should be left between the insulation and the floor. When installing a radiant heat system using Quik Trak, 5/16” hePEX Tubing must be used. The maximum loop length for 5/16" Tubing is 250'. Other sizes of PEX Tubing will not fit into the Quik Trak Panels.

  To install Quik Trak panels, first lay the panels down on top of the wood sub-floor. The panels should be placed perpendicular to the floor joists. The seams of the Quik Trak should be staggered. After the panels are laid, the grooves of the panels should be vacuumed to remove debris. Next, a thin bead of Quik Trak Sealant should be placed throughout the length of each of the grooves. The sealant acts as an adhesive and promotes good heat transfer from the tubing to the panel.
To install the tubing walk or step the tubing into the panel grooves. You may need to use a rubber hammer to snap the tubing into the groove. To secure the panels to the sub-floor use 1-1/4” screws or 1” staples. Start from the middle of the panel and work to the ends, alternating from side to side. If the panels are being installed over an existing slab a layer of 5/8” or ¾” plywood should be placed over the slab before installing the Quik Trak. In this application 1” screws or staples should be used.

Different floor covering types are possible using Quik Trak. However, the most efficient are hardwood, tile, and linoleum. Carpet floor covering installations will not be as efficient, but are possible.

**• Joist Heating using PEX Clips**

This method is commonly used in new and retrofit installations. The installation is not recommended for open-web truss construction. A minimum of R-11 Insulation should be used even if the space below is heated. When the tubing is installed in a crawl space, a minimum of R-19 insulation is recommended. Standard insulation is adequate, foil faced insulation is not necessary. Install the insulation vertically to block the joist cavity beneath. A small air space (2”-3”) should be left between the insulation and the sub-floor above. PEX Clips work with both ½” and 3/8” PEX tubing.

To install PEX tubing using Wirsbo PEX Clips, drill holes 1-1/4" minimum side by side at the end of each joist cavity. The tubing should then be threaded in between the floor joists, moving from one joist to the other as needed. After installing tubing in the last joist bay, run the PEX straight back through the joist holes behind the first set of holes. Return this end to the manifold and connect it.

Next screw the PEX Clips into the bottom of the sub-floor. The clips should be placed 8" on center in 16" joist bays, 6" on center in 12" joist bays. Install the loop farthest from the manifold first by pulling the loop the length of the bay. Slack from the loop hanging from the next bay can be borrowed. The clips should be placed every three feet along the joist bay. Attach the clips with screws. The screws should be no longer than ¾”. Snap the tubing into the PEX Clips. This will suspend the tubing an inch below the subfloor. Continue the process until all of the loops are attached.

**• Joist Heating Using Joist Trak**

Joist Trak installations can be done for new work and retrofit applications. Joist Trak applications produce more heat with the same water temperature as compared to joist heating without the panels. Insulation should be installed snug against the panels. Tubing should be pressure tested to 60 psi. Joist Trak works with ½” and 3/8” PEX Tubing.

To install a radiant heat system using Uponor Wirsbo Joist Trak, use ¾” drywall screws to
attach the panels to the subfloor. Panels should be separated equidistant from the joists in 16” joist bay. Leave about a foot at the end of joists to allow for tubing turns. Leave an inch between the panels. Drill two holes at the end of the joist bay. Thread the PEX Tubing in between the joists, moving from one joist cavity to the other as necessary. After tubing is in the last bay, run PEX back through the joist holes behind the first set of holes. This end of the PEX will be connected to the manifold. Install the loop farthest away first, slack can be borrowed from the loop hanging from the next joist bay. Then snap the tubing into the panels. Continue this process until all the loops are installed.

**Tools For Your Radiant Heat System:**

- Here User will select the Tools for the radiant heat system.
- I don’t have tool and don’t want to buy one.
- I don’t have tool and want to bye one use propex tool.
- I have propex tool and want to use propex fittings

- From this deigned will deign the quote according to the user entering the detailed about it.

- This is also compulsory field, but it will not give any JavaScript error ,if person will not select anything it will automatically select the first one I don’t have a tool and don’t want to buy one from drop down box.
**Heat Source:** Here User will select what kind of the heat source they want to Quote in the system.
- I will use existing heat source
- Quote tankless water heater
- Quote Cast boiler
- Quote High efficiency boiler

- This is also compulsory field, but it will not give any JavaScript error, if person will not select anything it will automatically select the first one. I will use existing heat source from drop down box.

**Fuel Type:** Fuel type is the user will select what kind of fuel they have in there home
- Natural Gas
- Oil
- Electric
- Propane

- If User will not select any of them then it will give you the JavaScript error, and do not go further till user will select any of them.
Control Level:* - In this field user has to select that they have basic control of their heating system or it is high efficiency system.

- If User will not select any of them then it will give you the JavaScript error, and do not go further till user will select any of them.

Number Of Rooms:* - Here I have drop down menu which has value to 1 to 20. Maximum number of the room is 20. User has to select how many room they want to quote for their system. eg. If user will select 5 rooms then one by one it will go to 1 to 5 room and at last it will submit the quote of the system.

- Here as an example I am showing you the room 1 page all the room page is going to be same, but in SQL server database I will save differently as different different room id.
Room1.asp:- on basic information page customer will select number of the room. They can select up to 20 rooms, and depend on their selection system will go. Suppose if they select 6 rooms. It will go till 6 rooms. Here I have selected till room1. here they will select room name, which zone of the room, floor of the room, shape of the room and its’ square feet, total length of the exposed wall, average height of the room, floor covering type, quality of room, efficiency of heating, all the windows and doors height and width. And it will go till user has want to apply heating system in number of the rooms till 20 rooms.

Room 1 name: (ie. kitchen) - Here user will enter the name of the room as an eg family room. 
-This is compulsory field if you will not write anything in that field it will give the error as:

![Image of error message](image-url)
**Which zone will room 1 be on?** - Here user has to enter the zone of the particular room.
-This is also compulsory field if you will not select any thing it will automatically select the first one that is 1 and value available in this field is 1 to 10, maximum of the zone available is 10.

**Which floor is the room on?** - Here from the drop down user has to select which floor is the room available
-Basement
-First
-Second
-Third
-Others

-If user does have anything to select they can select the others. This is also compulsory field but if user will not select anything it will take first one from the list as basement.

**Shape of the room:** - Here I made radio buttons from there user has to select the what is shape of there particular room
-rectangle

-You can see if you select the rectangle radio button, it will disable the corner and other field length and width field
-In that rectangle field user has to enter the length and width.
-dogleg

-you can see here if you select the corner others and the rectangle field will disable. Here user have to enter the A,B,C,D that has been shown in the figure.

-octagon
-Now if user will select the other it will disabled the rectangle and corner ,and user can put the total square foot of it.

**Total length of the exposed walls: [More Info]** - Here user will select the total length of the exposed walls from the user home.

-This is compulsory field if you will not write any thing in that field it will give the error as:

![Warning Message](image)

-And if user wan to more in detailed about the exposed wall they can select on the more info ,it will open the new window.

![Exposure Wall Information](image)

**Average height of this room:** - Here user will enter the Avh height of the room.
- This is compulsory field if you will not write any thing in that field it will give the error as:

**Floor covering type:** - In this field user has to select from drop down.
- wood
- concrete
- Tile
- Carpet

- This is also compulsory field if user will not select any of them then I will automatically take the wood from there.

**Is the space above the room heated?** - Here you have two options that space above the room is heated or not.
- yes
- no

- This is compulsory field if you will not write any thing in that field it will give the error as:

**Is the space below room heated?** - Here use has to select the space below room is heated or not.
- yes
- no
-This is compulsory field if you will not write any thing in that field it will give the error as

\[\text{Construction quality of this room: [More Info]}\] Here user has to select that what is quality of the room.
- Good
- Better
- Best

-This is compulsory field if you will not write any thing in that field it will give the error as

- If you want to know much in detailed about this field, you can select on the More Info that is the link to the page where we have description about it.
More information about construction quality: - If user wants to enter some special instruction about it, they can put it and that will save in database and when it will can see in admin side.

Windows of Room 1: Here we have to enter the sq ft of the different windows; maximum number of window is 5.

Doors of Room 1: Here we have to enter the sq ft of the different Doors; maximum number of window is 3.
Submit_quote.asp:-after selecting information of the room customer will submit the quote. Here they will enter the first name, last name, address, city, state, email, phone number, special instruction, payment method (card type), name on card, card number, ccv behind card, expiration date of the card.

**First Name:**  - Here user has to enter the first name .and it will save in customer table.

-This is compulsory field if you will not write any thing in that field it will give the error as
**Last Name:** * - Here user has to enter the last name and it will save in customer table.

-This is compulsory field if you will not write anything in that field it will give the error as

![Error Message](image1)

**Address:** * - Here user has to enter Address and it will save in customer table.

-This is compulsory field if you will not write anything in that field it will give the error as

![Error Message](image2)

**City:** * - Here user has to enter City and it will save in customer table.

-This is compulsory field if you will not write anything in that field it will give the error as

![Error Message](image3)

**State:** * - Here user has to enter State and it will save in customer table.
- This is compulsory field if you will not write any thing in that field it will give the error as

```
Please enter state.
```

**Zip Code:** - Here user has to enter Zip Code .and it will save in customer table

- This is compulsory field if you will not write any thing in that field it will give the error as

```
Please enter zip code.
```

**E-mail Address:** - Here user has to enter E-mail Address .and it will save in customer table

- This is compulsory field if you will not write any thing in that field it will give the error as

```
Please enter email address.
```

**Phone Number:** - Here user has to enter Phone Number .and it will save in customer table
-This is compulsory field if you will not write any thing in that field it will give the error as

![Error Message]

**Special Instructions:** - Here user can enter some special instruction if they want to enter, and want to tell the designer to design the quote.

**Card Type:** - Here user has to enter card type. and it will save in credit card info table
- visa
- master card
- discover
- amex

-This is compulsory field if you will not write any thing in that field it will give the error as

![Error Message]

**Name on Card** - Here user has to enter Name on the Card .and it will save in credit card info table

-This is compulsory field if you will not write any thing in that field it will give the error as

![Error Message]
**Card Number:** Here user has to enter card number .and it will save in credit card info table

-This is compulsory field if you will not write any thing in that field it will give the error as

![Windows Internet Explorer](image1)

**CCV:** Here user has to enter CCV that is 3 digit behind your card .and it will save in credit card info table

-This is compulsory field if you will not write any thing in that field it will give the error as

![Windows Internet Explorer](image2)

**Expiration Date:** Here user has to select the expiration month or expiration year of the credit card.
- when you hit submit everything is will save in database and, credit card information will go thorough the pay pal and cut money from particular user account or customer account and as an result RPA designer will design the quote for particular system according to the customer has entered the value.
Final.asp:- when customer will select the submit quote all the information will save in the database. And they will get the order number for the reference.

As an reference for particular record they customer will get the order number for the reference and for any concert they can ask about it using this order no.
DESCRIPTION OF THE SYSTEM (Admin Side)

Adm.asp:-What ever data has been enter by the customer it will list here, so all the information will list here.

On our admin site whatever the order has been place by the Customer,admin of the company can see here and can edit the detail of it from here.

RH#-Here i have RH# that is order number that has been given to the Customer at the last page og the quote system
This is identification number for the particular order. and it is primary key of the Admin table.
Date-Date the field in database that will display here, and it has save
in database as the using the now() function when customer is placing
the order.

D.O.P-D.O.P is the approximate time that has been select on the second page as
expected date of purchase one week, three weeks, and three months.

Name-The name is the first and last name of the customer that has been
enter on the last page where the order has been placed and it has two
different field as last name and first name, here i have combine that
field and displayed from the database.

State-State is the field that has been enter on the last page of the
radiant heat quote system page and i display the state of the customer
Where he or she has enter at that time.

Phone-Phone is the field that has been enter on the last page of the
radiant heat quote system, and also i have used Replace function here to
display the phone numbered suppose i have number as 3079211885, using
That function and (, and,) I had made this number (307) 921-1885.
Purchased-this is the field when the order has been place at that time
It is saving 'no' by default, when admin person will check the check
Box in detailed information when they going to edit that order and say
'Yes' that order has been already been purchased.

Quotes Status-This is the field for the if the order is pending or it
is done, when order has been place at that time it has value as pending
, but when admin person will go on the edit and will change it status to
done it will show it the done.

EDIT BUTTON-Edit button which is display here it not actually is button
it is image if the button and i am putting it as an link. That is
Actually image that has given the link of it, on that link i am passing
The order number as I. and it will search form database which has the i
i.e.

```html
<td class="row"><% k %"><a href="radian heat quote/admquote.asp?i=<% qt1 %">target="_blank"><img src="img/button_edit.gif" width="50" height="16" alt="Edit Details" border=0 ></a></center></td>
```

This is link to the page admquote.asp and as an image on the link is button_edit.gif.

here i am passing is the qt1 that i am getting from the database and Displaying on the first page where i am displaying all the record order by quoteid.

-When you hit on the edit button it will go to that particular Admquote.asp page and display the everything that has been enter by the User before.
Admquote.asp:-when employee click on edit they can see all the detailed that has been enter by particular customer, also can edit the status of the customer.

Contact Information-Contact information is include the Name, Address,E-Mail, City, State, Zip, Phone No of that particular customer.
Technical Information-Technical Information is include the basic Information that has been enter by the user like expected date of Purchase, preferrred brand of pex, type of supply line, system mode, type of quote,fual type, Installation method, heat source, control level, number of the room, More Info all those thing that has been enter by the Customer on the second page of the system.

-Techinal information also include the credit card name, credit card type, credit card number-when admin will select on the done then after it will not display the credit card number, it will just display the last 4 digit of the credit card number, and so we are removing from the
Database. So person credit card information is safe on this site.
CCV-Here I am displaying the CCV number that is four digit which is
Behind the card.
Expiration Date-Expiration date has expiration month and expiration year
Of the customer credit card.

ALL ROOM INFORMATION-Here I have all the information for the all the
Rooms. if the customer has 7 rooms it will only display 7 rooms
Information. All of them is going to be same as in look, but it is
Calling from the database differently, as if they don't has any value it
will not displays it, As an Condition i have given that.
Room Name-On the top of row for the room information, it will display
the name of the room
Room Shape-On the top of the row with - it will display the zone of
that particular room.
Room Floor-On the top of the row with - it will also display the floor
Of the room that has been enter by the customer.

Shape-Shape is room shape that has been enter by the user like Rectangle, corner, or others and besides that it is display height or Width of it.
Total length of the exposed wall-Total length of the exposed wall is which id enter by the customer on radiant heat material quote site.
Average height of this room-that will display the avg height of that room.
Floor Covering Type-here it has the floor type like wood, tile, concrete, carpet.

IS the space above the room heated?-here it will say yes or no According to the customer selected which one on quote site.

IS the space below the room heated?-here it will say yes or no according to the customer selected which one on quote site.

Construction quality of this room: It will display what the customer has enter the quality of the room that is good, better, or the best from the site, and that will select it here from the database.

Windows of the room-here if the customer has enter the height and width of the windows that's only window will display maximum of that is 5.if Customer has enter height and width of the only 2 window it will Display only 2 windows.

Doors of the room-Here if the customer has enter the height and width of the door that's only doors will display here, maximum of that is 3.if Customer has entered height and width of the only 2 doors it will display only two doors here.

Current Status-it will display the current status of the particular Order that is same as the main window of the admin has status of the order. that is going to be pending or done.

Change Status to-if all the design of that order is done then admin can Change it status to done, or sometimes by mistake that is happen it is Also can change status to the pending by checking the radio button that has been provided here.

Product Purchased-by default it has value as 'no' in database but when They already purchased it.admin will change it to the 'yes' by clicking The radio button 'yes'.
Submit Button-When you hit the submit button it will submit the form and will change or update the things that has been change by the admin. and you will get the screen like:
BIBLIOGRAPHY

- Analysis and Design of Information Systems
  James A Senn

- Integrated Approach to Software Engineering.
  Jalote Pankaj

- Database System Concepts.
  Silberschatz, Korth, Sudarshan

- Mastering Active Server Pages 3
  A. Russell Jones
  BPB Publication

- www.google.com
  This site provides search engine and related links.

- www.pexsupply.com
- www.plumbinggoods.com
  This is my company’s commercial site. I get related company information from this.

- www.answer.com
  This site provides definition of any subject
• ⇨ www.w3schools.com

This web site contains different language specification on ASP .NET, HTML, and SQL etc.