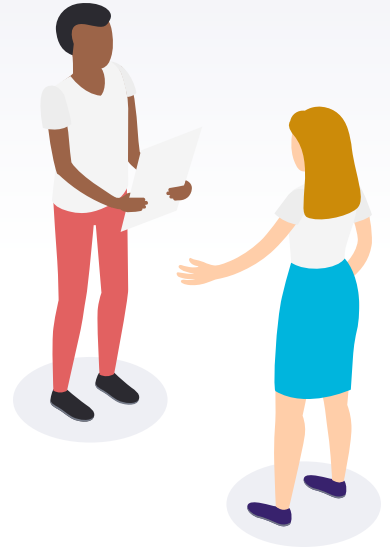


SELECTING THE RIGHT HEATING & COOLING EQUIPMENT



The importance of our HVAC System

In 2012, one of our customer (Ajay), had a broken compressor. He contacted us for an estimate, but he decided to get additional estimates. He found a contractor who offered a lower project cost and next day installation. Our customer rushed and hired the economical contractor.

A few days after the installation, Ajay noticed some problems. The unit was not cooling enough and the air was not properly distributed. These problems could be avoided if he learned before some basic concepts...

AGENDA



Basic Concepts

A review of what comfort implies.

Brands

Analyzing the brands characteristics.

Selection Guidelines

Equipment selection base on customer needs.

Frequently Questions

Addressing comun questions.

Comfort Concept

Comfort is achieved thru your HVAC system.
Mainly there are 5 aspects that comfort implies.

- ▶ Temperature
- ▶ Humidity
- ▶ Air filtration
- ▶ Air circulation
- ▶ Fresh air ventilation



Temperature

What is the effect of temperature in our body?

The internal human body temperature is about 98F, and we are generating this heat continuously thru metabolism. Our skin is approximately 86F which allows continuous heat release from our internal organs.

When body heat is released too quickly, we will feel cold. If heat is released too slowly, we will feel warm.

The goal of our HVAC system is to maintain an indoor environment that allows heat to be rejected from our body at a comfortable rate.



Humidity

What is the impact of humidity in our body?

A way that our body releases heat is thru perspiration.

If the air is too dry, our perspiration will vaporize in a faster rate. Heat from our body will be taken naturally to evaporate moisture from our skin. This may be desirable at some point in summer.

On the other hand, high level of humidity will avert perspiration evaporation and we could feel sticky.



Air filtration

What is the importance of air filtration?

Most of the air in residential homes is re-circulated. This air carries dust which is a compound of dead skin debris, small particles of fibers, aerosol, etc. It is important to remove most of these contaminants from the air with a good air filtration.

In addition, a way to improve air purification is installing accessories such as UV lights. They emit lights with high frequency that kills bacteria and viruses.

A good air filtration also helps to prevent equipment malfunction, keeping it cleaned and improving the lifetime of the system.



Air circulation

How the duct design impact air circulation?

Air distribution relies on the way the duct is set in the property. Most of technician that works in the field has a vast experience on repair, but limited on duct design. If you are building a house, it is essential to hire the right HVAC contractor with a good background on duct design.

A system is expected to produce comfort 24 hours a day. The best equipment available will not be able to yield comfort if it is coupled with a poor duct design and improper air distribution.



Fresh air ventilation

Why do we need to add fresh air to our home?

Oxygen is necessary to sustain life. One cubic per minute is necessary for a person to replenish the level of oxygen needed. Otherwise, high concentration of carbon dioxide will built up at home.

To prevent that, a fresh line from outside is installed and is normally attached to the return duct. In addition, there are energy recovery ventilators that reduce the cost of introducing outdoor air. They use the exhaust air to temper the entering outdoor fresh air by exchanging temperature and humidity between the two streams.



Ajay's system precondition problem.

For Ajay's house, the duct system was designed poorly. Only one side of the house has good airflow and the other side was really warm.

Also, unit seems to be small for this area, and feel sticky during the summer. That made everybody at home unhappy.

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Equipment Brands Selection



Market offers a great variety of brands. Base on its features, tech support and accessibility, we selected the best options on the market and categorize them as:

- Good
- Better
- Best



GOOD

- Goodman is the most economical option in the market.
- Easy to work with suppliers.
- Good tech support.
- Manufacture improvement in the last years is helping to improve its reputation.
- Reliable product.



BETTER

- American Standard is built with the best material quality.
- Good tech support.
- Equipment tend to age slower compared with other brands.
- Reliable product.
- American Standard and Trane came from the same manufacture.

BUILT TO A HIGHER STANDARD™


American Standard®

HEATING & AIR CONDITIONING



BEST



turn to the experts™ 

- The Infinity Carrier has the best performance on the high end of its brand. It has capability to help to reduce moisture.
- High tag price.
- Excellent tech support.
- Reliable equipment.
- Carrier and Bryant came from the same manufacture.



Ajay's opted for Lennox.

At that time, Ajay decided to acquire a Lennox system for his house. Lennox is a good brand, however if it is not properly installed and if it does not have the correct duct setting, the system will struggle and will not work well as intended.

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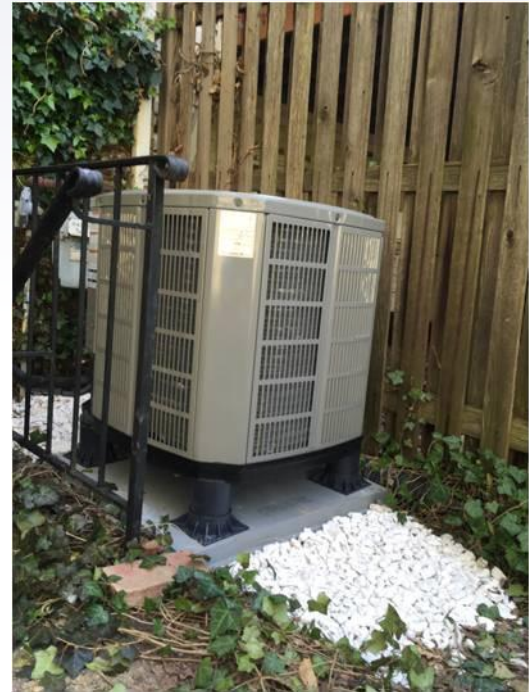
Gas furnace

- Do not buy an oversize gas furnace!
Excess of heat reduce the lifetime of the equipment if heat is not properly distributed and evacuated from the unit.
- Consider install a 90% instead of 80% gas furnace if conditions allowed. It will help to reduce the heating bill.
- It is recommended buying the same brand of the AC.
- Ask the HVAC contractor to ensure duct system will work properly with the furnace selected.



Air conditioner

- Avoid buying an oversize unit. The air conditioner needs to run long cycles in order to remove moisture.
- Consider buying the same brand of the gas furnace.
- Make sure duct system and indoor unit will work with the AC selected.



Heat pump

- Consider buying a high efficient heat pump. Some properties have most of the appliance running on electricity. That will help to reduce electrical bill.
- It is critical to ensure the proper airflow in heating mode. Ask the HVAC contractor for a duct analysis and ensure the proper operation of the unit selected.
- Keep in mind that heat pump improved in the last years, providing efficient heat.



Ajay's best option at that time.

For Ajay's house, we recommended an American Standard heat pump system since he plans to live in his house for many more years and these units age slowly. We also recommended him to modify the duct to ensure better air distribution and increase the size of his unit but half ton.

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I prefer a bigger unit to ensure more cooling

- A bigger AC will not remove moisture. In addition, it can convey to mold problems.
- Oversize AC units will run short cycles which reduced the lifetime of the equipment.
- Duct can generate condensation on its surface.
- The right equipment size should ensure it will cool the house and at the same time reduce humidity in the indoor air.



BIGGER ISN'T ALWAYS BETTER

For my new home, I prefer a gas furnace instead of heat pump in the second floor.

-On second floors, heat requirements are lower since heat from floors below will raise.

-Hard to detect a gas leak if furnace is installed in the attic.

-Costly installation.



Gas furnace in attic

Should I buy a high efficient unit?

- It is desirable, specially if house has most of the appliance base on electricity.
- The saving will be noticed in the monthly bill.
- Help to conserve environment.



Monthly savings

Ajay's impact on live quality.

That rush of early days made him make some mistakes that were extended until these days. The system is not able to cool the space specially in the hot days making him uncomfortable and unable to work well from his home office due to these conditions.

We strongly recommend no rush on a new system purchase. Analyze quotes and discuss any concern about the heating and cooling system with the HVAC contractor. **Please keep in mind that this decision will have an impact in homeowner's life quality for the next years.**

THANKS!

Any questions?

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