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As winter sets in, you may be wondering how that cozy wood stove works to keep your home warm. I, too, was curious and puzzled about the mechanics of a wood-burning stove, did you know that these devices don’t have any moving parts? Through thorough research and exploration, I’ve understood their inner workings more clearly.In this blog post, we will journey through the world of wood stoves together; from how they work to heat your home efficiently to tips on controlling them effectively– unmasking the mystery behind those crackling flames! Don’t let the chill get to you – let’s dive right in.Key TakeawaysA wood – burning stove creates a controlled environment for efficient wood burning, producing and distributing heat through combustion and oxygen supply.Heat is produced as the flames interact with materials like cast iron, stone, or steel in the stove, which then radiates warmth into the room.Wood stoves can heat a single room or an entire house by radiating heat directly and conducting/convecting heat throughout the space.Controlling a wood – burning stove involves adjusting air intake and damper settings to maintain an ideal temperature and control the burn rate.How Does a Wood-Burning Stove Work?A wood-burning stove works by creating a controlled environment for efficient wood burning, producing and distributing heat through combustion and oxygen supply.The controlled environment for efficient wood burningIn a wood stove, we burn wood in a closed place. This makes the fire hotter and less smoky. It also gives us more heat than an open fire would. The walls of the stove help hold in the heat.We make these from thick stuff like cast iron or steel that can stand up to high heat for a long time. There are no parts that move in a wood stove, so it lasts longer and needs less fixing than other heaters might need.Heat production and distributionWood stoves produce heat by burning wood in a controlled environment. The heat is then distributed to warm the surrounding area. This happens through a process called combustion, where the wood reacts with oxygen to release energy in the form of heat.The fresh air intake allows for constant airflow, ensuring efficient combustion. Heat is produced as the flames rise and interact with materials like cast iron, stone, or steel, which absorb and radiate warmth into the room.Some of this heat is also conducted and convected through the air to reach other parts of the house if properly installed and equipped with fans or air ducts. It’s important to maintain proper ventilation and follow safety guidelines while using a wood stove for effective heating.The role of combustion and oxygen supplyWhen wood is burned in a stove, combustion takes place. Combustion is when the wood reacts with oxygen from the air and produces heat. The oxygen supply is important because without enough oxygen, the fire won’t burn properly and produce less heat.That’s why it’s crucial to have fresh air flowing into the stove through an air intake or draft control. This ensures that there’s enough oxygen to support efficient combustion and heat production.By maintaining a good airflow and providing enough oxygen, wood stoves can generate a lot of heat to warm up your home or space effectively.How Does a Wood-Burning Stove Heat a House?A wood-burning stove heats a house by radiating heat directly from the stove into the surrounding space, as well as conducting and convecting heat throughout the room.Radiating heat from the stoveWhen a wood stove is burning, it radiates heat into the surrounding area. This means that the heat moves directly from the stove to the objects and people nearby. The materials used in the construction of the stove, such as cast iron, stone, or steel, help to absorb and transfer this heat efficiently.So when you sit next to a wood-burning stove, you can feel its warmth directly on your skin. It’s like having your own personal heater right in your living room! And because wood stoves are designed to distribute heat evenly, they can effectively warm up an entire room or even multiple rooms in a house.So if you’re looking for a cozy and efficient way to keep warm during those cold winter months, a wood-burning stove might just be what you need. Plus, don’t forget about the lovely ambiance created by crackling firewood!Conducted and convected heat transferWhen a wood-burning stove is lit, it produces heat that can be transferred to the surrounding area in two ways: conducted and convected heat transfer. Conducted heat transfer happens when the hot surfaces of the stove come into contact with objects like walls or flooring.The heat then moves through these materials, warming up the room. Convected heat transfer occurs as warm air rises from the stove and circulates around the space. This creates convection currents, which distribute the heated air throughout the room.These two types of heat transfer work together to effectively warm up your home when using a wood-burning stove.Heating a single room or the entire houseWhen it comes to heating with a wood-burning stove, you have the flexibility to heat either a single room or your entire house. The radiant heat from the stove can warm up the surrounding area, making it cozy and comfortable.Additionally, conducted and convected heat transfer allows for the warmth to spread throughout the space. So whether you want to keep just one room warm or achieve whole-house heating, a wood stove can meet your needs efficiently and sustainably.How Do You Control a Wood-Burning Stove?Controlling a wood-burning stove is as simple as adjusting air intake and damper settings, allowing you to maintain the ideal temperature and control the burn rate. Curious to learn more about how it works? Keep reading!Adjusting air intake and damper settingsTo control a wood-burning stove, I adjust the air intake and damper settings. Here’s how it works:I can control the amount of air entering the stove by adjusting the air intake. This affects how fast the fire burns and how much heat is produced.The damper is a device that controls the flow of smoke and gases out of the stove. By adjusting the damper, I can regulate the burn rate and temperature.It’s important to maintain an ideal temperature in the stove for efficient combustion. If it gets too hot, I can close the damper to slow down the burn. If it gets too cool, I can open the damper to increase airflow.By controlling the burn rate, I can make sure that my wood lasts longer and reduces fuel consumption.Adjusting the air intake and damper settings requires careful observation and experimentation to find what works best for efficient heating.Maintaining the ideal temperatureTo maintain the ideal temperature in a wood-burning stove, it’s important to control the amount of air flowing into the firebox. This can be done by adjusting the air intake and damper settings.By reducing or increasing the airflow, you can regulate the rate at which the wood burns and how hot your stove gets.Aim for a steady burn with a bright flame. If your stove is too hot and creating excessive heat, you can partially close the air vents to reduce oxygen supply to the fire. On the other hand, if your stove is not producing enough heat, open up the vents to allow more oxygen in and increase combustion.Remember, maintaining an ideal temperature isn’t just about comfort – it also impacts fuel efficiency and emissions. Burning wood efficiently requires finding that sweet spot where you have good heat output without wasting energy or generating excess smoke.Controlling the burn rateControlling the burn rate of a wood-burning stove is important to ensure efficient and safe operation. To control the burn rate, you can adjust the air intake and damper settings on your stove.By opening the air vents, more oxygen will enter the firebox, increasing the burn rate and producing more heat. On the other hand, closing or partially closing these vents will reduce the amount of oxygen, slowing down the burn rate and conserving fuel.It’s essential to find a balance that maintains an ideal temperature for heating without wasting too much wood or creating excessive smoke. Regularly monitoring and adjusting these settings will help you maintain a steady burn rate throughout your fires.Pros and Cons of a Wood-Burning StoveWood stoves have several advantages, including low carbon emissions and the ability to provide energy independence. However, they also require regular maintenance and can pose potential health concerns.Advantages of wood stoves (such as low carbon emissions and energy independence)Wood stoves have many advantages that make them a great choice for heating your home. Here are some of the key benefits:Low carbon emissions: Wood stoves produce significantly lower carbon emissions compared to fossil fuel-based heating systems. Burning wood is a renewable energy source and helps reduce greenhouse gas emissions.Energy independence: With a wood stove, you don’t have to rely on external energy sources like electricity or gas. You can heat your home using locally sourced firewood, giving you more control over your energy supply.Cost-effective heating: Firewood tends to be cheaper than other fuel options, such as natural gas or oil. By using a wood stove, you can potentially save money on your heating bills.Cozy ambiance: There’s something special about gathering around a warm wood stove on a chilly evening. The crackling fire creates a cozy and inviting atmosphere in your home.Backup heating during power outages: Wood stoves can provide heat even when the power goes out, ensuring that you stay warm and comfortable during emergencies or winter storms.Sustainable and renewable: Using firewood from responsibly managed forests ensures that you’re contributing to sustainable practices and supporting the growth of new trees.Reduced reliance on fossil fuels: By choosing a wood stove, you’re reducing your dependence on non-renewable resources like oil or gas, which helps protect the environment.Traditional warmth and comfort: Wood stoves have been used for centuries to provide warmth in homes. They offer a sense of tradition and nostalgia that many people find appealing.Disadvantages of wood stoves (such as maintenance and potential health concerns)Maintaining a wood stove can sometimes be challenging. It requires regular cleaning to remove ashes and soot buildup. This can be time-consuming and messy. Additionally, the chimney needs to be inspected and cleaned regularly to prevent the buildup of creosote, which is a flammable substance that can cause chimney fires.ConclusionWood stoves work by creating a controlled space for burning wood, efficiently producing heat to warm the surrounding area. They don’t have any moving parts, making them simple and reliable.With proper ventilation and fuel management, wood stoves can be an effective and sustainable way to heat your home or space. So, now you know how a wood stove works!FAQs1. How does a wood stove work?A wood stove works by burning wood to generate heat, which is then transferred into the room through radiation and convection.2. What kind of fuel does a wood stove use?A wood stove uses firewood or logs as its primary fuel source.3. How do I light a fire in a wood stove?To light a fire in a wood stove, start by placing small pieces of dry kindling at the bottom, followed by crumpled newspaper. Then, carefully light the newspaper with matches or a lighter and gradually add larger pieces of firewood once the kindling has caught fire.4. Can I cook on a wood stove?Yes, some wood stoves are designed with flat surfaces or built-in ovens that allow for cooking. However, it’s important to follow manufacturer guidelines and safety precautions when using your wood stove for cooking purposes.Hi, my name’s Eugene Duke and I love sitting by my fireplace reading a book and sipping on an adult beverage. Do you have a fireplace in your house? I’ll help you figure out the best type and style of fireplace for your home. Wood stoves have been used for centuries as a reliable source of heat. They provide warmth, comfort, and a rustic ambiance to any home. But have you ever wondered how a wood stove actually works? In this article, we will delve into the inner workings of a wood stove and explore its benefits, efficiency, environmental impact, installation, and more. How A Wood-Burning Stove Works A wood-burning stove operates on the principle of combustion, which is the process of burning wood to release heat energy. The stove’s design facilitates controlled airflow, ensuring efficient burning and heat production. Its key components include a firebox, a chimney or flue, and air vents. When wood is burned inside the firebox, it undergoes a chemical reaction that releases heat, carbon dioxide, water vapor, and other byproducts. The chimney or flue removes the smoke and gases from the combustion process, while air vents allow for the regulation of airflow to maintain optimal burning conditions. By understanding the process of wood burning fireplace, combustion and airflow control, you can gain insights into how a well open fireplace or wood burning stove work effectively generates warmth. Exploring the Benefits of Wood Stoves Wood stoves offer numerous benefits beyond their heat-producing capabilities. One of the primary advantages is their cost-effectiveness. Wood is often readily available and can be a cheaper fuel source compared to fossil fuels or electricity. Additionally, the wood burning stove provides a sense of self-sufficiency, as you can gather or purchase firewood and rely on it as a renewable heat source. Wood stoves also offer versatility, as they can be used for cooking and provide a backup heat source during power outages. These benefits make wood stoves an appealing choice for many homeowners seeking both practicality and a cozy atmosphere in their homes. Burning Wood More Efficiently To achieve optimal efficiency with a wood stove, certain practices should be followed. One crucial aspect is wood selection. Dry and seasoned wood burns more efficiently, producing more heat and less smoke. Properly seasoned wood has lower moisture content, which allows for cleaner and more complete combustion. It’s also essential to control the burn rate by adjusting the airflow. By providing enough oxygen for the fire, you can achieve a controlled and efficient burn, maximizing heat output and reducing waste. Properly starting and maintaining a fire in the wood burning stove is also important for efficient and effective wood burning. Types of Wood-Burning Stoves When it comes to wood-burning stoves, there is a wide range of types and designs available on the market. Understanding the differences between these types can help you make an informed decision when selecting a stove that suits your heating needs and preferences. Let’s explore some of the most common types of wood-burning stoves: Traditional Cast Iron Stoves Traditional cast iron stoves have a timeless appeal and are known for their durability and heat retention properties. Cast iron is an excellent material for wood stoves because it retains and radiates heat even after the fire has died down. These stoves often feature elegant and intricate designs that add a touch of classic charm to any room. Due to their robust construction, cast iron stoves can withstand high temperatures and provide long-lasting performance. Steel Stoves Steel stoves have gained popularity in recent years due to their sleek and modern wood stove designs. They are typically constructed from high-quality steel, which offers excellent heat conductivity. Steel wood burning stove tend to heat up more quickly than cast iron stoves and distribute heat more evenly throughout the room. They are often equipped with features such as airwash systems, which help keep the glass clean, allowing for an unobstructed view of the fire. Steel stoves are also generally lighter in weight, making them easier to install and move if needed. Soapstone Stoves These Soapstone stoves are known for their exceptional heat retention properties. Soapstone is a natural material that can absorb and store a significant amount of heat. This means that even after the fire has gone out, the soapstone stove continues to radiate heat, providing a prolonged and comfortable warmth. Soapstone stoves are often appreciated for their unique and elegant appearance, as the stone’s natural veining and color variations add a touch of natural beauty to the room. Masonry Stoves Masonry stoves, also known as “Russian” or “Swedish” stoves, are built with bricks, tiles, or other masonry materials. These stoves are renowned for their exceptional heat retention and high thermal efficiency. A masonry wood-burning stove is typically designed with channels and baffles that allow the hot gases from the fire to circulate and absorb heat before exiting through the chimney. This extended heat exchange process ensures maximum heat output and efficiency. Pellet Stoves Although technically not wood-burning stoves, pellet stoves are worth mentioning due to their popularity and eco-friendly nature. Pellet stoves use small wood pellets as fuel, which are made from compressed sawdust or other biomass materials. These stoves are equipped with automated systems that feed the pellets into the combustion chamber, regulating the burn wood rate for optimal efficiency. Pellet stoves offer convenience and automation, as they often feature programmable thermostats and remote controls. They produce minimal smoke and ash, making them a cleaner option compared to traditional wood-burning stoves. Each type of wood-burning stove has its own unique advantages and considerations. Factors such as design aesthetics, heat retention capabilities, efficiency, and maintenance requirements should be taken into account when choosing the right stove for your home. It’s recommended to consult with a professional or visit a reputable dealer to explore various options and find a wood-burning stove that aligns with your heating needs and personal style. Catalytic Wood Stoves Catalytic wood burning stove incorporate a catalyst into combustion, further enhancing efficiency and reducing emissions. The catalyst, typically made of precious metals, helps initiate and promote the chemical reactions during combustion. It facilitates the conversion of harmful byproducts, such as carbon monoxide and volatile organic compounds, into less harmful substances. Catalytic stoves can achieve higher levels of combustion efficiency, resulting in increased heat output and reduced environmental impact. However, they require regular maintenance, including cleaning and periodic replacement of the catalyst. How Does a Wood-Burning Stove Heat a House? Understanding how a wood burning stove distributes heat throughout a house is crucial for effective heating. Wood stoves primarily generate heat through two mechanisms: radiant heat and convection. Radiant heat is produced by the hot surfaces of the wood stove, directly warming objects and people in the room. It provides immediate and localized heat, creating a cozy environment. Convection heat, on the other hand, is created as air circulates around the wood stove and absorbs heat. This heated air then rises and spreads throughout the room, warming the surrounding space. By the heat pumps, strategically placing the stove and utilizing fans or heat transfer systems, you can optimize heat circulation and ensure efficient heating of your home. Radiating The Heat Wood stoves are designed to radiate heat, providing immediate warmth to objects and people in the room. The stove’s hot surfaces, such as the top and sides, emit radiant heat in all directions. This heat warms the surrounding space, creating a cozy atmosphere. Additionally, convection currents are created as the stove heats the air, causing warm air to rise and circulate throughout the room. Proper stove placement, the use of heat shields, and accessories like fans can enhance the stove’s radiant heat distribution, ensuring efficient and effective heating. Are wood-burning stoves environmentally friendly? Wood-burning stoves are considered a more sustainable option compared to burning fossil fuels. While burning wood releases carbon dioxide, wood is a renewable resource that can be part of a carbon-neutral cycle when responsibly harvested. Sustainable wood sourcing, such as using locally harvested or certified firewood, helps minimize environmental impact. Advancements in technology, electrical components like secondary combustion systems and particulate filters, have further reduced emissions from wood stoves. Proper maintenance and adherence to local regulations can help mitigate any negative environmental effects. Is burning wood bad for the environment? The environmental impact of wood-burning stoves is a topic of concern. While burning wood releases carbon dioxide, a greenhouse gas, it is considered a more sustainable option when compared to burning fossil fuels. Wood is a renewable resource, and if harvested responsibly, it can be part of a carbon-neutral cycle. Sustainable wood sourcing, such as using locally harvested or certified firewood, helps minimize environmental impact. Additionally, advancements in technology have led to the development of emissions reduction technologies, such as secondary combustion systems and particulate filters, which further decrease the emissions from wood stoves. Proper maintenance and adhering to local regulations regarding wood-burning practices can help mitigate any negative environmental effects. Wood Stove Installation Proper installation is essential for the safe and efficient operation of a wood stove. It’s important to consider factors such as the location of the wood burning stoves work, clearance requirements from combustible materials, and suitable venting options. Following local building codes and regulations is crucial to ensure compliance and safety. Professional installation is highly recommended, as it ensures that the wood burning stove works correctly installed, the chimney or flue is properly connected, and the necessary clearances are maintained. Safety tips, such as using heat shields and installing carbon monoxide detectors, should also be followed to promote a secure wood stove setup in your home. How much wood does a wood burner use? The amount of wood consumed by a wood stove can vary depending on several factors. Stove size, burn wood rate, insulation of the space, and climate conditions all influence wood consumption. Larger stoves generally require more wood to maintain desired heat produced levels. The burn wood rate, determined by airflow control, also affects wood consumption. A slow burn with controlled airflow will use less wood compared to a fast burn. Properly insulating your home and minimizing heat loss can also help reduce wood consumption. Climate conditions like colder temperatures may necessitate more frequent wood refills. By understanding these factors and monitoring your wood consumption, you can efficiently estimate and manage your wood supply. Conclusion Wood stoves are a reliable and efficient heat source, providing warmth, cost-effectiveness, and a rustic charm to homes. By understanding how wood burning stove work and implementing best practices, you can fully enjoy the benefits they offer. Facebook Twitter Pinterest Email Home » Appliances » Stoves » Wood Burning Stoves » Buying your wood burning stove » How a Wood Burning Stove Works Today, wood burning stoves are available in many different shapes, styles and sizes. The exact format for each Stovax stove is given on individual product pages but, in most cases, some or all of the following features will be included: an Airwash system for the window; a Cleanburn system with secondary air; an External air facility and an integral boiler to provide domestic hot water and run radiators. How to choose the right stove for you Stockton 5 wood burning stove One of your first steps (once your home has been assessed by a professional installer) is to decide what size of stove is right. As a guide, we suggest that for every 14 cubic metres of space, you will need 1kW (approximately) of heat output in order to achieve a room temperature of 21 degrees. However, this figure will give only a rough guide and does not take into account a number of other important factors such as the age of your home and how well insulated it is; how many rooms are to be heated or whether or not your living space is open plan. You may also require that your woodburner provides your home’s hot water needs and there are certainly many boiler stoves to choose from in today’s market. Below are concise key points to consider before selecting the right stove for your home: • Style/aesthetics you desire • Heat output appropriate for the room/space you want to heat • Fuel type – wood burning only or multi-fuel • Do you wish the stove to heat water as well as the room? • Are Cleanburn, Airwash and efficiency important to you? • Is my stove Ecodesign Ready? • Do you wish to burn wood in a Smoke Control Area? All these aspects should be carefully considered before you make your investment but a Stovax retailer will be able to lead you through the options to ensure you choose a stove that will not only be a welcoming and warming feature in your home but a real asset to your heating system. Stovax has a nationwide network of dealers, many with stoves burning live in their showrooms so you can get a real impression of the final effect. A Stovax retailer will also be able to recommend trusted local installers for a professional fit so you can relax and enjoy the many benefits of owning a wood burning stove. The difference between wood burning stoves and multi-fuel stoves Wood burns best on a bed of ash with its combustion air coming from above, so wood burning only versions of stoves have a flat fuel bed and no ashpan. Multi-fuel stoves usually have a riddling grate for the effective combustion of solid mineral fuels but also have Airwash so they can effectively burn wood as well. The riddling grate allows the ash and cinders from smokeless fuels, anthracite or peat/turf briquettes to be riddled into an ashpan, maintaining the primary airflow through the fuel bed and, hence, creating the optimum conditions for efficient combustion of those particular fuels. According to the model, a Stovax multi-fuel stove may have either an internal or externally controlled system for riddling the grate. Further information on the difference between wood burning stoves and multi-fuel stoves. Primary Air This is the air that is drawn into the wood burning stove, typically at a low level to maintain the combustion of the solid fuel being burnt. Usually, the primary air enters through a control on the front of the stove. The control can be adjusted to regulate the amount of air entering the firebox, thus giving you the opportunity to determine the intensity of the fire. This, in turn, will alter the heat output. Primary air is the best way of controlling a stove burning solid mineral fuels and may also be used to start a wood fire. However, primary air is not normally used in a log fire once the logs are burning well. Stovax Airwash System Airwash is a specific design feature that uses a specially placed vent or vents to draw in cool air from the room; the air is then heated and ducted to ‘wash’ over the inside of the glass. This feature helps to keep the glass clean for longer, allowing you to enjoy the glow and flames to the full. Airwash air is the best way of controlling a stove burning wood and can be used a small amount in a stove burning solid mineral fuels to keep the glass clean. Convection Air Where a Stovax wood burning stove includes a convection system, cool air from within the room is drawn into the convection chamber and then heated as it rises within the stove before flowing out into the room. The hot air rising draws more cool air into the stove, setting up a continuous flow and maintaining added heating efficiency. Some Stovax stoves also have the option of an electrically operated fan to boost the convection process and provide a quicker warm-up time within your room. Stovax Cleanburn System Most Stovax wood burning stoves incorporate triple air systems to provide a cleaner burn, greater thermal efficiency and control of the flame picture as follows: Airwash air is drawn down over the inside of the window to keep the glass clean and clear. It is also used as primary combustion air when burning wood. Primary air for use with solid fuel, also used to start wood fires but not normally used once a wood fire is burning. Cleanburn secondary air is pre-heated as it passes through a heat exchanger chamber within the firebox. It is then drawn into the smokestream, where it combusts unburnt hydrocarbons to provide a cleaner burn and greater thermal efficiency. Introducing pre-heated, secondary air into the firebox at just the right point promotes efficient combustion of any unburnt hydrocarbons that may be in the smoke. This ‘cleanburn’ process can greatly increase the combustion efficiency of your wood burning stove and dramatically reduce the amount of unburnt particles going up the chimney. This can in turn reduce your servicing costs and save you money in fuel. It also gives you an improved flame visual. External Air All wood burning stoves with a heat output above 5kW require an additional flow of air for combustion into the rooms in which they are installed. An External Air facility allows this air to come directly from outside your building rather than through a vent into the room, thus eliminating draughts and adding to the overall heating efficiency. Smoke Control Areas Most town and city homes are located in Smoke Control Areas as designated by the Clean Air Act 1993. To burn logs in a stove in these locations, the wood burning stove must be suitable for use in Smoke Control Areas. This exemption is given only to appliances that have been independently tested to demonstrate particularly cleanburning combustion. Without this exemption, you may only burn smokeless fuels in a multi-fuel stove within a Smoke Control Area. Stovax has one of the most comprehensive choices of stoves for use in Smoke Control Areas. More information on wood burning stoves in Smoke Control Areas. Ecodesign Plus Heralding a new era of ultra-green technology, Stovax Ecodesign wood burning and multi-fuel stoves and fires feature advanced combustion systems that burn so cleanly they are compliant with future 2022 flue gas emission and thermal efficiency standards. Designed to meet or exceed Ecodesign standards, Stovax’s compliant stoves and fires ensure substances present in smoke emissions such as Carbon Monoxide (CO), nitrous oxides (NOX), organic gaseous compounds (OGC) and particulates (PM) are minimised – making them some of the most eco-friendly stoves in the world. The future of solid-fuel heating, Ecodesign stoves and fires offer an even greener heating choice than standard appliances, without sacrificing flame visuals or heat output. One of the oldest and still most trusted forms of heating is the wood burning stove. These highly efficient units were traditionally, the centerpiece of the home before the inception of modern central heating and electrical appliances. They were used not only to heat the home, but to cook all of the meals for the family. Today, not many people actually use their stoves for cooking as modern appliances have replaced them. But the fact still remains, that these devices are among the most efficient ways to heat any home and best of all, they utilize a renewable and inexpensive resource for the heat. Here is a guide as to how they really work, so when you have your new stove installed, you will know exactly what is going on within the unit to produce such warm and inviting heat. The difference between a wood burning stove and an open fireplace People often get a wood burning stove and a fireplace mixed up. They are not really the same thing at all. The heat that comes from a stove is more efficient than with a fireplace because the air intake is controllable within the unit. An open fireplace generally has air flow from the home coming in from the front, fueling the fire. Air also comes from the flue and the ventilation from the flue allows the smoke to escape instead of into the home, provided the flue is kept clean. More control of the heat A stove works to control the air brought into the unit. Air flow is still very much important as a complete lack of air would not feed the fire and simply dampen the flames. With each stove, you will find ventilation holes and an air control valve. The valve can be opened completely to allow for maximum air flow for the hottest flame and closed for less heating and a cooler flame. Insulation and heating capacity A stove is much more than a box to hold the wood with good air flow. The materials used throughout the stove are important as well. Not all metals conduct heat as well as others and throughout the years, cast iron has proven to be among the most efficient materials for building these types of units. It is inexpensive, plentiful, recyclable, durable, and lasts for many years. It can also stay warm for a long time after the fire is out, so the residual radiant heat from the unit can maintain the temperature of the room for quite some time. The iron stove - efficient enough on its own When the air comes into the unit, it enters the fire box. The fire box is the main part of the unit and most people simply believe that the unit is entirely comprised of cast iron. The truth is that the iron stove can be efficient enough on its own, but it is the insulated bricks that surround the interior that make it more efficient. The bricks hold even more of the heat and keep the wood from simply sitting on the bottom of the unit making air flow easier within the system. Looking for a new wood stove? Take a look at all of our different wood stoves! Flowing out It is not simply a matter of keeping all of the heat within the unit. The transfer of fresh air into the firebox to allow the flames to grow is only part of the process. The heated air does have to have somewhere to go. Some modern wood burning stoves maintain a blower system that allows some of the heat to be blown into the room improving the overall efficiency of the heating unit, but the additional air still needs somewhere to vent out of the home, otherwise the entire unit would be nothing but a fire hazard. Flue - gives the smoke a place to vent out of the home The heated air goes up naturally and therefore, a standard flue gives a place for the smoke and unused air to vent out of the home. Some homes that have older flues may require the use of a tube inserted in the flue (a chimney liner) to allow for easy cleaning and for the smoke to vent properly. If there is no existing flue within the home, the installer will install one for you. The flues can either go straight out of the ceiling, or vent through a small flue in the wall of the home depending on the requirements of the stove and the home itself. Install a Jøtul-wood stove today and lower your heating bills! Now that you know how a wood burning stove works, you can feel good about having one of them in your home. Even if your home is equipped with modern forms of heating such as a central unit, it is a smart investment to have a wood burning stove. The units can lower your heating bills substantially and are vital for heating the home when power outages happen. Every home can use a wood burning stove and even if you believe that your home is too small for one, there will be a unit right for you. Ask your registered local stove dealer (HETAS recommended) for more information today. Contact your nearest dealer With an estimated 10.1 million wood burning stoves in American homes, the U.S. Environmental Protection Agency (EPA) has released new guidelines to regulate this large and stable industry. All new wood burning stoves must release no more than 4.5 grams of smoke per hour to minimize greenhouse gas effects during winter. This number is expected to drop by 50 percent within the next year or so. Modern stove designs are full of innovations that help them meet this stringent new environmental standard. If you think you’d like to try heating with wood, a wood burning stove is certainly worth considering. Learn all about wood burning stoves and how they work, as well as the best firewood for heating, then decide for yourself if one makes sense as a heat source for your home. If you decide they’re not for you but still like the idea of burning wood, consider having a fireplace or masonry heater built in your home. Or for a more refined wood burning experience, invest in a hardwood pellet burning stove. What Is a Wood Burning Stove? Wood burning stoves are self-contained heating appliances designed to produce indoor heat through wood combustion. Many sizes and styles exist, but the basic principles are always the same. A wood fire is contained in the body of the stove, which is usually made of steel or cast iron. The fire warms the body of the stove, which radiates heat into the surrounding space. Smoke from the fire leaves the building through a pipe (called the flue) that leads to a chimney. How Does a Wood Burning Stove Work? All wood burning stoves rely on constant air flow to create combustion and heat. Fresh air is drawn in through adjustable dampers, usually in the stove’s door. This air allows wood inside the stove to burn, because combustion can’t happen without oxygen. Exhaust gases from the fire are then drawn up the chimney, safely leaving the building. Most modern wood stoves are lined with fire brick to protect their metal bodies from overheating. Many also have specially shaped pieces of sheet steel, called baffles, inside their firebox. The baffles are designed to control and slow the escape of gases through the chimney, retaining warmth longer and improving overall efficiency. In addition to the adjustable air vents in the front of most stoves, many are also equipped with turn dampers in the indoor portion of the flue pipe that leads to the chimney. Turn dampers are circular discs of metal attached to handles protruding from the pipe. They’re slightly smaller in diameter than the inside of the stovepipe, and they are rotatable. This rotation lets the user slow down or speed up the departure of exhaust gases from the building, allowing more or less heat to be retained. Is a Wood Burning Stove a Good Heat Source for Your Home? It depends. Wood burning stoves aren’t for everyone. If you prefer low to no maintenance heating options where the only homeowner involvement is setting the thermostat and paying your monthly bill, burning wood probably isn’t for you. If, on the other hand, you like a traditional heating approach that involves some physical work (cutting, splitting and stacking wood), owning a wood stove can be a beautiful thing. Old timers near where I live say that firewood you produce yourself rather than buy warms you three times: Once when you cut and split it, once when you stack it and once more when you burn it. However, if your home is large with many closed-off rooms, wood heat isn’t the best choice. That’s because wood stoves lack ducts to move warm air around the home. Generally speaking, wood burning stoves suit small to medium-size, open-concept houses best. What to Burn in a Wood Burning Stove There’s more to proper wood stove use then filling it with wood and stepping away. The species and moisture content of your firewood affect your stove’s performance in a big way. All firewood should be stacked in a well-ventilated area for at least a few months after cutting and splitting before you try to burn it. This gives the wood a chance to dry, and makes combustion much cleaner and more efficient. Hardwoods like oak, maple, birch and ash provide the most heat, so if you live somewhere with seriously cold winters stock up on this sort of wood. Softwoods like pine and fir don’t provide as much heat or burn as cleanly because of naturally occurring oils in the fibers, but some folks find them ideal for fall and spring burning when it’s not cold enough to warrant a hardwood fire. How To Clean and Maintain a Wood Burning Stove Three parts of your wood burning stove system need regular cleaning. Firebox: This is the main chamber inside your wood burning stove where the fire is contained. It will need to have the ash removed regularly — once a week or more, depending on the size of your stove. Flue Pipe: The indoor pipe leading from your stove to the chimney will gradually build up ash, and possibly a little creosote if you do some burning with the air intake dampers mostly closed. You’ll need to remove this pipe and clean it outdoors with a chimney brush every month or two. Chimney: Most chimneys have a bottom access port for cleaning. Use your stovepipe cleaning brush with chimney rod attachments to scrape loose any ash buildup inside the chimney pipe. Do this a few times each winter. In addition to these cleaning tasks, remove ash and soot from the inside face of your stove door regularly. Wood burning stoves work by creating a controlled environment in which wood can be burnt more efficiently to produce heat. Wood stoves don’t have any electrical components or moving parts, but require manual input from the user to be able to operate effectively. A wood burning stove works by: Allowing a fire to burn wood inside an enclosed compartment surrounded by fireproof materials.The size of the firebox dictates how much wood can be added to the fire and influences how much heat can be generated.The airflow to the fire can be controlled using the air vents on the stove to be able to burn the wood more slowly and efficiently.Waste gases produced by the fire are held inside the stove for longer and at higher temperature to produce more heat through secondary combustion.Heat is radiated out into the room thanks to metal bodies on the stove. I’ve explained how a wood burning stove works in more detail below using our own wood burning stove as an example. This guide shows how wood burning stoves work. To see how multi fuel stoves work, which can burn types of fuel other than wood, click here. The main issue with open fires in traditional fireplaces is that much of the heat produced is lost up the chimney, because the amount of air getting to the fire can’t be managed and so the fire can’t be controlled effectively. Open fireplaces are therefore very inefficient at providing heat to a room, and we find that we always have to sit near our open fireplace just to feel the heat. Wood burning stoves help to solve this problem of inefficient heating by allowing you to control both the amount of wood and the supply of air to the fire. Wood burning stoves help to provide more heat to your room by burning the wood more efficiently. A wood stove helps to provide the most amount of heat possible from burning wood through two key ways: Burning the wood in a more controlled manner.Burning off excess gases from the fire to produce even more heat. In a wood burning stove, a fire is built and lit inside the firebox. The inside of the firebox is lined with fireproof material on the base, sides and back. Where the fire is built inside a wood burning stove The door is located on the front of the stove, and has a glass panel built in to allow you to view the fire. The door to our wood burning stove is largely a glass panel A seal around the door means that when the door is closed, all of the air being supplied to the fire is through the air vents. Depending on the model of stove and its design, wood burning stoves typically have one or two air vents. Our wood burning stove has one controllable air vent that’s located underneath, and can be opened or closed using the handle that sticks out the front. The main air vent located under our wood stove The handle to control the airflow into the stove Wood burns best with a source of air from above, and so the diagram below shows how the fire in a wood burning stove is typically supplied with air. How airflow in our wood burning stove stove works Along with how much wood is put on the fire, the main way to control how hot and fast a fire burns inside a wood stove is by using the air vents. Opening the vent(s) increases the flow of air to the fire, causing the fire to burn through the wood more quickly because it has a greater supply of oxygen. More heat is produced as a result. Closing down the air vent(s) reduces the oxygen supply to the fire, causing it to burn through the wood more slowly, which in turn produces less heat. Completely closing the vents prevents any air from getting to the fire and causing it to eventually go out. As wood burning stoves are designed to be more efficient than open fireplaces, the air supply to the fire needs to be controlled so that the fire is burning through the wood at a steady pace. A fire that is smoldering due to lack of air, or rapidly burning through the wood due to a large air supply, is very inefficient. As well as helping to burn wood in a more efficient manner, a wood burning stove also typically burns waste gases from the fire to produce even more heat through a process known as secondary burn or secondary combustion. Higher temperatures and pressures are required to burn off waste gases from a fire, and so a wood burning stove achieves this by providing an enclosed environment whereby the air can only enter the stove through the air vents and leave the stove via the flue. Wood burning stoves are designed to stop waste gases from leaving the firebox too quickly, so that more time is allowed for secondary combustion to occur. A baffle plate located at the top of the firebox helps to stop the air, and forces it through a small gap at the top of the stove before leaving your home. The top of the firebox inside our wood stove showing the baffle Waste smoke and gases leave via the flue at the top of the wood stove Wood burning stoves also provide a fresh supply of air to above the fire so that secondary combustion can occur. While primary air is typically supplied to the fire to burn the wood, either secondary air or tertiary air is supplied to above the fire to be used in secondary burn. I’ve explained primary, secondary and tertiary air in stoves here. Our wood stove has a set of tertiary air vents located at the back of the stove that provides a fresh supply of oxygen for secondary burn. Tertiary air vents inside our wood stove to aid in secondary combustion of waste gases The diagram below shows how air is supplied to the fire to aid in secondary combustion of waste gases on our particular model of wood burning stove. How tertiary air enters our wood stove above the fire to aid in secondary burn Combined with burning the wood more slowly and efficiently, secondary burn helps wood burning stoves to produce the most amount of heat possible from each piece of wood burnt. Each model of wood stove is designed differently and so how well a stove converts wood into heat will be slightly different. Our wood burning stove has an efficiency rating of 78.9%, but you can find wood stoves with efficiency ratings of 80%+. This is compared to open fireplaces where the efficiency of burning wood can be as low as 10 or 20%, meaning that a large proportion of the heat produced isn’t used to heat your home. The body of a wood burning stove provides the means of transferring the heat produced from the fire to your room. Our wood stove is made from steel, and helps conduct the heat generated by the fire and radiates it out into the room. The main body of our wood burning stove that radiates heat into the room As wood burning stoves help to contain a fire within a metal and glass body, the glass on the door of the stove can blacken over time through use. Byproducts such as creosote created from burning wood can line the inside of the glass and leave stains. This can build up over time and prevent you from fully enjoying the view of a fire. Here’s what the glass on our wood burning stove can sometimes look like after a number of fires. Without air wash the glass door can blacken over time To help overcome this problem, many wood burning stoves incorporate what’s known as an air wash system. A constant flow of air is supplied down the inside of the glass to help prevent deposits from settling on the glass. How secondary air is supplied to the glass to help keep it clean in our wood stove Our wood burning stove has air wash built in, and secondary air from the vent located underneath the stoves provides the air needed for the air wash. With the main vent on our wood stove open, the air wash system helps to keep the glass clear throughout each fire. Air wash allows us enjoy the view of the fire by helping to keep the glass clean Further ReadingHow To Use A Wood Burning StoveParts Of A Wood Burning Stove ExplainedHow To Build And Light A Fire In A Wood Burning Stove Wood burning stoves work by creating a controlled environment in which wood can be burnt more efficiently to produce heat. Wood stoves don’t have any electrical components or moving parts, but require manual input from the user to be able to operate effectively. 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