Heat Exchanger Design Handbook

By recovering the residual heat in the exhaust gas, the fresh air introduced into the air conditioning system is preheated (or pre-cooled) before it enters the room, or the air cooler of the air conditioning unit performs heat and moisture treatment. A typical heat recovery system in buildings comprises a core unit, channels for fresh and exhaust air, and blower fans. Building exhaust air is used as either a heat source or heat sink, depending on the climate conditions, time of year, and requirements of the building. Heat recovery...

Marine heat exchanger

Shell and tube heat exchangers consist of a tube bundle which is placed inside the larger shell. Due to this design these exchanger require twice the

Marine heat exchangers are no different than non-marine heat exchangers except for the simple fact that they are found aboard ships. Heat exchangers can be used for a wide variety of uses. As the name implies, these can be used for heating as well as cooling. The two primary types of marine heat exchangers used aboard vessels in the maritime industry are plate, and shell and tube. Maintenance for heat exchangers prevents fouling and galvanic corrosion from dissimilar metals.

Plate-fin heat exchanger

categorized as a compact heat exchanger to emphasize its relatively high heat transfer surface area to volume ratio. The plate-fin heat exchanger is widely used

A plate-fin heat exchanger is a type of heat exchanger design that uses plates and finned chambers to transfer heat between fluids, most commonly gases. It is often categorized as a compact heat exchanger to emphasize its relatively high heat transfer surface area to volume ratio.

Baffles are an integral part of the shell and tube heat exchanger design. A baffle is designed to support tube bundles and direct the flow of fluids for maximum efficiency. Baffle design and tolerances for heat exchangers are discussed in the standards of the Tubular Exchanger Manufacturers Association (TEMA).

The plate-fin heat exchanger is widely used in many industries, including the aerospace industry for its compact size and lightweight properties, as well as in cryogenics where its ability to facilitate heat transfer with small temperature differences is utilized.

Shell-and-tube heat exchanger

A shell-and-tube heat exchanger is a class of heat exchanger designs. It is the most common type of heat exchanger in oil refineries and other large chemical

A shell-and-tube heat exchanger is a class of heat exchanger designs. It is the most common type of heat exchanger in oil refineries and other large chemical processes, and is suited for higher-pressure applications. As its name implies, this type of heat exchanger consists of a shell (a large pressure vessel) with a bundle of tubes inside it. One fluid runs through the tubes, and another fluid flows over the tubes (through the shell) to transfer heat between the two fluids. The set of tubes is called a tube bundle, and may be composed of several types of

tubes: plain, longitudinally finned, etc.

Heat exchanger

A heat exchanger is a system used to transfer heat between a source and a working fluid. Heat exchangers are used in both cooling and heating processes

A heat exchanger is a system used to transfer heat between a source and a working fluid. Heat exchangers are used in both cooling and heating processes. The fluids may be separated by a solid wall to prevent mixing or they may be in direct contact. They are widely used in space heating, refrigeration, air conditioning, power stations, chemical plants, petrochemical plants, petroleum refineries, natural-gas processing, and sewage treatment. The classic example of a heat exchanger is found in an internal combustion engine in which a circulating fluid known as engine coolant flows through radiator coils and air flows past the coils, which cools the coolant and heats the incoming air. Another example is the heat sink, which is a passive heat exchanger that transfers the heat generated by an electronic...

Holger Martin

*Heat Transfer Engineering, International Journal of Heat & Mass Transfer , etc. * * * Heat Exchanger Design Handbook (HEDH), "Heat Exchanger Design Handbook*

Holger Martin (December 3, 1942 in Achern - November 5, 2016 in Karlsruhe) was a German University lecturer for process engineering.

Heat recovery ventilation

rotary heat exchanger, or rotary air-to-air enthalpy wheel, energy recovery wheel, or heat recovery wheel, is a type of energy recovery heat exchanger positioned

Heat recovery ventilation (HRV), also known as mechanical ventilation heat recovery (MVHR) is a ventilation system that recovers energy by operating between two air sources at different temperatures. It is used to reduce the heating and cooling demands of buildings.

Baffle (heat transfer)

heat exchangers, chemical reactors, and static mixers. Baffles are an integral part of the shell and tube heat exchanger design. A baffle is designed

Baffles are flow-directing or obstructing vanes or panels used to direct a flow of liquid or gas. It is used in some household stoves and in some industrial process vessels (tanks), such as shell and tube heat exchangers, chemical reactors, and static mixers.

Aluminum alloy plate-fin heat exchangers, often referred to as Brazed Aluminum Heat Exchangers, have been used in the aircraft industry for more than 75 years and adopted into the cryogenic air separation industry around the time of the second world war...

Ground-coupled heat exchanger

A ground-coupled heat exchanger is an underground heat exchanger that can capture heat from and/or dissipate heat to the ground. They use the Earth's near

A ground-coupled heat exchanger is an underground heat exchanger that can capture heat from and/or dissipate heat to the ground. They use the Earth's near constant subterranean temperature to warm or cool air or other fluids for residential, agricultural or industrial uses. If building air is blown through the heat exchanger for heat recovery ventilation, they are called earth tubes (or Canadian well, Provençal well, Solar chimney, also termed earth cooling tubes, earth warming tubes, earth-air heat exchangers (EAHE or EAHX), air-to-soil heat exchanger, earth channels, earth canals, earth-air tunnel systems, ground tube heat exchanger, hypocausts, subsoil heat exchangers, thermal labyrinths, underground air pipes, and others).

Tubular Exchanger Manufacturers Association

Process Equipment Southern Heat Exchanger Struthers-Wells Ward Vessel and Exchanger Cheremisinoff, Nicholas P. (2000-07-30). Handbook of Chemical Processing

The Tubular Exchanger Manufacturers Association (also known as TEMA) is an association of fabricators of shell and tube type heat exchangers. TEMA has established and maintains a set of construction standards for heat exchangers, known as the TEMA Standard. TEMA also produces software for evaluation of flow-induced vibration and of flexible shell elements (expansion joints). TEMA was founded in 1939, and is based in Tarrytown, New York. The association meets regularly to revise and update the standards, respond to inquiries, and discuss topics related to the industry.

Plate heat exchanger

A plate heat exchanger is a type of heat exchanger that uses metal plates to transfer heat between two fluids. This has a major advantage over a conventional

A plate heat exchanger is a type of heat exchanger that uses metal plates to transfer heat between two fluids. This has a major advantage over a conventional heat exchanger in that the fluids are exposed to a much larger surface area because the fluids are spread out over the plates. This facilitates the transfer of heat, and greatly increases the speed of the temperature change. Plate heat exchangers are now common and very small brazed versions are used in the hot-water sections of millions of combination boilers. The high heat transfer efficiency for such a small physical size has increased the domestic hot water (DHW) flowrate of combination boilers. The small plate heat exchanger has made a great impact in domestic heating and hot-water. Larger commercial versions use gaskets between...

Earth tubes are often a viable and economical alternative or supplement...

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