Cooling and Heat Exchanger Solutions

We are proudly South African and passionate about delivering world class solutions to all industries, from power generation and petrochemical, steel and aluminium to light industrial, IWC is the obvious choice.

Founded in 1986, IWC has established itself as the leader in cooling tower and GRP solutions in Africa. Through our knowledge and experience of local conditions, we are able to provide flexible, tailored solutions to suit any project, at home or abroad. Our products and services are easily exported to any country.

Our service offering includes the design, manufacture and development of cooling systems, cooling towers and equipment, repairs and refurbishment, spares and other associated services. With heavyweight clients such as Eskom, Sasol, ArcelorMittal, Foskor, Impala Platinum, Anglo Platinum... it's safe to say that we set the benchmark in the industry.

Our portfolio of projects illustrates our activity across the SADC region; we have provided solutions in Zambia, Tunisia, Ghana, Mauritius and Swaziland.

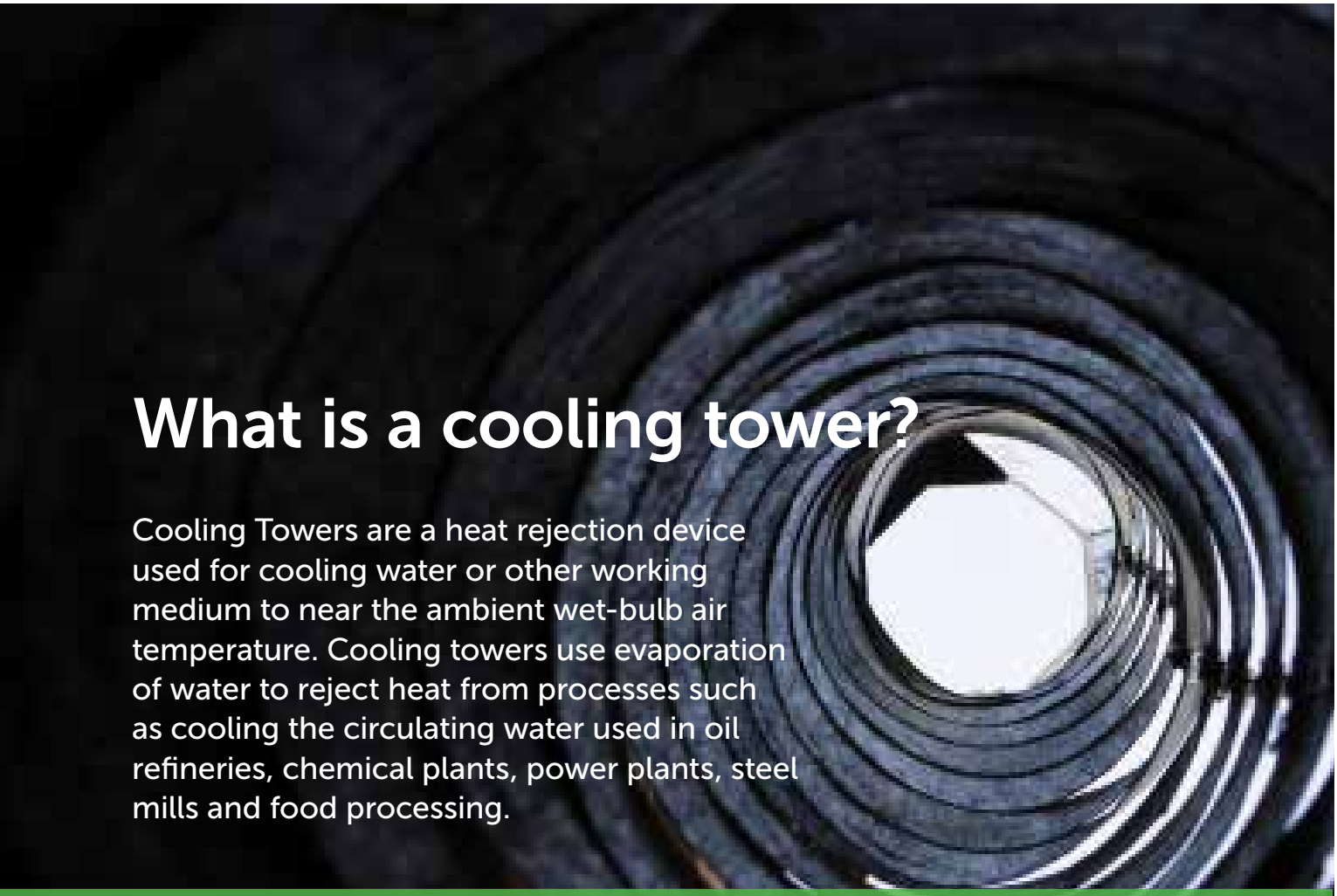
We are a long standing member of the CTI, Cooling Technology Institute, based in the USA. This association has as its members both constructors as well as end users of cooling towers.

Our company focus is based on high quality (ISO 9001:2008 accredited company) and excellent service standards, while always maintaining a competitive price structure.

Our extensive Cooling Tower range includes package cooling towers, large field erected mechanical natural draught cooling towers as well as the refurbishment thereof.

Our heat exchanger range includes evaporators, condensors, copper brazed, semi welded, all welded and traditional plate heat exchangers.

We also offer spares and servicing of all brands of plate heat exchangers.



What is a cooling tower?

Cooling Towers are a heat rejection device used for cooling water or other working medium to near the ambient wet-bulb air temperature. Cooling towers use evaporation of water to reject heat from processes such as cooling the circulating water used in oil refineries, chemical plants, power plants, steel mills and food processing.

A cooling tower extracts waste heat to the atmosphere though the cooling of a water stream to a lower temperature. The type of heat rejection in a cooling tower is termed "evaporative" in that it allows a small portion of the water being cooled to evaporate into a moving air stream to provide significant cooling to the rest of that water stream. The heat from the water stream transferred to the air stream raises the air's temperature and its relative humidity, and this air is discharged to the atmosphere.

Evaporative heat rejection devices such as cooling towers are commonly used to provide significantly lower water temperatures than achievable with "air cooled" or "dry" heat rejection devices, like the radiator in a car, thereby achieving more cost- effective and energy efficient operation of systems in need of cooling.

The towers vary in size from small roof-top units to very large hyperboloid (hyperbolic) structures that can be up to 200 metres tall and 150 metres in diameter, or rectangular structures that can be over 15 metres tall and 100 metres long. Smaller towers (package or modular) are normally factory-built, while larger ones are typically constructed on site in various materials.

Our cooling solutions

We offer various cooling tower solutions tailor made to our clients requirements. Whether its a package cooling tower or a field erected cooling tower solution, IWC has the expertise and experience to assist.

Field Erected Mechanical Draught Cooling Towers

We offer various solutions ranging from counterflow to crossflow configurations in either forced or induced draught. These are available in numerous different materials of construction as follows:

- Reinforced concrete
- Steel (painted, hot dip galvanized or stainless steel)
- Wood
- Pultruded fibreglass.

We offer various types of fill, dependent on the application and water quality.

- Film Packs - Clean water
- Trickle Packs - Moderately dirty water
- Slash Packs - Dirty water
- Splash Bars - Very dirty water
- Fill-less cooling towers for extremely dirty water.

Package Cooling Towers

Our package range of cooling towers are manufactured in our Midrand factory, they are designed for general industrial use and can be used singularly or in multiple configurations. These towers have the following general specifications:

Non-Corroding - Our towers are constructed from non-corroding materials and are designed for long life under extreme damp and contaminated conditions. The shell is constructed from heavy duty fibreglass. All internal parts are made of PVC, 3CR12, stainless steel or polypropylene. **Operationally efficient** - All package cooling towers are of counterflow induced draught design for optimum performance. The water enters the tower at the top and is evenly distributed over the fill material while the air enters through the inlets at the bottom and is discharged vertically by the fan. Various types of fills in different materials can be installed to accommodate any operating conditions. **Reliable** - Our towers are fitted with a static water distribution system with non-clogging nozzles. The exclusion of all moving parts, except for the motor-fan assembly, gives the towers excellent reliability with minimal maintenance. **Easy to install and service** - All our Package Cooling Towers are fully assembled prior to delivery and can be lifted and placed in position by a mobile crane preventing extended on-site erection periods. Our towers are made from 100% South African content. A comprehensive range of spares are kept to assist customers at short notice. Service calls are undertaken throughout Africa and even further afield. We can arrange transport if necessary and in most cases our engineers are present during installation.

We also offer various services for cooling towers

- Turnkey cooling water installations
- Water treatment equipment – filters and dosing equipment
- Testing and evaluation of cooling towers
- Parts and accessories.

Our package range of towers namely the FGS and the FM towers are manufactured in our works and transported to site complete and ready for installation.

The FGS Range

Our range of FGS cooling towers is a "stand-alone" cooling tower which is based on induced draught counter flow technology and has been designed and built for the highest possible efficiency. The range spans from our entry level unit, the FGS16 to the largest in the range FGS65.

These can be installed as a single cell or in a multi-cell configuration. The units come complete with their own sump and are easy to install. Models without the sump are available as well. The FGS range has the following features:

- Capacity range of up to 1800kW per tower (10^0 ΔT)
- Water flows up to 43.4 l/s (160m^3/h) per unit
- Corrosion resistant
- Fibreglass housing (fire retardant optional)
- Air inlet louvers
- Fibreglass basins UV resistant FRP
- PVC self-extinguishing fill and drift eliminators.

The FM Range

- Direct drive motor assembly
- Various fill and drift eliminator options.

The FM range of cooling towers are also based on induced draught counter flow design. They are built to achieve the highest possible efficiency permitting multi-cell installations with future extension capabilities. These towers do not normally come with an integrated sump but are installed above concrete basins designed according to individual user's requirement. Basins made from fibreglass, galvanised or stainless steel can be supplied on request.

The FM main features are:

- Suited for capacity of up to 10 000kW per cell (10^0 ΔT)
- Water flows up to 250 l/s per cell (900m^3/hr)
- PVC self extinguishing fill and drift eliminators
- Fibreglass side panels which are removable for maintenance (fire retardant optional)
- Aluminium or polyester reinforced fibreglass fans, driven by direct coupled low speed or geared motors
- 3CR12 , 304 or 316 stainless steel structures
- Low pressure water distribution system with non-clogging ABS spray nozzles
- Fan deck handrailing and access ladder standard on all models.

SONDEX

IWC supplies the SONDEX range of plate heat exchangers and fresh water distillers. SONDEX A/S is a Danish company specialized in the development, production and global marketing of plate type heat exchangers. Since 1984 SONDEX has grown into one of the world leaders and has developed a vast range of "new generation" plate heat exchangers suitable for almost any task.

Besides the traditional plate heat exchangers, the product range includes "Free Flow"-, "Semi-Welded"-, "Plate-and-Shell"-, "Brazed" and "Spiral" type heat exchangers as well as fresh water distillers.

Having one of the biggest ranges of plate heat exchangers, SONDEX has an optimal technical solution for any duty and service. Connection sizes range from Ø15 mm – Ø650 mm and cover a liquid flow rate of 0.05 m^3/hour to 5700 m^3/hour.

Gasketed Plate Heat Exchangers, Condensers & Evaporators

These plate heat exchangers have many applications in industry, in heat recovery processes and air-conditioning. We offer these plate heat exchangers with ordinary, free flow or semi-welded plates. The plates are tied together in a plate pack with each plate sealed to the next by means of a gasket. Gaskets are supplied in a range of materials specifically selected for the application.

Copper Brazed Heat Exchangers

Brazed plate heat exchangers consist of a number of thin, acid resistant plates, precision stamped and assembled as a unit. The plate pack, assembled with two end plates and connections, is vacuum brazed at extremely high temperatures providing a permanently sealed heat exchanger.

This results in an efficient unit which gives a space-and-weight saving of up to 80% compared with a tube heat exchanger. These plate heat exchangers are suitable for use with high temperature and pressure. The brazed plate heat exchangers do not contain rubber gaskets and can therefore operate continuously at extreme temperatures from -180°C to 200°C. The operating pressure can be as high as 30 bar.

Some applications where these heat exchangers are an effective solution includes heating and ventilation (for solar heating and air-conditioning units); heat pumps, heat recovery and hydraulic oil units.

Semi and Fully Welded Plate and Shell Heat Exchangers

Thermal efficiency in a SONDEX welded heat exchanger is comparable to a traditional gasketed plate heat exchanger.

Compared to the shell and tube heat exchangers the Sondex welded units take up significantly less space. The plate and shell heat exchanger works in the same way as an ordinary tubular unit; however, it is more efficient due to use of plates instead of tubes. The plates are laser welded together to form a plate pack, which is then mounted inside a traditional cylindrical shell. The heat exchanger is produced as an all welded exchanger or with flanges which makes manual cleaning possible. The all welded heat exchanger is built into a frame with its welded plate pack.

These units can operate with temperatures from -100°C to 400°C and with design pressures of up to 40 bar. These heat exchangers can be used to cool aggressive media and applications include, power plants, petrochemical, pulp & paper, steel and sugar industries.

Spiral Heat Exchangers

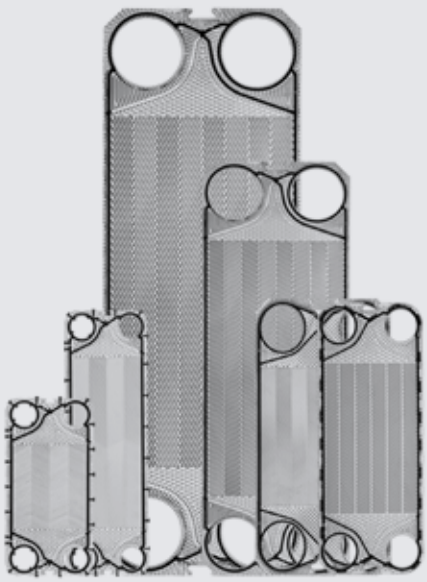
This heat exchanger is circular with two spiral channels; each one is a closed chamber allowing for the two products to remain separate while heat exchange occurs.

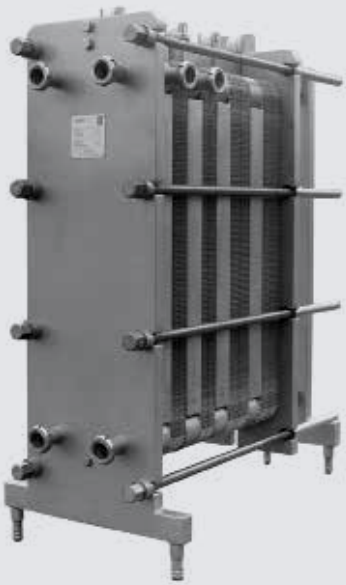
The flow of these two products is mostly counter current which results in close temperature approach between the two media. A variety of fluids can be circulated through this heat exchanger such as liquids containing solids and fibres, waste water and slurries to name a few. The heat exchanger is easy to clean and maintain as it has side frames on hinges which open to allow access to the internal spirals.

Fresh water distiller

This Fresh Water Distiller utilises the waste heat from diesel engine jacket cooling water or other heat sources to produce pure drinkable water by evaporating sea water under a high vacuum, thereby enabling the feed water to evaporate at temperatures below 48°C.

Steam can also be used as the heat source instead of the hot jacket water. The Fresh Water Distiller is based on a design where two titanium plate heat exchangers act as an evaporator and a condenser respectively and this unit can distil between 1 to 150 tons of water per day.





Maintenance, Parts & Refurbishment

Cooling Towers

We are the South African leader in the refurbishment of natural draught cooling towers and have undertaken the vast majority of these projects in our region over the past 24 years. We have also developed patented methods to do this work on-line thereby reducing down time and production cuts that would normally be associated with this type of project.

We also offer site servicing and refurbishment of all makes of cooling towers, a full range of spare parts is available and we are able to offer clients a range of upgrade alternatives.

Plate Heat Exchangers

Our service centre in Midrand offers maintenance of all brands of plate heat exchangers and holds a large range of spare plates and gaskets to suit. Our service crews offer our clients a full on site service including dismantling, inspection & servicing, re-gasketing and re-assembly of the machines.

Thermal Testing

IWC is able to offer thermal testing of cooling towers and systems. We are able to assist with detailed analysis and trouble shooting.

IWC

Head Office
10 Marcius Road, Barbeque Downs, Midrand, 1682, South Africa
PO Box 30882, Kyalami, 1684, South Africa

T 011 466 0699 / 0861 112 339
F 011 466 8180 / 0861 112 338

Email mail@iwc.co.za
Website www.iwc.co.za