IWC is a specialist EPC contractor, providing engineered cooling solutions to all industries.
About us

Industrial Water Cooling (IWC) is a specialist EPC contractor that has been providing engineered cooling solutions to industries across the African continent since 1986. IWC’s core products include cooling towers, heat exchangers and chillers, along with their allied spares and services.

We strive to design and implement thermal solutions that have a lower environmental impact by targeting a reduction in water use, energy use and carbon emission. We achieve this by being highly consultative with all our clients, focusing on technical operation, capacity building, quality manufacturing and implementation.

With heavyweight clients such as Eskom, ArcelorMittal, Foskor, Impala Platinum, Anglo Platinum, SASOL, CHEVRON amongst others, it’s safe to say that we set the benchmark in the industry. Our extensive portfolio of projects illustrates our activity across the SADC region. We have provided solutions in Zambia, Tunisia, Ghana, Mauritius, Mozambique, Kenya, Uganda, DRC, Malawi, Senegal, Morocco, Namibia and Swaziland. Our international reach extends to Vietnam, Australia and Sweden. 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 9001:2015 accredited company) and excellent service standards, while still maintaining a competitive pricing structure.

Our vast experience and knowledge of the industry has resulted in us being able to offer a range of services from feasibility studies to the installation of a complete plant on an EPC basis.
IWC Corporate Profile

A comprehensive service offering for the supply of new and spare parts for heat exchangers including gasketed plate & frame, welded & semi welded, spiral and other specialised heat exchangers.

Cooling towers from factory assembled packaged cooling towers, to large field constructed mechanical & natural draught cooling towers as well as thermal upgrading & the refurbishment thereof.

Our Extensive Range

Cooling Towers

Heat Exchangers

A comprehensive service offering for the supply of new and spare parts for heat exchangers including gasketed plate & frame, welded & semi welded, spiral and other specialised heat exchangers.

Refrigeration

High efficiency, energy efficient industrial chillers.

Spares & Accessories

Cooling tower parts & components e.g. fill, drift eliminators, nozzles, fans and drives.

Air fin coolers and condensers as well as the supply of associated equipment and spare parts.
The IWC range of cooling towers has proven itself as one of the most efficient and reliable in the world.

Each cooling tower is analysed and designed by our engineers who collectively have over a century of experience in this field. When our cooling towers require periodic inspection, they can be serviced by the same engineers who originally designed them. Our primary goal is customer satisfaction and we can solve your particular requirements with bespoke cell sizes. Our design engineers can choose from a number of possible cooling tower component combinations that result in economical selections capable of the thermal performance required.

Our flexible approach to designing customer centric solutions considers fan power, pumping head, plan area, water quality and environmental considerations to ensure the best possible solution. Our engineers review each cooling tower application to assure that the components selected will work together as an integrated system for both efficient performance and a long, reliable operational life.

IWC has completed approximately 80% of all the natural draft cooling tower refurbishments in Southern Africa and are deemed by many to be Africa’s leading cooling tower specialist.

80% of all refurbishments in South Africa completed by us

30+ years pioneering cooling technology
Concrete Towers

Recognised as a market leader, IWC has constructed numerous cast in situ concrete cooling towers.

Concrete is a natural material which is ideally suited for long service life in the harshest environment and defies the detrimental effects of heat and ultraviolet light. IWC has an impressive installed base of cast in situ concrete cooling towers, we have constructed these towers in a number of different industries and countries. Please contact us should you require any references.

Pultruded GRP Towers

IWC’s range of custom engineered Cooling Towers built from pultruded fiberglass profiles are the best possible solution for long term use in corrosive environments.

IWC’s Pultruded GRP Cooling Towers are designed according to specific project specifications and conform to CTI STD-137 & CTI STD-152 standards.

Due to Glass Reinforced Polyester (GRP) unique properties, Pultruded GRP is becoming the industry norm for the construction of large field erected cooling towers. GRP is a modern material that has many advantages over conventional materials of cooling tower construction such as concrete, steel or wood. Thanks to the unique benefits of Pultruded GRP, cooling tower owners and operators benefit from long service lives of cooling towers constructed from Pultruded GRP. Not only are long service lives of benefit but so are reduced construction durations and reduced initial capital cost. Due to the construction of these cooling towers they can be rapidly deployed to remote project sites and assembled with limited skills, plant and equipment. IWC has an impressive installed base of cooling towers constructed from pultruded fiberglass and have constructed these towers in a number of different industries and countries.
Bulk air coolers

Undoubtedly, the biggest challenge of deep level mining is providing a safe environment for miners. Today, gold and platinum mines descend as far as 4km below surface. In this extreme environment, virgin rock temperatures often exceed 60°C, requiring sophisticated cooling methods and equipment to reduce temperatures to safe levels for miners to work in.

Due to the extreme environment, underground mining operations make use of some of the largest ventilation and cooling systems in the world, incorporating more than one type of cooling technology, such as evaporative condensers, mechanical refrigeration plants, pre-cooling towers and bulk air coolers, in order to ensure a safe mine temperature.

IWC, has been at the forefront of developing ventilation and cooling system technology in the mining industry for over 30 years. Recent projects include manufacturing and installing these systems into the world’s biggest mining corporations, including Anglo Platinum’s Amandelbult Platinum Mine in Limpopo and AngloGold Ashanti’s Mponeng Mine in Gauteng.

Slurry and Cooling Towers

IWC has developed a field erected cooling tower specifically designed to handle slurries as well as highly abrasive and/or corrosive solutions.

These cooling towers are designed with ease of maintenance in mind and have forced draught fans, removable spray lances (accessible from an external walkway) and are fill-less, making them ideally suited for applications where fouling of the internals would normally be a major operational concern.

Drift eliminators are assembled into easily removable pads and can be provided with an automatic CIP (Cleaning In Place) system. Drift losses have been minimised and drift losses can be reduced to as low as 0.002% of the re-circulating solution flow rate. The cooling tower is typically octagonal in shape and consists of a number of field assembled, dual composite GRP panels, complete with an integral basin which is designed to be non-clogging. The structural panels have integral polypropylene liners with the structural laminate produced from a high-quality vinyl ester resin; a conductive carbon tissue is included as a corrosion barrier, as well as to allow for spark testing of the internal polypropylene panel seal welds.
IWC offers a comprehensive range of plate type heat exchangers for numerous applications. We also provide a range of spare plates and gaskets for most brands of exchangers.

Semi and fully welded plate type heat exchangers

The thermal efficiency in a welded heat exchanger is comparable to a traditional gasketed plate heat exchanger. IWC can offer different solutions from this range of heat exchangers, such as plate and shell and square block heat exchangers, semi-welded plate heat exchangers, pillow plate heat exchangers and fully welded plate heat exchanger. Each type with its specific benefits. For all these types, plates are laser welded together to form a plate pack, which is then mounted inside either a traditional cylindrical shell for the plate and shell heat exchanger or bolted together in a frame for the other types. Compared to shell and tube heat exchangers, welded units take up significantly less space and when exotic materials are required for the application, these units are significantly cheaper than the shell and tube heat exchangers.

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 mining processing, petrochemical, pulp and paper, steel and sugar industries.
Gasketed plate heat exchangers

Gasketed plate heat exchangers are used in many processes in all kinds of industries. Auxiliary cooling at a power generation plant or wort cooling at a brewery or an ammonia evaporator to produce chilled water for mineshaft cooling are all applications done by plate type heat exchangers. Plate heat exchangers are available with single, semi-welded, free flow or fully welded plates.

Plates are bolted together in a plate pack with each plate sealed to the next by means of a gasket or a laser-weld. Plate and gasket materials are carefully selected for the application in which the heat exchanger will operate.

Spiral plate heat exchangers

Circular in design with two spiral channels; each one is a closed chamber allowing two media to remain separate while heat exchange occurs.

The flow of the two products is usually counter-current, which results in a close temperature approach between the two media. A variety of fluids/vapours can be circulated through this type of heat exchanger, including liquids containing solids and fibres, waste water and slurries to name a few.

The heat exchanger surface is easy to clean and maintain with its optional removable bolted covers that can be mounted with hinges to easily open allowing access to the internal spiral chambers.

Copper or nickel brazed heat exchangers

Brazed plate heat exchangers consist of a number of thin (0.3mm), stainless steel 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.

The brazing is mostly used with a copper alloy but in some instances, where copper is not allowed, nickel can be used as a brazing material. 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 applications requiring high temperatures and pressures. Brazed plate heat exchangers do not contain rubber gaskets and can therefore operate continuously at extreme temperatures from -180°C to 200°C with operating pressures as high as 30 bar.

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

Hybrid air coolers

Hybrid air coolers offer outstanding performance potential thanks to the combined effect of both wet and dry cooling.

The hybrid air cooler has the following design features:

- Fans have continuous speed control to reduce energy consumption
- Automatic functions include draining, biocide addition, conductivity measurement and blowdown

We offer the following options for the hybrid air coolers:

- Cathodic dip-paint coating provides superior protection against corrosion
- Complete electrical control cabinet with control system to regulate summer/winter modes, adjustment of fan speed, control for the deluge system and automatic blow down and make up.

Air fin coolers and condensers

IWC offers a complete range of industrial air fin coolers and condensers to cover a wide range of performance parameters.

The range of air fin coolers we offer have the following specifications:

- Finned heat exchanger coils are provided with either copper of stainless steel (304 or 316) tubes configured with a staggered arrangement for efficient heat transfer.
- Fins are fabricated with a number of options such as aluminium, AL Mg, epoxy-coated aluminium, cathodic dip-paint coating or copper.
- The air fin coolers have casings manufactured from powder coated galvanized steel with 316 stainless steel as an option.
Refrigeration

IWC represents ENGIE Refrigeration in South Africa.
Engie Refrigeration Quantum Chillers

After years of continuous development, the QUANTUM is now a chiller that provides an astonishingly broad range of services. This series of high capacity chillers offer impressive solutions for each refrigeration application and can be individually tailored to ensure that every customer gets exactly the refrigeration they require.

It is the underlying concept of an oil-free compressor and contact-free magnetic bearings that make the QUANTUM chiller so powerful and efficient. There is no material wear, significantly lower maintenance costs and all the regulations and precautionary measures associated with oil operation simply do not apply. Another advantage of oil-free operation is more efficient heat transfer (in the condenser and the evaporator), which is not impaired by oil. This increases efficiency and reduces operating costs.

However, it is not just the QUANTUM’s long-lasting refrigeration and environmental credentials that impress, it’s also the reduced energy costs. It is also exceptionally easy to operate. It begins with a staggered start-up of the individual compressors, thereby resulting in low start-up currents, among other things. Then it switches over to quiet and low-vibration operation. QUANTUM’s continuous power control eliminates inefficient pulsing behaviour in the compressors, ensuring highly constant temperatures.

The Quantum chiller range is available in either water cooled or air-cooled versions.

50% Lower operating costs:
- High-efficiency compressors > no friction losses thanks to magnetic bearings
- Each compressor is fitted with a frequency converter > maximum efficiency during partial load
- Heat exchangers with high-performance ribbed pipes > optimum heat transfer with minimum pressure loss.

ENGIE Refrigeration supplies the right cooling for every process: from efficient chillers, environmentally friendly heat pumps to modular re-cooling systems. Efficiency, sustainability and cost effectiveness are hallmarks of every ENGIE Refrigeration product.
Water Cooled

The water-cooled QUANTUM was developed for process cooling in HVAC applications where efficient refrigeration is required despite the climate.

Advantages:
- Maximum energy efficiency
- Soft start up
- Minimal noise and vibration
- Reduced CO2 emissions
- Operational safety.

Air Cooled

At 2 megawatts, it is the most powerful air-cooled chiller of its type on the international market – and it works more intelligently than all other models currently available: the new QUANTUM Air.

Advantages:
- Energy-efficient and environmentally friendly
- Minimal noise
- Lightweight and compact
- Suitable for numerous areas, e.g. data centres, hospitals or office building

<table>
<thead>
<tr>
<th>Quantum Water cooled chiller</th>
<th>Quantum Air-cooled chiller</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Series</strong></td>
<td><strong>W Series</strong></td>
</tr>
<tr>
<td>Type</td>
<td>W050 – W385</td>
</tr>
<tr>
<td>Cooling capacity (kW)</td>
<td>400 - 3850</td>
</tr>
<tr>
<td>Condensing temperature max. (°C)</td>
<td>43</td>
</tr>
<tr>
<td>Number of Compressors</td>
<td>1 - 6</td>
</tr>
<tr>
<td>Refrigerant</td>
<td>R134a or R513a</td>
</tr>
</tbody>
</table>
Spares & Accessories

IWC offers a comprehensive range of spares and accessories for all products.
**Fan Rotating Assembly**

IWC supplies a range of fans and fan equipment to retrofit almost any cooling tower or air cooled heat exchanger.

Our standard fan arrangement comprises an axial flow fan having either fiberglass or aluminium fan blades, right angle reduction gearboxes, steel, stainless steel or carbon fibre composite drive shafts and electrical motors supplied to our customer’s specifications.

---

**Fan Rings or Fan Stacks**

We provide fibreglass fan rings and fan stacks for both air cooled heat exchangers as well as cooling towers.

These are supplied complete with bell, circular or conical inlets. Pressure recovery diffusers are available as optional equipment.

---

**Cooling Tower Internals**

We have a comprehensive range of cooling tower fills on offer. Our range of media covers all possible cooling tower operating conditions from very clean to extremely dirty recirculating water.

IWC’s team of cooling tower engineers has extensive application knowledge and are able to provide our customers with expert guidance in selecting the most suitable fill medium for their application.

Above fills are typically available in either PVC or polypropylene, with the exception of our splash grid fill that is only available in polypropylene.

---

**Drift Eliminators**

A variety of drift eliminators are available depending on customer’s emission requirements.

These typically include our S-Type (Large cooling towers), Honeycomb D15 (typical in package cooling towers) as well as a comprehensive range of high efficiency, EUROVENT certified products.

---

**Distribution Systems**

We have a range of cooling tower spray nozzles that have been developed by IWC specifically for use in both large concrete cooling towers as well as in package cooling towers.

These include our successful full cone square pattern sprayers and our low pressure upward and downward gravity pressure nozzles.