

# Chiller Application Guide

## General Questions For Chiller Sizing



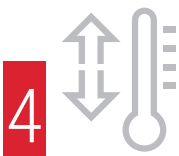
What **industrial sector** is this application for?



What **needs to be cooled** in the equipment?



Water, oil or mixture?  
What is the **recommended coolant**?



What is the **fluid temperature** needed? (Typical Value, Min./Max.)



Recommended **flow rate & pressure / pressure drop**?



What is the **cooling capacity/ power** needed?



Where does the Chiller need to be **located**?



Are **PID drawings, or equipment datasheets** available?



What is the Min./Max. **ambient temperature**?

Application	Systems	Questions
MACHINE TOOLING	Spindles (Rough grind, centerless grind, finish grind, boring, milling, heavy-med-light sock removal), CNC Machine, Torque Motor, Linear Motor, Table Motor, Waterjet Cutter	<ul style="list-style-type: none"> <li>• What is the Min. coolant flow rate required?</li> <li>• What is the Min. pressure and max pressure required?</li> <li>• What is the cooling power needed? <ul style="list-style-type: none"> <li>• Or ask to be provided a data sheet</li> </ul> </li> <li>• Is a control flow and brass filter required?</li> </ul>
MEDICAL IMAGING	MRI Machine, CT/PET Scanner, Radiotherapy Machine, Blood Bank Analyzers, Biograph Equipment, Cancer Treatment Clinics	<ul style="list-style-type: none"> <li>• What is the cooling capacity/ flow rate/ pressure drop needed for cooling helium compressors and magnets?</li> <li>• Does the equipment need specialized cooling for each magnet and helium compressor or central cooling of all components?</li> <li>• What is the cooling capacity/ flow rate/ pressure drop needed for cooling the heat exchanger in the CT's gantry?</li> <li>• Does the heat exchanger require partial load cooling?</li> </ul>
LASER & PLASMA	CO2 Laser Cutting Head, Lenses, Cold Plate, Fiber Optic Cable, Plasma Cutter, Glass Edging Laser	<ul style="list-style-type: none"> <li>• What components need to be cooled? (Laser source, optics, cable, etc.)</li> <li>• What is the heat load/heat dissipated from the laser + optics?</li> <li>• What is the recommended temperature and accuracy needed to cool laser tube/laser head + optics?</li> <li>• What kind of water does it need to cool?</li> <li>• Demineralized, deionized?</li> <li>• Do they use additives? (anticorrosive, antialgae, etc.) <ul style="list-style-type: none"> <li>• Always ask for the "cooling section" data sheet of the laser</li> </ul> </li> </ul>
METAL WORKING	Spot Welders, MIG, TIG, Stick, Flux Cored Arc, Energy Beam, Plasma Arc, Submerged Arc, Metal Extruders, Induction Oven, Ice Lathes	<ul style="list-style-type: none"> <li>• What is the temperature to maintain?</li> <li>• What is the power to be dissipated in kW or W?</li> <li>• What is the required flow rate?</li> <li>• What is the pressure drop?</li> </ul>
PLASTIC PROCESSING	Injection Mold, Extruder Die, Extruder Screw, Extruder Barrel, Blow Molding Die, Rollers, Thermoforming Machine, Packaging and Blister Forming	<p><b>Injection Molding</b></p> <ul style="list-style-type: none"> <li>• How many injection molds need cooling?</li> <li>• What are the different plastic materials being molded and approx. quantity (in lbs) of the plastic molded per hour in the machine?</li> <li>• What is the melt injection temperature and mold temperatures for the plastics being molded?</li> <li>• If cooling calculations have been performed, ask about inlet temperatures of cooling channels?</li> <li>• What is the required flow rate for the cooling channels?</li> <li>• If cooling calculations aren't performed, ask if they can provide a list of plastics being molded along with melt and mold temperatures?</li> </ul> <p><b>Plastic Extrusion/Blown Film Extrusion</b></p> <ul style="list-style-type: none"> <li>• What is the temperature that the extruder barrel needs to be maintained at?</li> <li>• What are the flow rate requirements?</li> <li>• Does the screw need cooling?</li> <li>• What temperature and flow rate is required to maintain?</li> </ul> <p><b>Thermoforming</b></p> <ul style="list-style-type: none"> <li>• What are the different plastic materials being formed and approx. quantity (in lbs) of the plastic molded per hour in the machine?</li> <li>• What is the processing temperature range that the plastic sheets are heated up to?</li> <li>• What are typical temperature ranges that the forming die needs to be maintained at?</li> <li>• What is the flow rate requirement for cooling the die?</li> <li>• If cooling calculations aren't performed, ask if they can provide a list of plastics being formed along with forming and die temperatures?</li> </ul>

Application	Systems	Questions
TEXTILE PROCESSING	Printing Machine, Dyeing Machine, Finishing Machine	
FOOD/BEVERAGE / COSMETICS	Bakery (High Speed Dough Blenders, Frosting and Filling Machines), Brewery (Wort Boiler, Brite Tanks, Fermenters, Two-stage heat exchangers), Winery (Heat Exchangers of the Wine Making Vessel), Distillery (Wort Boiler), Yogurt/Soft-Serve Machines, Ice Making Machines, Freeze Dryers, Food Packaging Machines, Quench Tanks, Die Cast Cooling Tanks.	
WASTE WATER TREATMENT	Effluent Water Discharge, Hypochlorite Generators, Water Reuse Line, Ozonator Lines	
DRYING TREATMENT	UV Lamps (Housing, Reflectors, Backplate) for Drying and Sterilizing	
INDUSTRIAL WASHING & TREATMENTS	Latching and Grinding Machines, Vapor Degreasers, Electrical Discharge Machines (EDM), Washing Machines, Anodizing Vessel, Thermal Sprayer, Flame Sprayer, Double Jacket Hardening Ovens, Diffusion Pumps, PVD/ Vacuum Coating, Optical Coating, Solvent Distillation	<ul style="list-style-type: none"> <li>• What is the temperature to maintain?</li> <li>• What is the power to be dissipated in kW or W?</li> <li>• What is the required flow rate?</li> </ul>
PRINTING	Flexographic Printer Roller, UV Curing Conveyor, Offset Printer Plate Development Fluid,	<ul style="list-style-type: none"> <li>• What is the pressure drop?</li> </ul>
COATING AND GLUE	Cold Glue, Vinyl Glue, Urea Glue, Polyurethane Glue Machines (Jacketed Adhesive Vessels, Coating Rollers, Chill Rollers, Heat Transfer Rollers), Wood coating coaters, Shoe Glue Mold	
CERAMIC MANUFACTURING	Ceramic Kiln Tunnel, Roller Kilns	
LABORATORIES	HPLC (High Performance Liquid Chromatography), GC-MS (Gas Chromatography-Mass Spectroscopy), Nuclear Magnetic Resonance Spectrometer(NMR), PCR (Polymeric Chain Reaction) Machines, Electron Microscopes, Centrifugers, X-Ray Diffraction Machines	
PHARMACEUTICALS	Extrusion/Hot-Melt Equipment, Blenders, Mixers/Jacketed Vessels, Chill Rolls, Tablet Press	
HEAT EXCHANGERS	Biogas/Biofuel Process Equipment, Inverters in Solar Equipment, Electrical Enclosures	
BATTERY ENERGY STORAGE	Battery Modules	<ul style="list-style-type: none"> <li>• What is the system heat load from the batteries?</li> <li>• What is the system fluid flow rate? <ul style="list-style-type: none"> <li>• Module flow rate x quantity of modules</li> </ul> </li> <li>• What is the system operating pressure?</li> </ul>

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