

Maintenance services



THERMAL SYSTEM APPLICATIONS

- Process and office air-conditioning
- Refrigeration
- Chillers
- Boilers and heating systems
- Laboratory equipment
- Building automation systems
- Environmental chambers
- Humidification systems
- Industrial ventilation
- Clean rooms
- Computer rooms

YOUR CRITERIA

- Minimize downtime
- Reduce operating costs
- Reduce energy costs
- Extend the service life of your equipment
- Assure occupant comfort
- Secure the highest level of service
- Designate one qualified supplier to service all your systems

Carmichael...

- Employs over 400 certified journeyman technicians in service centres located across the country.
- Offers multiple technical skills under one roof – refrigeration technicians, heating technicians, electricians, welders, pipe fitters and tinsmiths.
- Has technical supervisors on hand to ensure the highest level of expertise and quality.
- Manages and operates regional service offices across Canada offering support staff, designers, estimators, workshop and local management.
- Assigns account representatives and managers who pay close attention to your every need.

MANDATES FULFILLED

- Preventive maintenance supported by fully computerized tracking of all tasks and repairs
- Specialized diagnostic service and adjustment of all systems
- Repair services
- System upgrades



Factories and industries



Industrial screw-type compressor

In the light of globalization and current economic trends, plant managers must more than ever focus on production processes. Their most important objectives: ensure product quality; guarantee the health and safety of employees; respect environmental legislation. Thermal systems that for whatever reason haven't kept up with production demands can only detract from attaining these and other objectives.

As a Carmichael client, you benefit from the company's long-standing experience in making sure that your thermal systems – from freezing, cooling and conditioning through heating, boiling, burning and exhausting – are constantly able to satisfy new and growing demands.

TYPES OF COMPANIES

- Steel mills and fabrication
- Chemical processing
- Machinery
- Aerospace
- Electronic
- Plastics
- Packaging
- Food processing
- and many others

DESIGN, INSTALLATION AND MAINTENANCE MANDATES

- Production chilling systems
- Air-conditioning chillers
- Combustion equipment such as boilers and industrial dryers
- Control room air-conditioning
- Dust collectors

YOUR PRIORITIES

- Minimization of downtime
- Equipment reliability
- Calibration of control system
- Modernization of thermal systems
- Indoor air quality
- Management of cost



Polyethylene water chiller designed and built by Carmichael



Commercial properties and high-rise buildings



As an owner or administrator, you know the reliability of your air-conditioning system is a top priority for the comfort and satisfaction of your employees, customers and tenants.

However: your maintenance, repair and replacement budget is also a concern, as are energy costs.

As a Carmichael client, you team up with a national leader that is supported by multiple resources and specialists in the design, maintenance and repair of all your systems. Three words: Carmichael handles everything.

TYPES OF COMPANIES

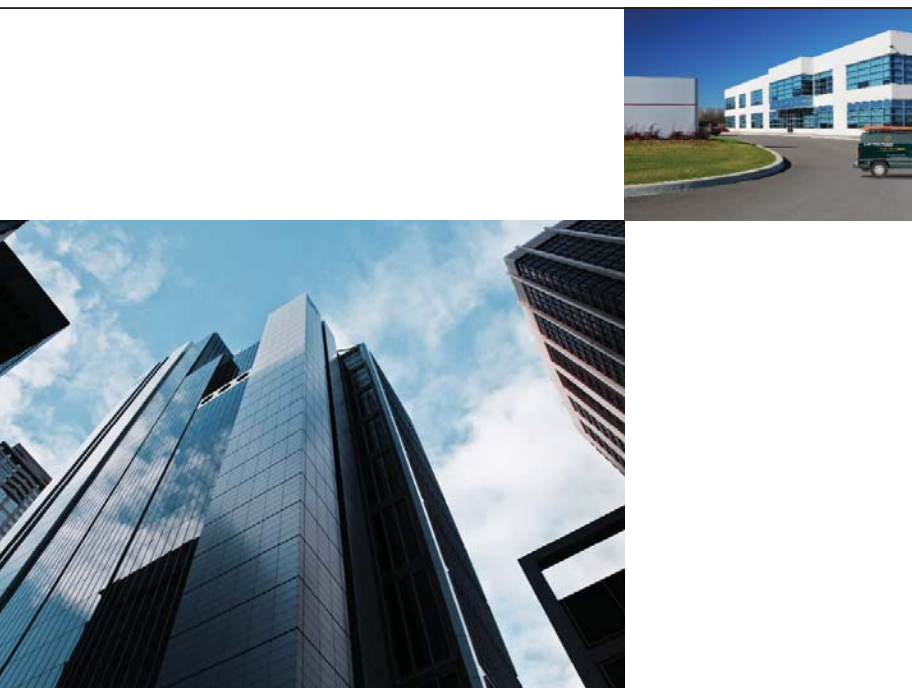
- National retail chains
- High-rise office buildings
- Condominiums

DESIGN, INSTALLATION AND MAINTENANCE MANDATES

- Chillers
- Roof-top air-conditioning
- Boilers
- Refrigeration systems
- Building automation systems
- Computer room air-conditioning

YOUR PRIORITIES

- ☐ Management of costs
- ☐ Indoor air quality
- ☐ Occupant comfort
- ☐ Energy savings
- ☐ Environmental issues



Public and private institutions



As a facility manager, you know the reliability of your heating and air-conditioning systems, as well as the comfort of the people who use your buildings, are top priorities. It's important to respect the established indoor air-quality standards, just as it's necessary to respect budgetary constraints.

When you choose Carmichael as your thermal systems technical service provider, you can rely on designers and specialists who will see to the maintenance and updating of your systems and who will give you impartial recommendations regardless of brand names. A thermal-systems industry leader since 1922, Carmichael is well able to take charge of all your system needs.

TYPES OF INSTITUTIONS

- Private schools
- Universities
- Hospitals and health centres
- Nursing homes
- Municipal buildings
- Public buildings

DESIGN, MAINTENANCE AND MODERNIZATION CONTRACTS

- Air-conditioning
- Chillers
- Boilers
- Building automated systems
- Ventilation systems

YOUR PRIORITIES

- Reduction of repair costs
- Equipment preservation
- Energy savings
- Building user comfort
- Indoor air quality

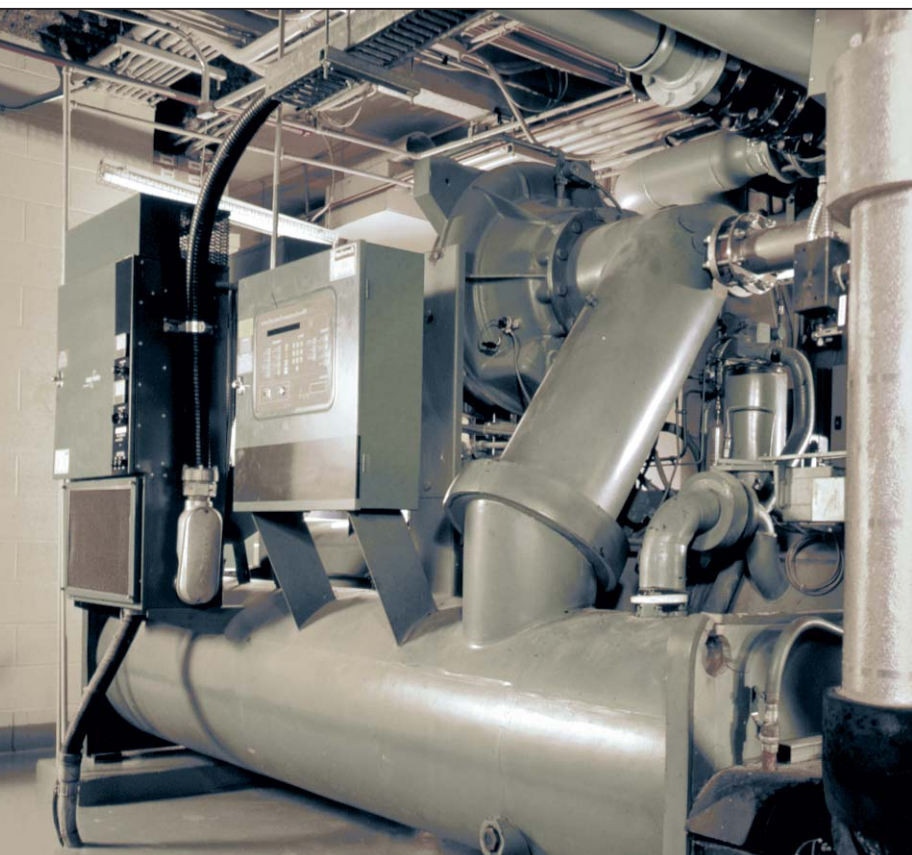


Modular chiller services

(screw-type, centrifugal and reciprocating compressor chillers)

Typical brands:

Carrier, York, Trane, McQuay,
Dunham Bush



YOUR CRITERIA

- Minimize system downtime
- Extend the service life of your devices
- Plan long-term corrective actions
- Validate systems' internal protection
- Save energy
- Receive unbiased upgrade recommendations

Carmichael...

- Employs experienced technicians to service screw-type, centrifugal and reciprocating compressor chillers. The company's technicians are trained by our technical supervisors and equipment manufacturers.
- Employs designers who can properly integrate all your systems.

MANDATES FULFILLED

- Preventive maintenance (comprehensive repair option for five years)
- Predictive maintenance (eddy-current testing, oil tests, quality of power supply, winding resistance, vibration, etc.)
- Actualization of systems (purge, refrigerant conversion, control, etc.)
- Cost estimates and optimal system selection
- Selection of ideal type of modular chiller
- Energy savings

DID YOU KNOW?

- Carmichael employs over 400 certified journeyman technicians as well as a team of over two dozen designers and project managers in 14 service centres across the country.
- Carmichael performs preventive maintenance on boilers, building automation systems, computer rooms and air conditioning systems.



Industrial refrigeration



Food and beverage industries,
pharmaceutical, plastics production
as well as arenas.

Screw compressor
package for
ammonia system



YOUR CRITERIA

- Secure expertise and experience in design and maintenance of high-capacity system
- Obtain the skills and knowledge required in ammonia and/or Freon refrigeration
- Assure quick response time
- Minimize downtime

TYPICAL APPLICATIONS

- Blast freezers (tunnel, conveyor, spiral)
- Liquid chillers
- Cold rooms
- Production environment air-conditioning (temperature and humidity)
- Ultra-low-temperature chambers
- Ice-rink refrigeration

Carmichael...

- Mobilizes a team of industrial refrigeration engineers.
- Deploys technicians who work exclusively in the industrial sector.
- Has a task force of designers and project managers dedicated to refrigeration projects.
- Custom-builds refrigeration systems at in-house workshops.
- Carries out preliminary design in 3D software.

MANDATES FULFILLED

- Design and installation of new systems
- System upgrades (capacity, efficiency, product quality)
- Preventive maintenance and repair
- System assessments (energy conservation, budget estimates)
- Diagnostics and corrections of technical malfunctions
- Refrigerant conversions
- Control systems

DID YOU KNOW?

- Carmichael is already the biggest employer of refrigeration technicians in Ontario, Quebec and Atlantic Canada, and growing.
- Carmichael also specializes in steam boiler applications.



Scientific services



Scientific equipment including ultra-low-temperature freezers, refrigerators, controlled and stabilized atmosphere chambers, environmental chambers, drying freezers, distillers, incubators, ovens, circulation baths

Typical brands:

Sanyo, VWR, Thermoelectron, Virtis, Fisher Scientific, Forma, Thermotron, Shellab, etc...



YOUR CRITERIA

- Assure safe storage of valuable substances
- Conform to national standards
- Obtain the services of a manufacturer-certified provider

Carmichael...

- Hires knowledgeable technicians across the country who specialize in the scientific sector.
- Executes repairs at in-house workshops.
- Continuously trains specialized technicians.
- Guarantees national coverage.
- Gives unparalleled support from 14 regional service centres.
- Performs annual instrument calibration according to the National Institute of Standards and Technology (NIST) and the Canadian Standards Association (CSA).

MANDATES FULFILLED

- Certified control device calibration
- Documented preventive maintenance
- Refrigerants conversions
- Installation and system start-up
- U.S. manufacturer warranty support
- Device and control upgrades
- Repairs
- IQ/OQ service
- Freezer rental service

DID YOU KNOW?

- Carmichael has over two dozen technicians working exclusively in the scientific sector.
- Carmichael has partnerships for installation and repairs with several international manufacturers.



Industrial boiler services



Typical brands:

Combustion Engineering, Volcano,
Thermogenics, Vapor, Cleaver
Brooks and Dominion Bridge.

Steam boiler



YOUR CRITERIA

- Minimize downtime
- Reduce energy loss
- Respect environmental emission standards
- Extend the service life of your systems

Carmichael...

- Upgrades boiler systems
- Employs specialized technicians and designers working exclusively on boilers
- Offers instrumentation and control services

MANDATES FULFILLED

- Preventive maintenance, repairs and upgrades in the following areas: steam pressure systems, combustion systems, water supply systems, operation control systems, gas emission and internal protection controls.

DID YOU KNOW?

- Carmichael also handles chillers and central air-conditioning systems.



Design-build services



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Industrial chiller



YOUR CRITERIA

- Benefit from the support of highly experienced designers.
- Obtain a complete turnkey system solution in response to your needs.
- Benefit a fast-track execution and superior project management

Carmichael...

- Employs over two dozen designers and internal project managers.
- Develops innovative and practical designs suited to your needs, from the conceptual stage through to completion.
- Assures the assembly of your thermal system by qualified technicians.
- Views your systems in their entirety and integrates them accordingly.
- Works on projects from small to large.

MANDATES FULFILLED

- Determining design and budgetary options
- Complete design services
- Equipment selection and purchase
- Installation
- Project management
- Start-up and testing
- Preventive maintenance of after-sale service for the duration of the system

DID YOU KNOW?

- The price of your project will depend mainly on three major factors:
 - 1) the design of your system,
 - 2) the scope of the project, and
 - 3) the grade of equipment selected (light or heavy duty).



Laboratories and research centres



You trust your scientific equipment

to process or store products that are essential to your endeavours. Precision and reliability – essential nowhere more than in industries such as yours – are vital to your objectives.

With decades of acquired experience, Carmichael has the necessary skills and qualifications required to install and maintain high-end, high-tech equipment. Our specialists are factory-trained, equipped with precision equipment that meets national standards, and benefit from permanent technical support for thermomechanical laboratory devices. These apparatus, critical to your operation, must be perfectly maintained.



Carmichael invests considerable sums in employee training and in state-of-the-art diagnostic instruments. These are annually calibrated and up to the task of verifying your sensitive equipment.

TYPES OF COMPANIES

- Pharmaceutical
- Biotechnology
- University research centre
- Hospital research centre
- Aviation
- Aerospace
- Telecommunication
- Factories and production plants

INSTALLATION, REPAIR AND MAINTENANCE MANDATES

- Clean room air-conditioning
- Ultra-low-temperature freezers
- Distillers
- Incubators
- Freeze dryers (lyophilizers)
- Environmental chambers

YOUR PRIORITIES

- Equipment precision
- Equipment reliability
- Management of costs
- Environmental issues
- Indoor air quality
- Energy savings

