High precision temperature control for every industry

Temperature Control Equipment

SMC®

NP387-A

SMC Temperature Control Equipment

As a total pneumatic equipment manufacturer, SMC supplies products to a wide range of industries against a backdrop of increasing automation across the industrial sector.
We have grown to be a global company with the leading market share.

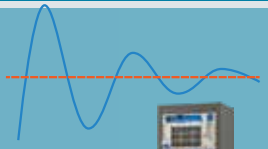
The global market we built up through sales of our pneumatic equipment has yielded customers with increasingly diverse demands. This prompted us to begin developing temperature control equipment for the semiconductor and medical industry in 1978.
In the more than 40 years since then, we have supplied the market with products tailored to quality, ease of use, energy efficiency, reliability and more.

We have further extended the core technologies developed in the course of manufacturing products for the healthcare and semiconductor industries, and now develop temperature control equipment suited to a vast array of applications.
Based on globally-oriented design principles, we are now delivering high-quality products to clients all over the world that are tailored to their local power supplies and environmental standards.

Using the global network we have built, we at SMC will continue to supply advanced technologies and services that make a positive contribution to industrial growth.

SINCE 1978

Demand for temperature control products in the healthcare and semiconductor industries	Core technologies developed in the course of meeting this demand
	Quality award winner Quality recognized by customers in the healthcare industry
High quality Maintaining high production/operation rates	Durable technology in components Systems design techniques
High precision (temperature accuracy) Detailed machining accuracy	Refrigerant circuit control technology
Compact Reduced footprints in clean rooms	Compact design techniques
Energy saving Reduced environmental impact	Power consumption reduction techniques Regulatory compliance (RoHS, etc.) Low environmental impact refrigerant technology
Globally compatible	Compliance with overseas safety regulations Technology compatible with differing power supply voltages



SMC

Global market share	Japan market share
37%	65%

Countries/regions: **83**

Local service locations: **560**

Countries/regions with production facilities: **30**

Employees: **19,746**

Company Profile

Company name	SMC Corporation
Head Office	Akihabara UDX 15F, 4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, JAPAN
Established	27 April 1959
Stock exchange listing	Tokyo Stock Exchange, first section
Capital stock	61 billion yen
Net sales	576.9 billion yen (consolidated)*
Net income	130.6 billion yen (consolidated)*
Number of employees	19,746 (consolidated)*
Equity ratio	89.3%*
Rating	AA [R&I (Rating and Investment Information, Inc.)]*
Purpose of business	Manufacture, processing and sales of automatic control equipment Manufacture and sales of sintered filters and various types of filtration equipment

* As of end of March 2019

2019

Technology Succession

Development of technology for temperature control products for general industry

High quality

High precision

Compact

Energy saving

Globally compatible

40 years of progress

Meeting the challenges of high precision, compactness and energy efficiency

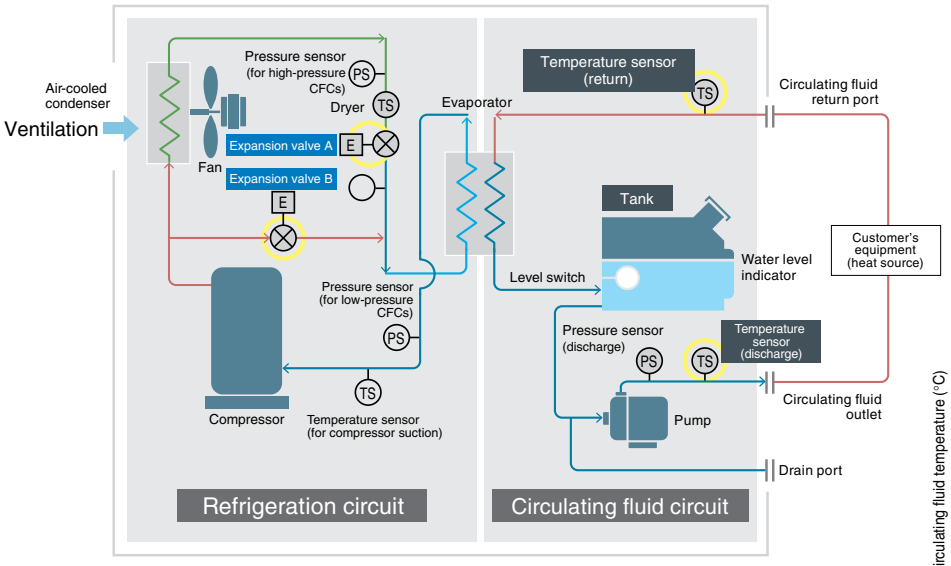
SMC original chiller control is made possible by technology built up over many years, and this experience and technology underpins achievements such as high-precision temperature stability as well as our pursuit of compactness, space-savings and lower power costs.
Our extensive product range caters to a wide range of industries and machine types.

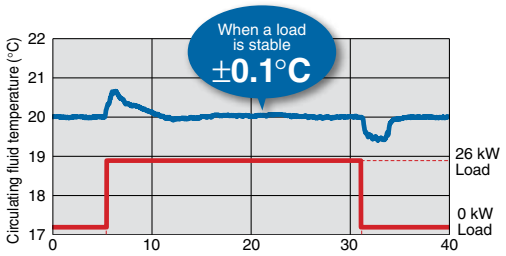
High precision Compact

Control technology offering temperature stability of ±0.1°C

Point A combination of precise control in **expansion valve A** for cooling and **expansion valve B** for heating yields excellent temperature stability.

Point Since the refrigeration circuit is controlled by the signals from **2 temperature sensors (for return and discharge)**, **precise temperature control of the circulating fluid** can be achieved. Therefore, there is no need for a tank with a large capacity to absorb the circulating fluid temperature difference, as **high temperature stability** can be achieved even with **a small-size tank**. This also contributes to space saving.

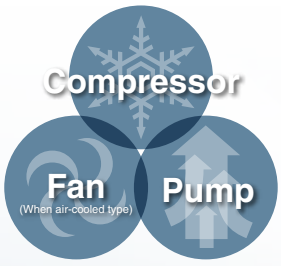




Energy Saving, Reducing Power Consumption

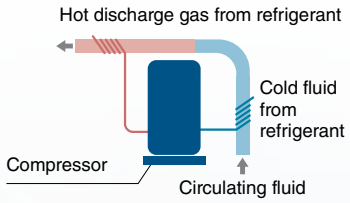
Triple inverter control technology

The inverter respectively controls the number of motor rotations of the compressor, fan and pump depending on the load from the customer's equipment.



Circulating fluid can be heated without a heater.

Hot discharge gas is recycled for heating. No heater is required, which helps to save energy.



∗ Example diagram.

Product Lines

Refrigeration type

General Purpose

- Cooling capacity 1.3 to 28 kW
- Temperature stability ±0.1°C to ±2.0°C
- Set temperature range 5 to 35/40°C
  Air/water-cooled refrigeration type

Thermo-chillers HRSE/HRS/HRSH

Rack mount type HRR

Laser

Dual type HRL

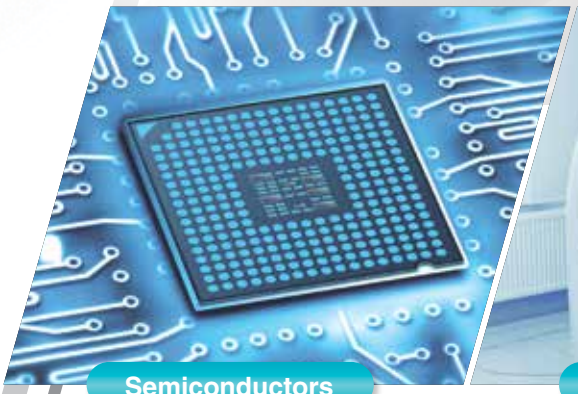
High Performance

- Cooling capacity 1 to 10 kW
- Temperature stability ±0.1°C
- Set temperature range -20°C to 90°C
  Water-cooled refrigeration type

Thermo-chillers HRZ

Dual thermo-chillers

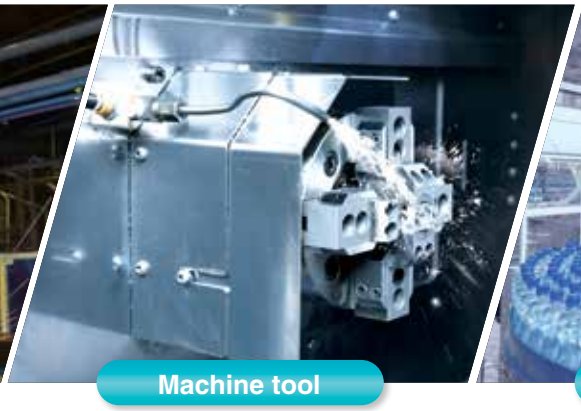
Catering to a wide range of industries and equipment


Semiconductors


Medical


Lasers


Welding


Machine tool


Food


FPD


Printing


Physical and Chem-

Water-cooled type

Refrigerant-free type

- Cooling capacity 2 to 30 kW
- Temperature stability ±0.3°C
- Set temperature range 20°C to 90°C

Thermo-chillers HRW

Peltier type

High precision

- Cooling capacity 140 to 1200 W
- Temperature stability ±0.01°C to ±0.03°C
- Set temperature range 10°C to 60°C

Thermo-con HEC/HECR

Direct control of chemical liquid temperature

- Cooling capacity 300 to 750 W
- Temperature stability ±0.1°C
- Set temperature range -10°C to 60°C

Chemical thermo-con HED

Technology Development Capability to Meet Customers' Needs

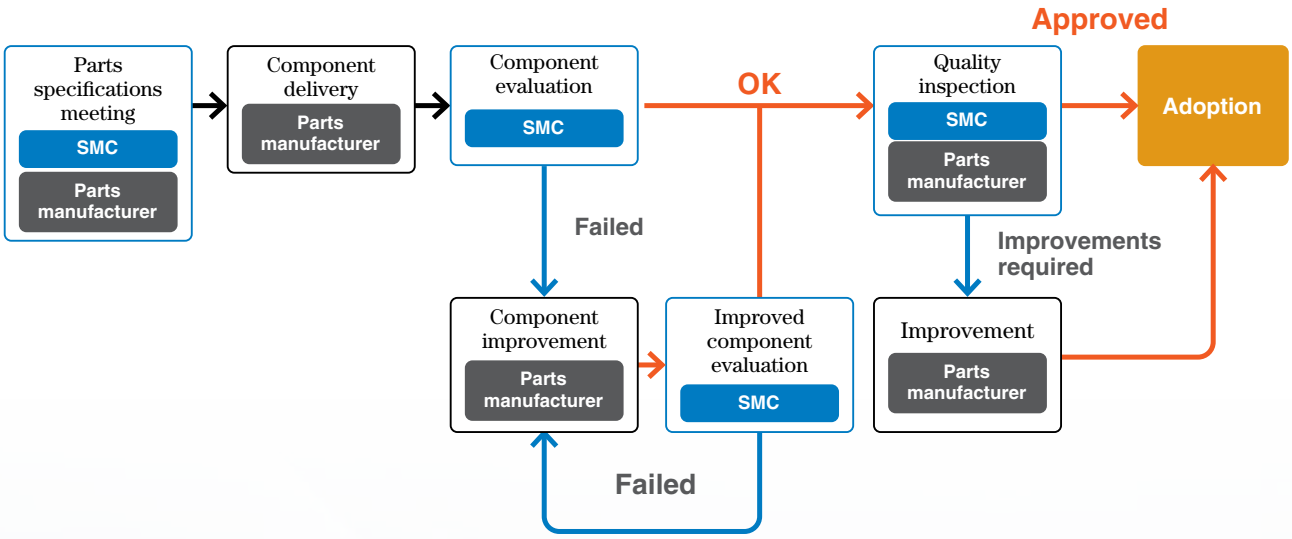
With "Customer First" as our motto, we are working to create highly reliable products through wide-ranging technology development from component parts upwards. This development includes improving performance, quality and endurance, high functionality, multi-functionality, compactness, new refrigerants and compliance with international standards.

Design Quality

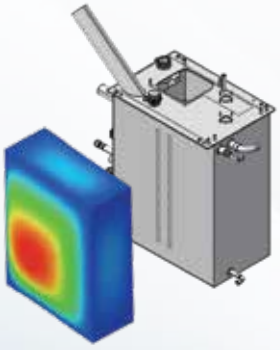
Identifying specifications that meet customer requirements ▶ Developing components that meet customers' requirements ▶

Developing highly reliable components

Developing components cooperatively with parts manufacturers



Component parts development



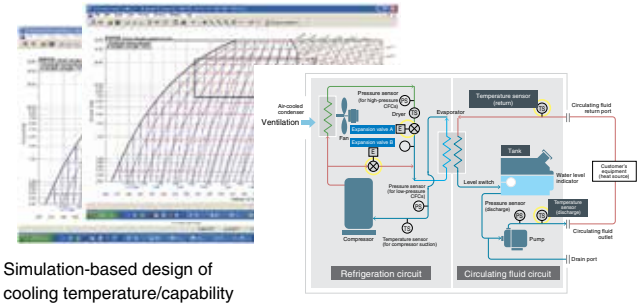
Tank assessments (withstand pressure testing and deformation simulations)

Pump assessments (endurance testing)

Environmental testing laboratories

Developing temperature control equipment that meets customers' requirements

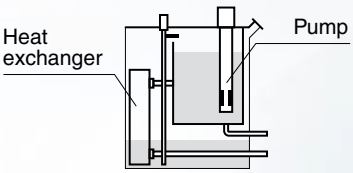
Extremely reliable components providing high precision temperature control and energy efficient design techniques



Simulation-based design of cooling temperature/capability

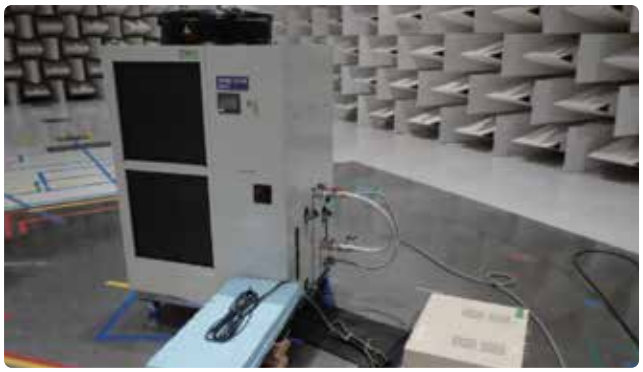
Compact design techniques achieving multi-functionality in a limited space

Rack mount chillers that are compact and allow front access



Space savings achieved by an all-in-one tank with a built-in pump and heat exchanger

Reliability assessments (compliance with international standards, etc.)



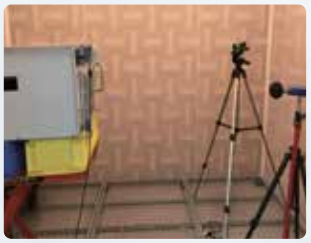
EMC testing (safety standards compliance testing)

Temperature control data measurement testing

Discharge testing

Temperature control testing / life testing

Transportation vibration testing



Noise testing

Integrated production system for the production of high-quality products

We have built a system which ensures that high-quality parts are supplied, made or shipped in any process. High reliability is ensured by 100% inspections. A dedicated temperature control equipment factory provides manufacturing consistency.

Manufacturing Quality

100% inspection

Parts machining/ inspection


Plate metal machining


Tank welding


Tank welding


Tank leak testing

Only high-quality parts supplied

Preparatory work (component assembly)


Brazing


Assembly parts

Preparatory work by staff certified in particular skills

100% inspection

Refrigerant circuit leakage inspection

Refrigerant gas replenishment

High-quality products produced

Environmentally friendly refrigerating circuit leakage inspection using helium

Accredited work

Basic tasks such as screw fastening, gas welding, pressing, plate metal machining, wiring, adhesion, soldering, pressure bonding, brazing, refrigerant gas replenishment (recovery), assembly, inspection, finishing

Factory (Yamatsuri 1st Factory)

The processes from parts machining and assembly through inspection and shipping are all concentrated in the Yamatsuri 1st factory (site area: approx. 320,000 m^2; total floor space: approx. 80,000 m^2) with a unique SMC integrated development and production system that ensures production efficiency.

Assembly → 100% inspection Cooling capacity inspection → Finishing /Packing → Warehouse

Assembly by multi-skilled staff

High-quality products shipped

100% inspection for other items such as pump performance and safety functions

Global Network Services

SMC has built a network of highly localized supply systems all over the world, working with some 560 local offices and agents in a total of 83 countries and regions in all the major nations of Asia, Oceania, America and Europe.

SMC supply system providing exhaustive coverage in every major country around the world

U.S.A.:
U.S.A. Central Warehouse

Belgium:
European Central Warehouse (ECW)

North, South and Central America

1. Argentina
2. Bolivia
3. Brazil
4. Canada
5. Chile
6. Colombia
7. Ecuador
8. Mexico
9. Peru
10. United States of America <U.S.A. Central Warehouse>
11. Venezuela

Europe

12. Albania
13. Austria
14. Belarus
15. Belgium
    <European Central Warehouse (ECW)>
16. Bosnia-Herzegovina
17. Bulgaria
18. Croatia
19. Czech Republic
20. Denmark
21. Estonia
22. Finland
23. France
24. Germany
25. Greece
26. Hungary
27. Ireland
28. Italy

* icons indicate a central warehouse or logistics center.
* SMC critical products are warehoused at each facility.
* Countries and regions are listed alphabetically in each area.

China:
Logistics Center
in Beijing

China:
Logistics Center
in Hong Kong

China:
Logistics Center
in Guangzhou

China:
Logistics Center
in Shanghai

Korea:
Korea Central
Warehouse (KCW)

Thailand:
Bang Pa-In Central
Warehouse

Singapore:
Jurong Headquarters

29 Kazakhstan
30 Latvia
31 Lithuania
32 Netherlands
33 North Macedonia
34 Norway
35 Poland
36 Portugal
37 Romania
38 Russia
39 Serbia
40 Slovakia
41 Slovenia
42 Spain
43 Sweden
44 Switzerland
45 Turkey
46 Ukraine
47 United Kingdom

Africa

48 Algeria
49 Cameroon
50 Cote d'Ivoire
51 Egypt
52 Kenya
53 Morocco
54 Nigeria
55 Senegal
56 South Africa
57 Tunisia

Asia/Oceania

58 Australia
59 Bahrain
60 Bangladesh
61 Cambodia
62 China: <Beijing/Shanghai/ Guangzhou Logistics Center>
63 Hong Kong <Hong Kong Logistics Center>
64 India
65 Indonesia
66 Israel
67 Japan
68 Korea: <Korean Central Warehouse (KCW)>
69 Kuwait
70 Malaysia
71 Myanmar
72 New Zealand
73 Oman
74 Pakistan
75 Philippines
76 Qatar
77 Saudi Arabia
78 Singapore <Jurong Headquarters>
79 Sri Lanka
80 Taiwan
81 Thailand: <Bang Pa-In Central Warehouse>
82 United Arab Emirates
83 Vietnam

Global Engineering Network

We have Technical Centers at 5 locations worldwide that are collaborating to develop advanced technologies and comprehensive expertise that we use to address customers' needs by supplying outstanding products and services. We also listen carefully to our customers around the world and use their feedback in our product development and quality improvement programs.

Technical Support

The ideal temperature control equipment for any customer differs depending on the industry they work in, their equipment and the applications in which it is used. At SMC, we consult closely with our customers prior to installation and provide hands-on support to help them choose the product that is right for them.

1. Performance testing

Each individual product is subjected to a range of performance tests. Through our commitment to high quality, we have achieved temperature regulation that is stable regardless of the environment.

2. Selection support

We offer technical advice to ensure that customers choose the best possible equipment for their operating conditions.

3. Loan service

This service allows customers considering a purchase to carry out tests using sample products provided for real-world evaluations.

SMC's Global Engineering Network

We have established Technical Centers in the U.S.A., Europe, China and Japan.

Engineering staff 1,600

U.S.A.

UTC (U.S. Technical Center)

The UTC is enhancing its engineering capabilities in order to more quickly respond to the needs of the North American market through product development and the provision of technical services. There are currently around 140 employees tasked with dealing with the various needs of customers in the region.

United Kingdom

ETC (European Technical Centre)

Around 70 experienced staff members from various European countries work together to provide a wide range of services and to quickly relay accurate information regarding the various needs of our customers.

Germany

GTC (German Technical Centre)

Located at the heart of European industry in Germany, the GTC and its 80 employees support our product development and technical services in the region, responding quickly to customer requirements and issues.

China

CTC (China Technical Center)

With around 120 employees, the CTC provides a structure for product development and technical support that can respond quickly to the diverse needs of our customers in the various industries and regions of China.

Japan

JTC (Japan Technical Center)

The JTC is staffed with 1,200 employees and is the core facility for SMC research and development. It produces new products for the global market based on customers' current and future needs.

Global Maintenance Network

Our Chiller Support Teams maintain an inventory of maintenance parts and deal swiftly and appropriately with maintenance issues such as repairs and replacements.
With our global high-quality after sales service, customers can rest assured after purchasing our product.

Service Quality

U.S.A.

United Kingdom

Netherlands

Mexico

Germany

Spain

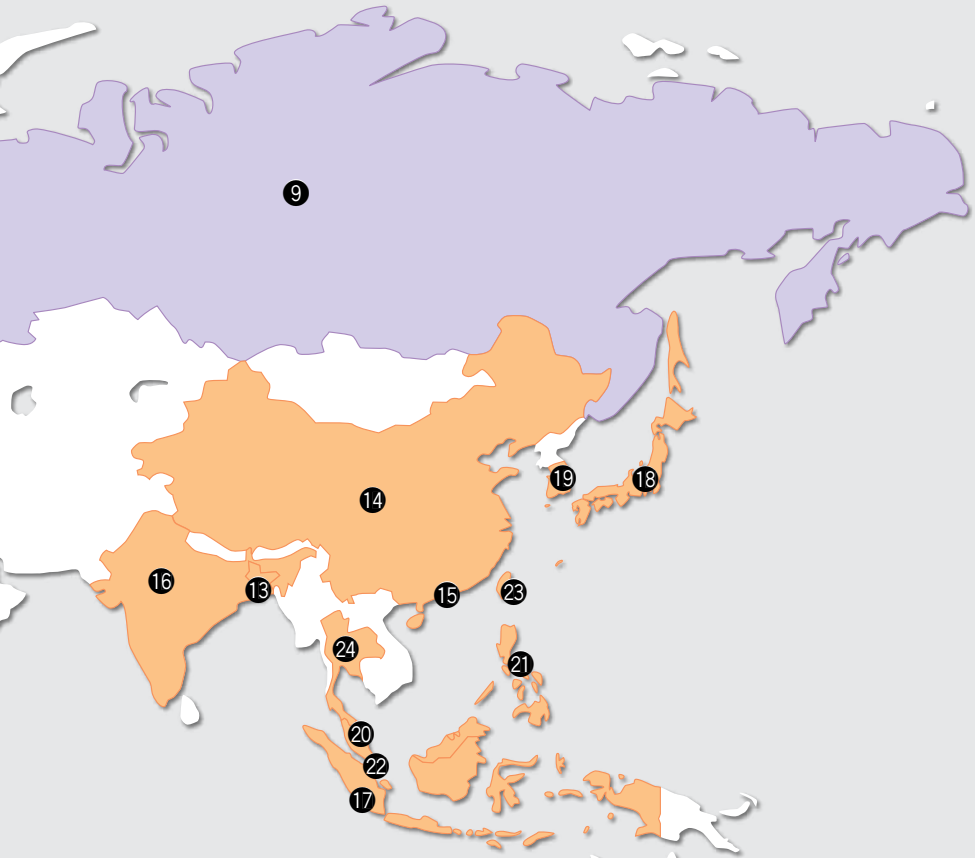
Rapid responses from our parts inventory

We stock replacement parts in the form of sub-assemblies, reducing the time required to replace parts in products such as heat exchangers, compressors and pumps

China (Beijing area)

China (Shanghai area)

China (Guangzhou area)



North, South and Central America

1. Brazil
2. Mexico
3. United States of America

Europe

4. Austria
5. France
6. Germany
7. Italy
8. Netherlands
9. Russia
10. Spain/Portugal
11. Turkey
12. United Kingdom

Asia

13. Bangladesh
14. China (Beijing/Shanghai/Guangzhou area)
15. Hong Kong
16. India
17. Indonesia
18. Japan
19. Korea
20. Malaysia
21. Philippines
22. Singapore
23. Taiwan
24. Thailand

* Countries and regions are listed alphabetically in each area

Singapore

Taiwan

Reliable Maintenance System

Global training in service techniques

So that our Chiller Support Teams can provide high-quality maintenance services, education and training is conducted in each country.

Complete maintenance documentation

Training in progress

Global Manufacturing, Distribution and Service Network

Worldwide Subsidiaries

EUROPE

AUSTRIA
SMC Pneumatik GmbH (Austria)

BELGIUM
SMC Pneumatics N.V./S.A.

BULGARIA
SMC Industrial Automation Bulgaria EOOD

CROATIA
SMC Industrijska Automatika d.o.o.

CZECH REPUBLIC
SMC Industrial Automation CZ s.r.o.

DENMARK
SMC Pneumatik A/S

ESTONIA
SMC Pneumatics Estonia

FINLAND
SMC Pneumatics Finland OY

FRANCE
SMC Pneumatique S.A.

GERMANY
SMC Pneumatik GmbH

GREECE
SMC Hellas EPE

HUNGARY
SMC Hungary Ipari Automatizálási Kft.

IRELAND
SMC Pneumatics (Ireland) Ltd.

ITALY
SMC Italia S.p.A.

KAZAKHSTAN
LLP "SMC Kazakhstan"

LATVIA
SMC Pneumatics Latvia SIA

LITHUANIA
UAB "SMC Pneumatics"

NETHERLANDS
SMC Pneumatics B.V.

NORWAY
SMC Pneumatics Norway AS

POLAND
SMC Industrial Automation Polska Sp. z o.o.

ROMANIA
SMC Romania S.r.l.

RUSSIA
SMC Pneumatik LLC.

SLOVAKIA
SMC Priemyselná Automatizácia, Spol s.r.o.

SLOVENIA
SMC Industrijska Avtomatika d.o.o.

SPAIN / PORTUGAL
SMC España, S.A.

SWEDEN
SMC Pneumatics Sweden AB

SWITZERLAND
SMC Pneumatik AG

TURKEY
SMC Pnömatik Sanayi Ticaret ve Servis A.Ş.

UK
SMC Pneumatics (U.K.) Ltd.

ASIA / OCEANIA

AUSTRALIA
SMC Pneumatics (Australia) Pty. Ltd.

CHINA
SMC (China) Co., Ltd.
SMC Pneumatics (Guangzhou) Ltd.

HONG KONG
SMC Pneumatics (Hong kong) Ltd.

INDIA
SMC Pneumatics (India) Pvt. Ltd.

INDONESIA
PT. SMC Pneumatics Indonesia

JAPAN
SMC Corporation

MALAYSIA
SMC Pneumatics (S.E.A.) Sdn. Bhd.

NEW ZEALAND
SMC Pneumatics (N.Z.) Ltd.

PHILIPPINES
Shoketsu SMC Corporation

SINGAPORE
SMC Pneumatics (S.E.A.) Pte. Ltd.

SOUTH KOREA
SMC Pneumatics Korea Co., Ltd.

TAIWAN
SMC Pneumatics (Taiwan) Co., Ltd.

THAILAND
SMC (Thailand) Ltd.

UNITED ARAB EMIRATES
SMC Pneumatics Middle East FZE

VIETNAM
SMC Pneumatics (VN) Co., Ltd

AFRICA

SOUTH AFRICA
SMC Pneumatics (South Africa) Pty Ltd

NORTH, CENTRAL & SOUTH AMERICA

ARGENTINA
SMC Argentina S.A.

BOLIVIA
SMC Pneumatics Bolivia S.R.L.

BRAZIL
SMC Pneumáticos do Brasil Ltda.

CANADA
SMC Pneumatics (Canada) Ltd.

CHILE
SMC Pneumatics (Chile) S.A.

COLOMBIA
SMC Colombia Sucursal de SMC Chile, S.A.

MEXICO
SMC Corporation (Mexico) S.A. de C.V.

PERU
SMC Corporation Peru S.A.C.

USA
SMC Corporation of America

VENEZUELA
SMC Neumatica Venezuela S.A.

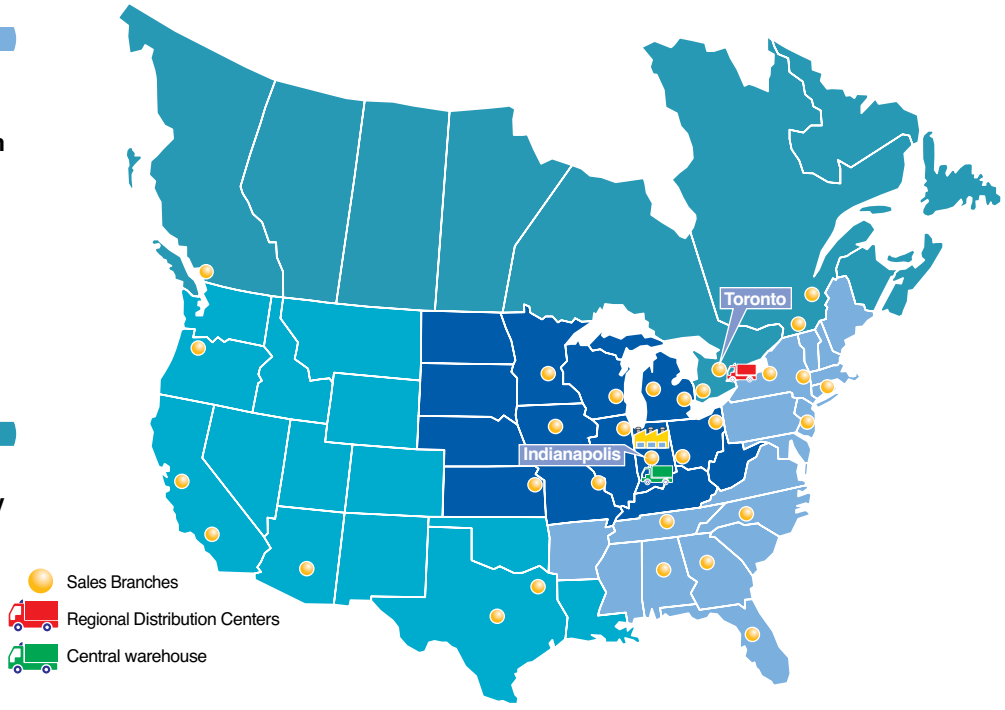
U.S. & Canadian Sales Offices

WEST
- Austin
- Dallas
- Los Angeles
- Phoenix
- Portland
- San Jose

CENTRAL
- Chicago
- Cincinnati
- Cleveland
- Detroit
- Des Moines
- Grand Rapids
- Indianapolis
- Kansas City
- Milwaukee
- Minneapolis
- St. Louis

EAST
- Albany
- Atlanta
- Birmingham
- Boston
- Charlotte
- Knoxville
- Nashville
- New Jersey
- Rochester
- Tampa

CANADA
- Montreal
- Quebec City
- Toronto
- Vancouver
- Windsor



SMC

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