

A photograph of the Shanghai skyline at dusk, featuring the Oriental Pearl Tower on the left and the Shanghai Tower on the right. The sky is a clear blue, and the buildings are illuminated with warm lights. A large blue diagonal shape is overlaid on the left side of the image.

Variable Speed Scroll Compressor and Drive Solutions

Emerson Commercial and Residential

Customers' Concerns and Advantages of Emerson Solutions

Customer Concern 1

Too much communication and coordination as the core components of the variable speed system are provided by various manufacturers.



Emerson Solutions Advantage 1

Provide one-stop shopping of all core components.
(Compressor/drive/controller/sensors/valves etc.)

Customer Concern 2

Project delayed as being lacking of efficient technical support during system development

System time-to-market requirements are strict, delays may result in tremendous negative impact



Emerson Solutions Advantage 2

Set up a dedicated system solution team and regional application engineer to provide customers with point-to-point complete technical support and services

Customer Concern 3

The development of variable speed system is much difficult and the cycle is long. Developed by inexperienced engineers, product after putting into the market may have quality issue, which is unacceptable.



Emerson Solutions Advantage 3

Pre-qualified package. All components are fully verified by Emerson design standards and labs.
Control logic, system protection, parameter optimization fully integrated

Customer Concern 4

Need full range variable speed products



Emerson Solutions Advantage 4

Developed 4 ~ 15HP full range of variable speed compressor and drive solutions

Emerson Integrated Solutions Advantage 1

-Provide One-stop shopping of All Core Components According to System Application Requirements (5hp air source heat pump as example)

System Controller

- Integrated dual EXV Drive
- Built In optimized control logic for optimal performance and reliability
- Over a 150 configurable parameters for customized solution



Drive

- Optimized for Copeland Scroll Compressors
- Plug and Play Compressor Compatibility
- Built-in compressor protection further enhance reliability



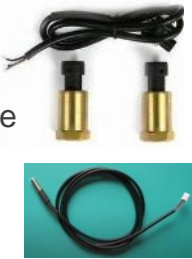
Double EXV

- Complete ranges of valves
- Accurate control of Refrigerant Pressure



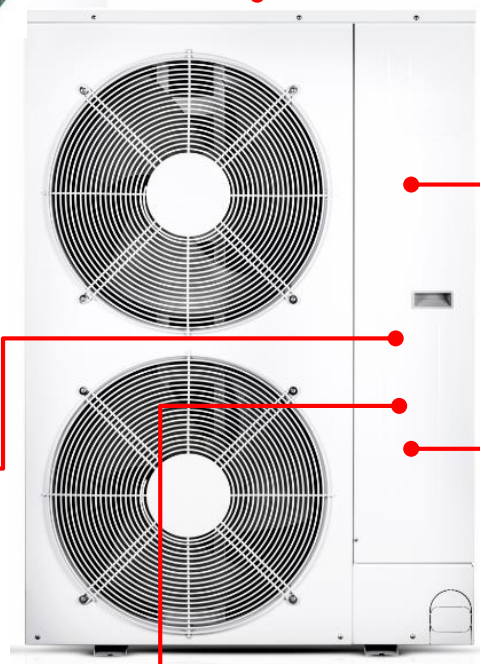
Temp/Pressure sensors

- Enables precise system control



Variable Speed

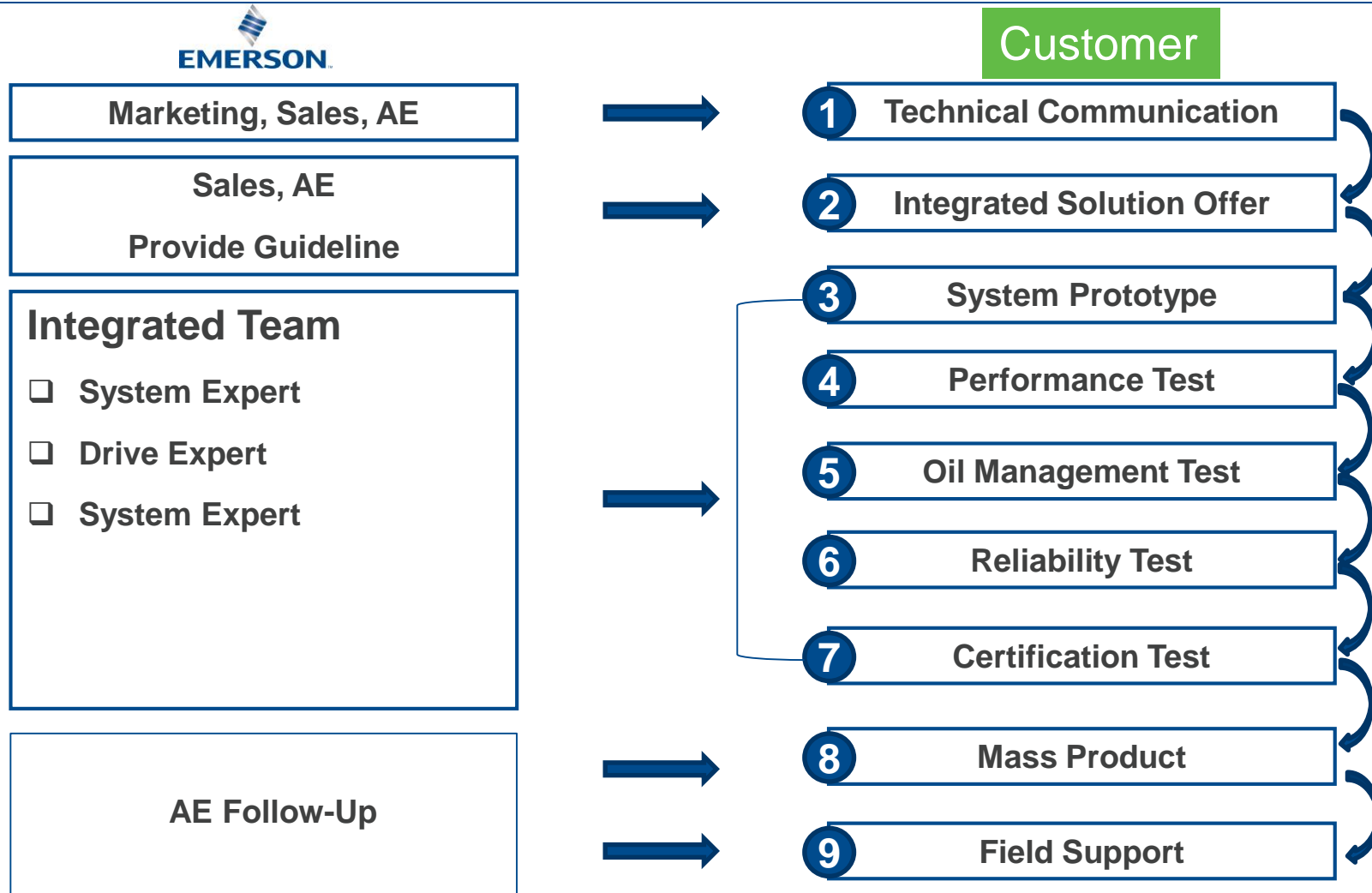
- Cover 4-8HP
- Vapor injection Design For heating
- High COP and IPLV
- Low Operating Noise
- Wide operating range with ambient temperature of -25C



Emerson Fully Integrates The Core Components Required by The Variable Speed System and Provides a One-stop Purchasing Experience.

Emerson Integrated Solutions Advantage 2

-Providing Complete Technical Support and Services Ranging From Unit Selection, Design Optimization to Market Promotion



Throughout The Project Development Cycle, Emerson Provides Complete Technical Support

Emerson Integrated Solutions Advantage 3

-Fully Integrated Control Logic, System Protection, and Parameter Optimization

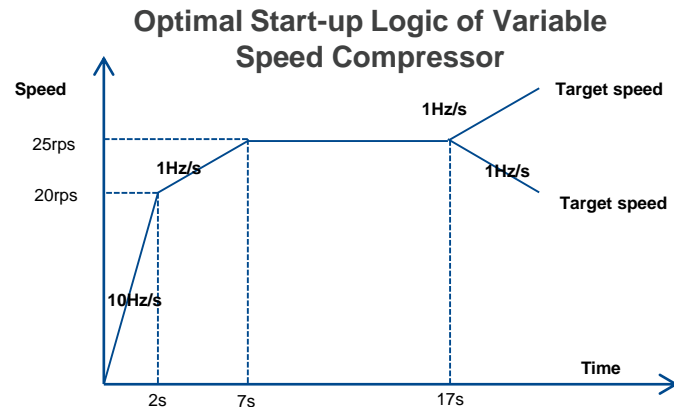
- **Reduce customer system design cycle and cost**

- The integrated solution verified by Emerson Design Standard
- No need to consider the matching of drive and compressor

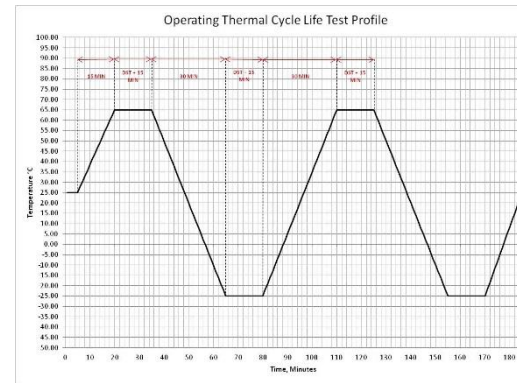
- **Enhancing Energy Efficiency Ratio and reliability**

- Optimization of variable speed drive and motor parameters
- Ensure system reliability through system protection and control logic

- Perfect compressor operation protection
- Optimized electronic expansion valve
- Precise system oil return protection

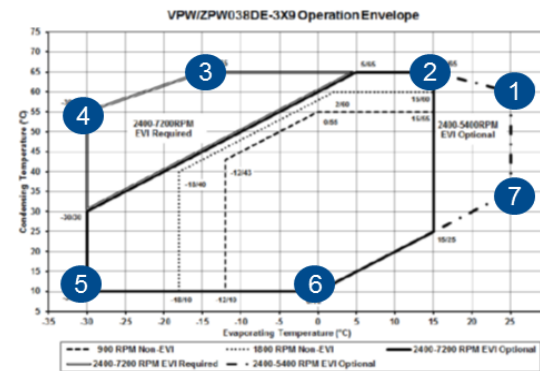


Robust Reliability



- Continuous Reliability Running For 1000hours
- Operation Temperature 25C~65C
- The voltage range continues to fluctuate
- Maintain Maximum Current Operation

Perfect Matched with Emerson VS Compressor



- Over 200hours Test In Compressor Testing Stand
- Compressor Full Envelope Testing
- Optimum Control Logic
- Compressor start-up control
- Compressor shut down control

Emerson Integrated Solutions Advantage 4

Full Range of Variable Speed Scroll Compressor and Drive Solutions

	Light Commercial			Commercial		
	53Fr			70Fr		
	30cc	38cc	50cc	66cc	80cc	96cc
Model (displacement)	4HP	5HP	8HP	10HP	12HP	15HP
	Launched in Suzhou	Launched in Suzhou	Launched in Suzhou	Launched in Suzhou	Launched in Suzhou	Launched in Suzhou
	May 2020	May 2020	May 2020	June 2020	June 2020	June 2020
Emerson EVD Drive	Single phase 8.0kW			3 phase,380V 8.0kW	3 phase,380V 11.0kW	3 phase,380V 15.0kW
				3 phase,380V 8.0kW	3 phase,380V 18.0kW	

Variable Speed Compressor

Drive

Emerson Has Developed a Full Range of 4HP ~ 15HP Compressor and Drive Integrated Solutions (Manufactured in Suzhou)

Variable Speed Drives Platform and Certification

Capacity	20kW		30kW		40kW		45kW		50kW	
Input Power	5.5kW		8.0kW		11.0kW		15.0kW		18.0kW	
Displacement	30		30 38 50		50 *66		66 80		80 *96	
	1PH 220Vac		3PH 208Vac		3PH 380Vac		3PH 460Vac		Certification	
EV2	5.5kW 8.0kW		8.0kW		5.5kW 8.0kW				CE UL	
EV3					15.0kW 18.0kW				CE UL	
EVD	8.0kW				8.0kW 11.0kW 15.0kW 18.0kW				CQC	

The Drive Is Perfectly Matched with The Compressor, Covering The Complete Application of Air Conditionings and Heat Pumps

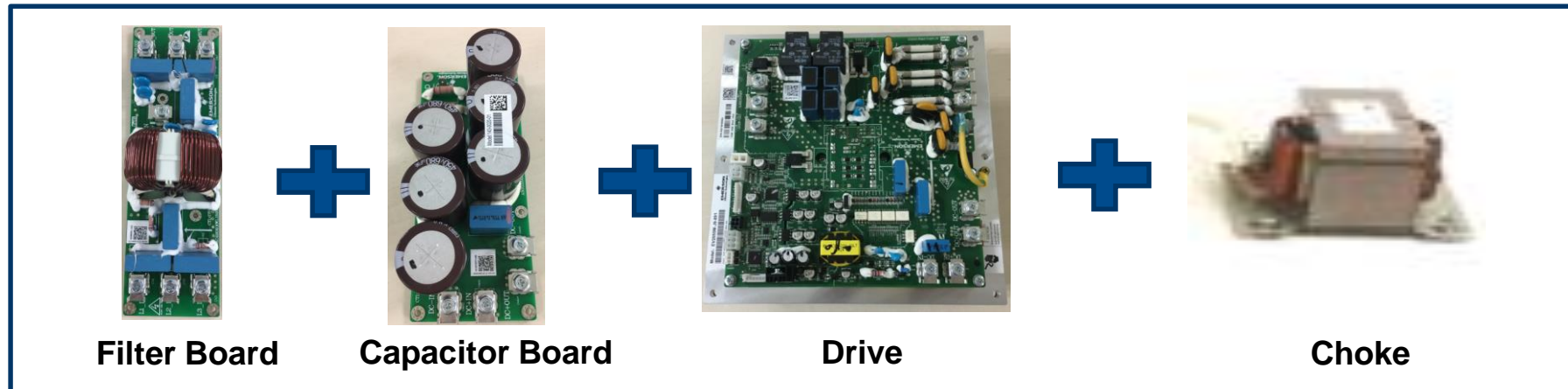
EVD Drive Products

-Designed For Asia HVAC Market

Single Phase Drive



Three Phase Drive



EVD Drive Technology Features

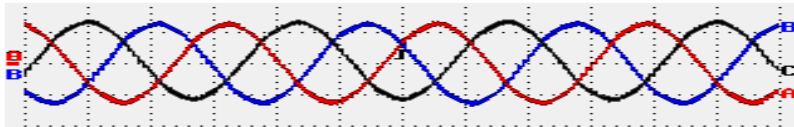
Three-phase Drive

Model	Input Current	Output Current
EVD1180B-D1-111	38Arms	38Arms

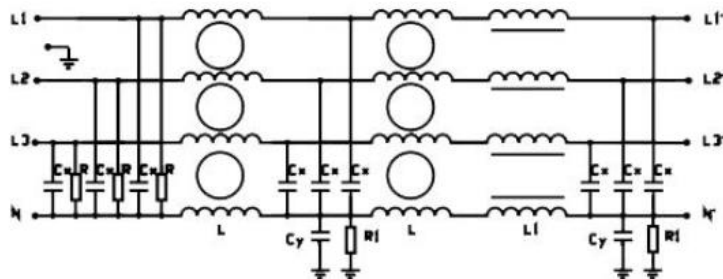
* The maximum current is based on the ambient temperature of the driver board at 60°C and the wind speed of the heat sink outlet is 3m/s;

Technology Features

1 Sine wave vector control



2 Three-phase four-wire and three-phase three-wire compatible power input



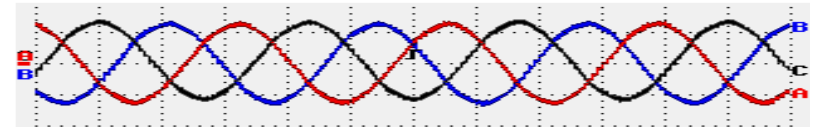
Single-phase Drive

Model	Input Current	Output Current
EVD2080B-C1-113	35Arms	25Arms

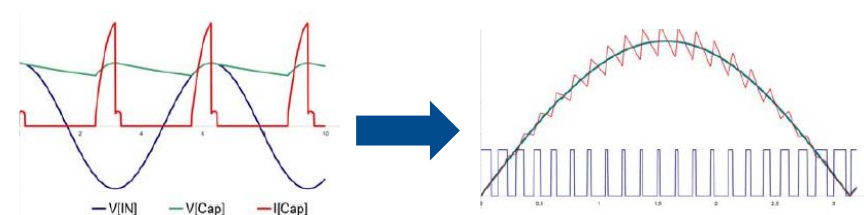
* The maximum current is based on the ambient temperature of the driver board at 60°C and the wind speed of the heat sink outlet is 3m/s;

Technology Features

1 Sine wave vector control



2 Active PFC function



Successful Case (Precision Cooling Air-conditioning)

China Mobile Air-cooled Precision Cooling Procurement Project

Project Background

- Recent Centralized purchase of China Mobile Published 8 system manufacturer to win bidding to share 6kpcs Air Cooled Precision Cooling Units
 - Part of Selected OEMs work with Emerson on VS and Integrated Solution for bidding
- 中国移动2019年至2020年风冷型机房专用空调集中采购_中标结果公示**

中国移动2019年至2020年风冷型机房专用空调集中采购：

标1/定标的中标人为维谛技术有限公司、依米康科技集团股份有限公司、南京佳力图机房环境技术股份有限公司、广东海信科技有限公司、北京斯泰科空调制冷设备有限公司；

标1/定标的中标人为华为技术有限公司、广东海信科技有限公司、依米康科技集团股份有限公司、维谛技术有限公司。

采购人/招标代理机构：中国移动通信有限公司/中国邮电器材集团有限公司

2019年12月9日

Customer Values

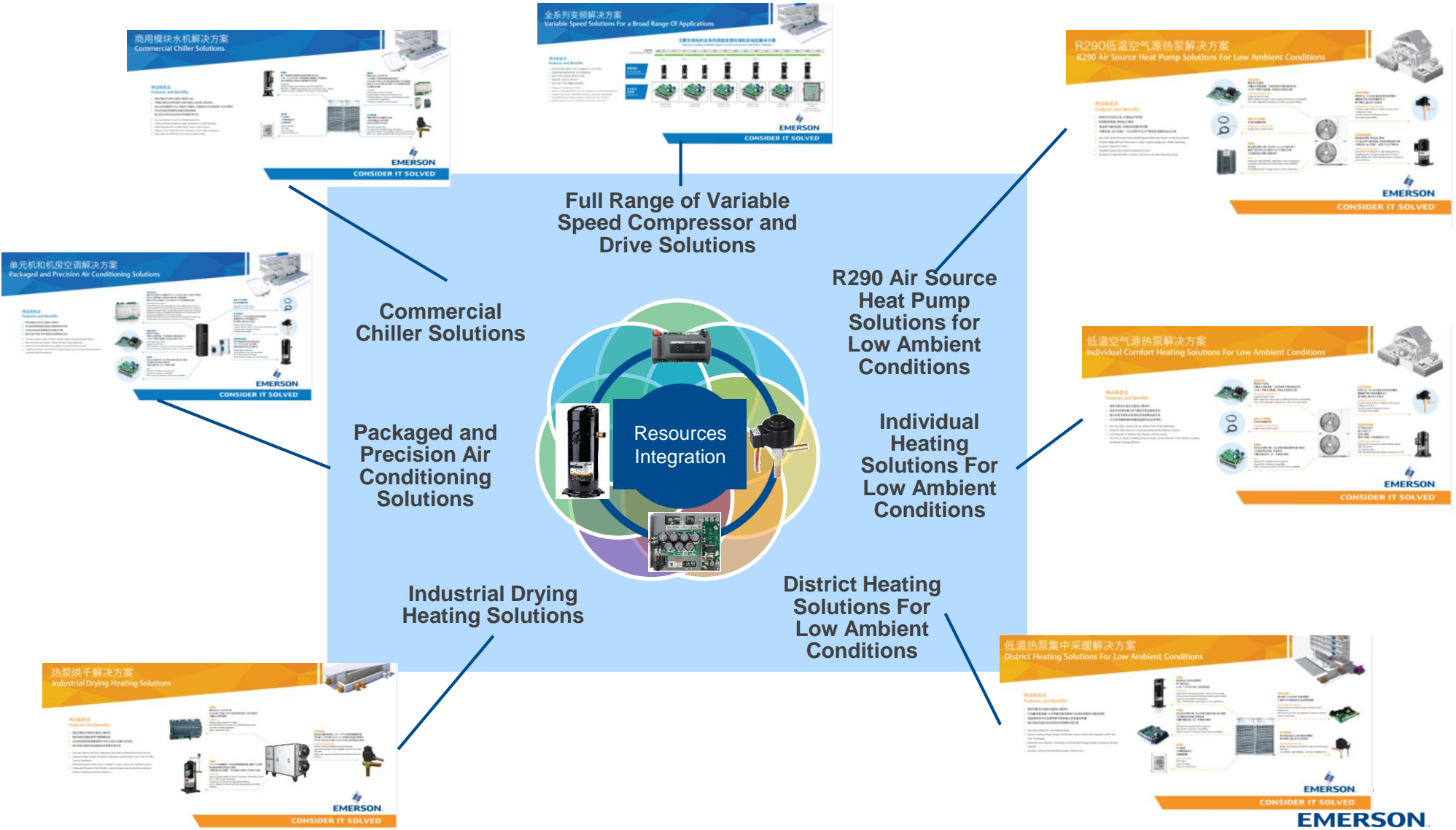
- Emerson VS Technology and Solution Enable Precise Temperature and Humidity Control while Improving Energy Efficiency.
- Integrated Drive Solution For Reduced Design Time Cost & Speed To The Market
- Active Customer Engagement and End User Influence Activity Planned For More Wins

Successful Application Case



Emerson Successfully Support Precision Customers To Win The Bid for China Mobile's Centralized Procurement Project with Our Integrated Solutions Offering

Emerson Provides Solutions from Components to Integrated Solutions Applicable for Wide Array of Applications



EMERSON
CONSIDER IT
SOLVED™