

Daikin Overview

City of Fort Collins



Agenda

- A little About me
- About Daikin
- Daikin Offerings
- Daikin Technology

About Me

Matt Baker

Personal Life:

- Husband and father of four daughters
- Live in Fort Collins; I am a CSU graduate
- I like gardening, baking artisan sourdough breads, and I like getting outdoors, especially to hike with my Great Dane, Walter



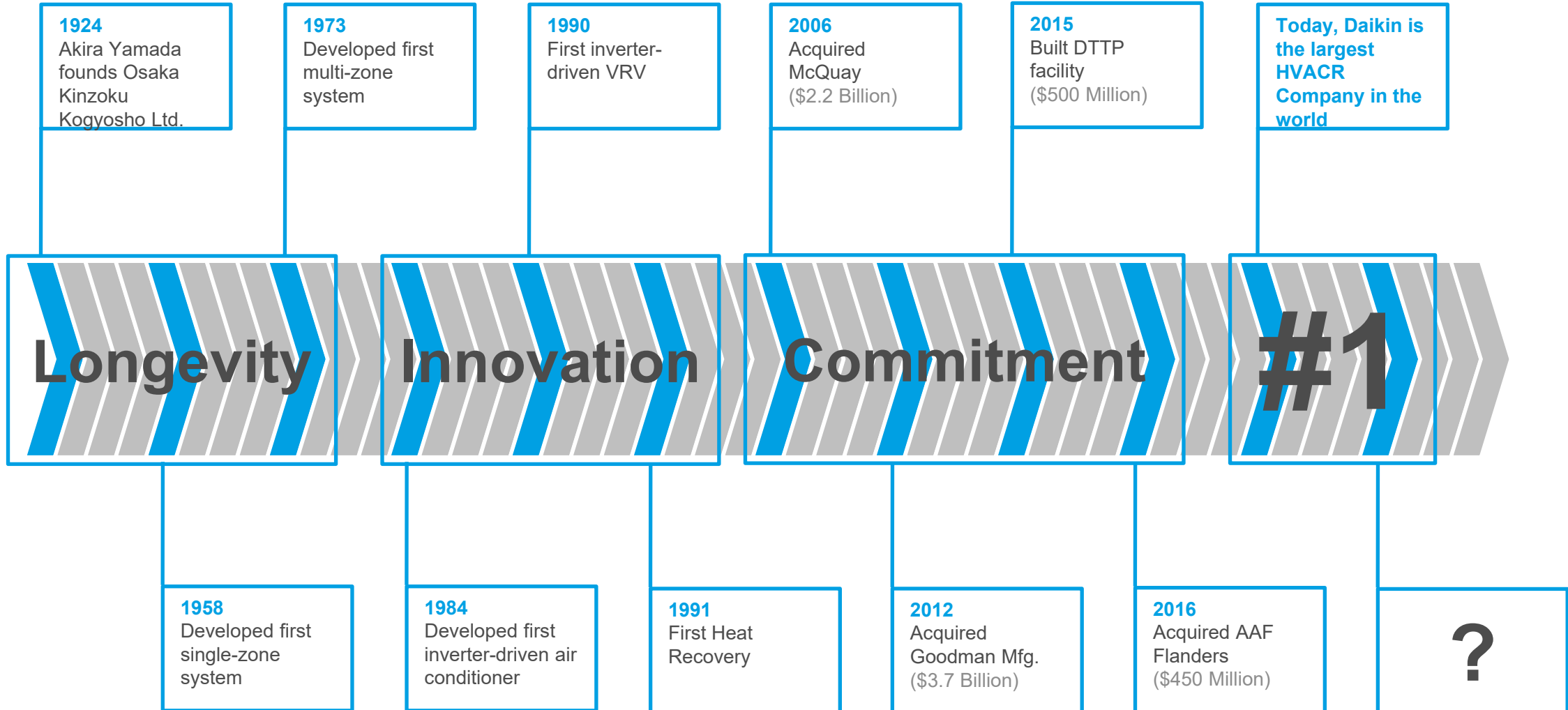
Work Experience:

- Current title: Business Development Manager, EE Programs at **Daikin North America**
- Previously, utility energy efficiency program manager in California
- Licensed homebuilder in Fort Collins

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Key Moments in Our History



Trusted Brands, Recognized Advantages

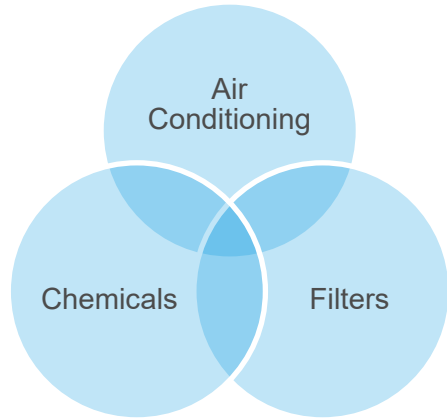
Brands



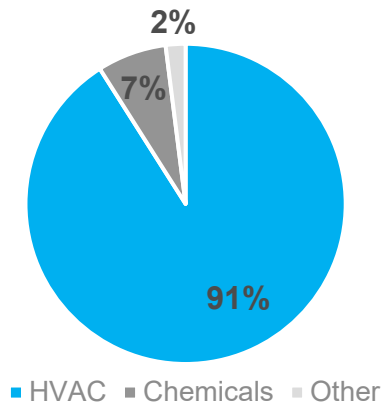
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A Little About Us

Daikin's Three Business Pillars



Business Mix



90 Years of History

**Founded
in 1924**

More than

90

global production bases
for localized production

Business development in more
than

150

countries

**Comprehensive AC
Manufacturer**

Handling both AC equipment
and refrigerants

Sales amounting to

\$23
BILLION

More than

76,000+

EMPLOYEES

80% are outside Japan

76%

of our sales are from outside
Japan

**AIR
SPECIALISTS**

Environmental Vision 2050

We will reduce the greenhouse gas emissions generated throughout the entire life cycle of our products.

Furthermore, we will create solutions that link society and customers as we **work with stakeholders to reduce greenhouse gas emissions to net zero.**

Using IoT and AI, and open solutions, we will meet the world's needs for air solutions by providing safe and healthy air environments while at the same time contributing to solving global environmental problems.



Daikin Core Values and Technologies

Core Values

1. Absolute Credibility

- We do what we say and say what we do
- Honesty is the best policy

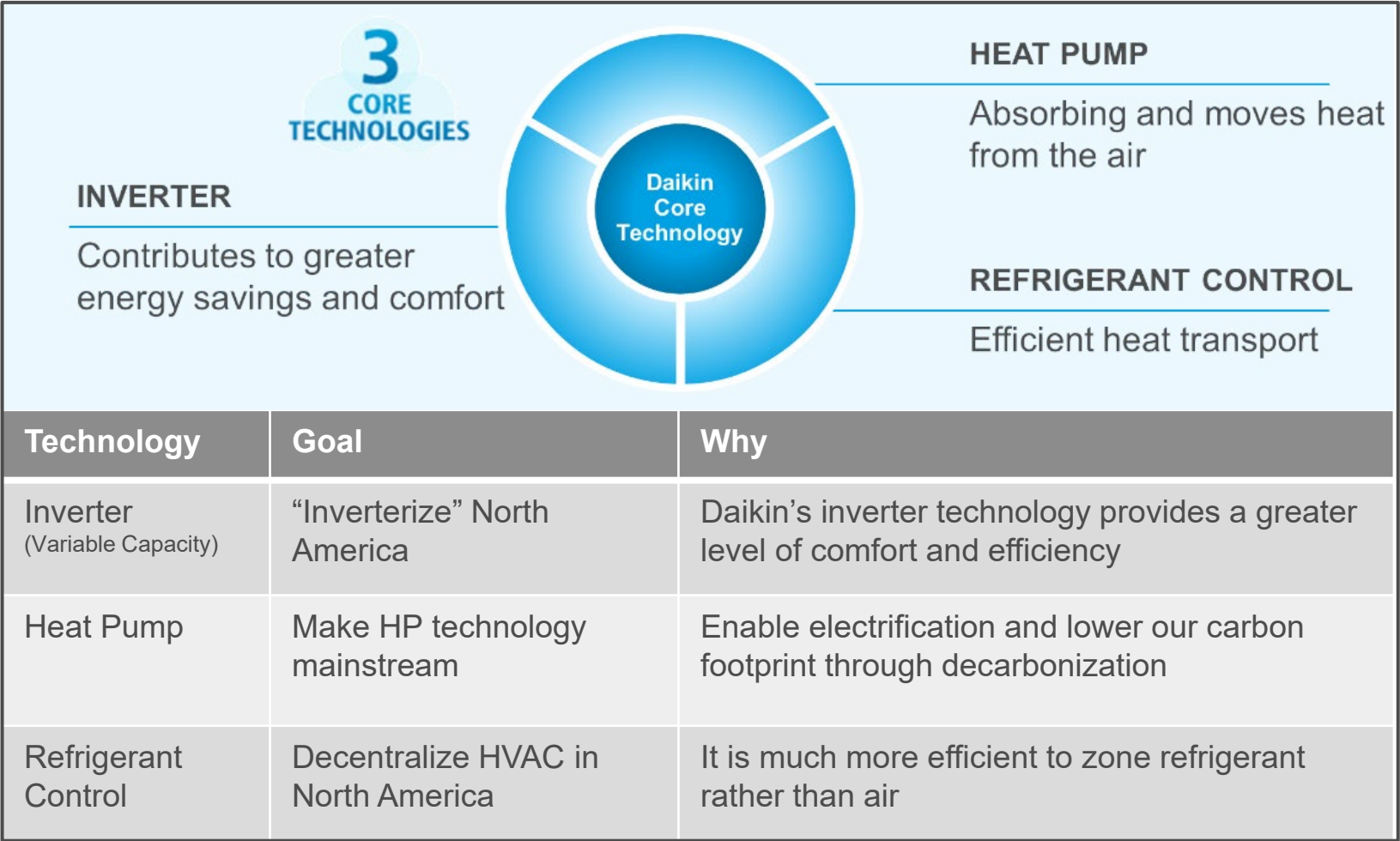
2. Enterprising Management

- Genba: always stay involved
- Looking for the 3rd way

3. Harmonious Personal Relations

- People-centered management (PCM)
- Encouraging disagreements/discussions about processes

Core Technologies



Daikin Texas Technology Park (DTTP)

- Located outside of Houston in Waller, TX
- Office interiors are LEED Gold certified
- 3rd largest single-level manufacturing facility in North America
- 253 loading docks and 700 trailer spaces
- Training ‘dojo’s
- R&D labs, marketing, engineering, and manufacturing – all under one roof



17K+
EMPLOYEES IN NORTH AMERICA

25+
YEARS IN NORTH AMERICA

TOTAL
INVESTMENTS
\$7B+

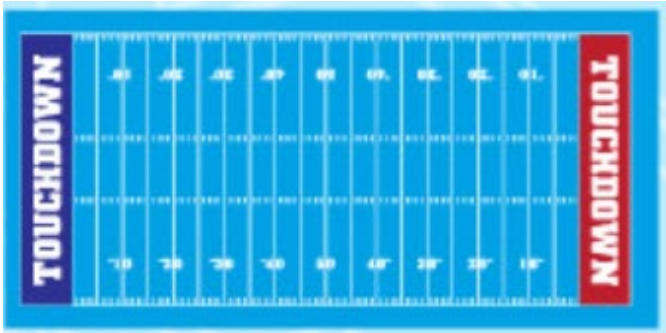
DISTRIBUTION
LOCATIONS
2,254

DEALERS
CONTRACTORS
60K+

FY19 NORTH
AMERICAN SALES
\$6B

**4 Million Square
Feet Under One
Roof**

74 Football Fields, with End Zones



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Daikin HVAC Product Lineup

Daikin's lineup meets all types of needs, including energy-savings, the environment, comfort, peace-of-mind, safety, and health

Residential AC

Room Air Conditioners



Housing/Multi-Split Air Conditioners



Unitary Air Conditioners



Air Purifiers



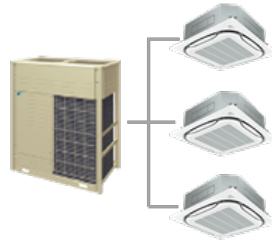
Heating/ Water Heaters



Control/Maintenance Systems



VRV Systems



Ventilators



ACs for Facilities and Factories

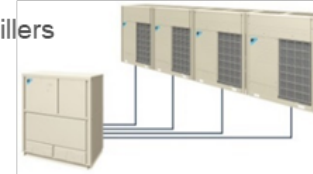


Applied ACs

Centrifugal Chillers



Chillers



Air Handling Units



Fan Coil Units



ACs for Small Shops and Offices



Rooftops



Residential

Commercial

Industrial

Applicable Product Lineup

Residential & Light Commercial Product Portfolio

AC & HP Platform

- 13-20+ SEER
- 1-Stage, 2-Stage & Inverter Sys
- Straight match & **dual fuel**



FIT[™]



Coil & AH Platform

- All-AL evaporator coils
- Multi-Position AHs
- PSC, ECM blowers
- Cased, uncased & slab coils



Gas Furnaces

- 80% & 90%+ platforms
- ECM & variable speed blowers
- 1-stage, 2-stage & modulating valves
- Up-flow/horizontal & down-flow/horiz.
- All stainless-steel heat exchanger



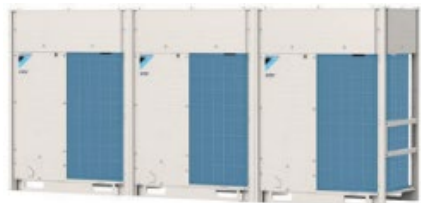
Ductless Platform

- 13 non-ducted single-zone systems
- 5 ducted single-zone systems
- 3 multi-zone systems w/ 6 indoor unit options
- Cold climate options w heating down to -13°F



VRV Platform

- Up to 38 tons (3-phase)
- Commercial and residential applications
- 14 indoor unit options
- VRV Aurora is capable of heating down to -22°F
- VRV Life first in industry with a gas furnace connection



Package Platform

- 14-16 SEER
- 3-25 tons
- Multi-position & dedicated horizontal
- AC, gas/electric, HP & dual fuel



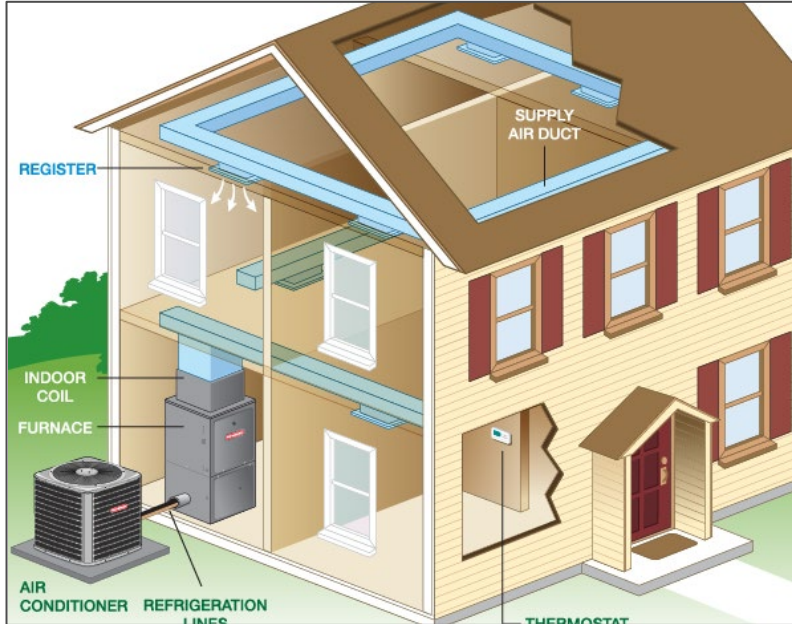
IAQ Platform

- Filtration
- Humidity control
- Purification
- ERV/HRV
- Powered ventilation
- IAQ monitoring



Primary Types Of Residential HVAC Systems

Central AC with Gas Heating



- Generally, a single- or two-stage system
- Uses ductwork to distribute conditioned air
- **Gas furnace** provides heat
- One temperature controller for the whole house
- **When on, it conditions the whole house** (like one light switch for the whole house)

Central Heat Pump / Dual Fuel



- Generally, a single- or two-stage system
- Uses ductwork to distribute conditioned air
- Outdoor unit provides primary heat. **Gas furnace** or **electric resistance** provide backup heat in colder conditions
- One temp controller for the whole house
- **When on, it conditions the whole house** (like one light switch for the whole house)

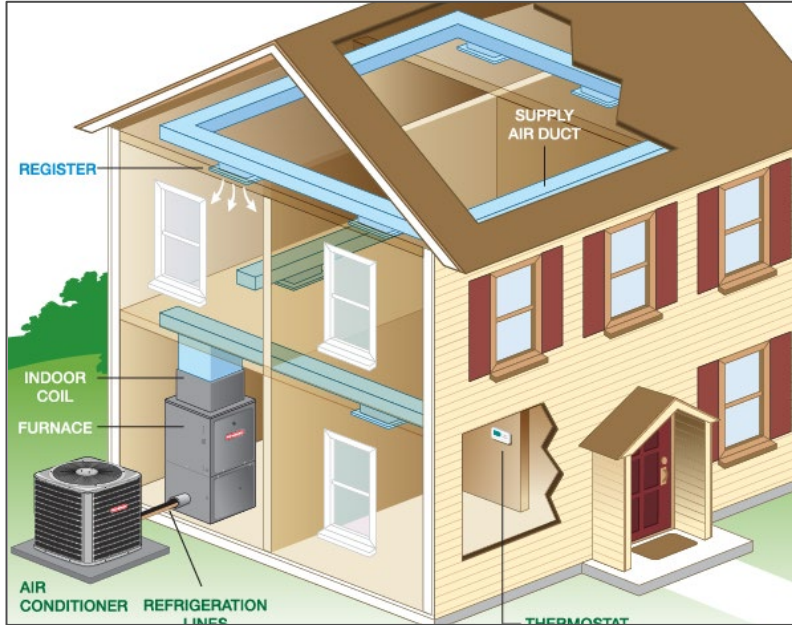
Decentralized Heat Pump



- Uses variable speed, inverter technology
- Very little or no ductwork
- Outdoor unit provides primary heat
- Each room can have independent temps
- **When on, it conditions each room to its individual comfort level** (separate light switch for each room)
- **Best option for decarbonization**

Daikin's Outdoor AC Units

Central AC with Gas Heating

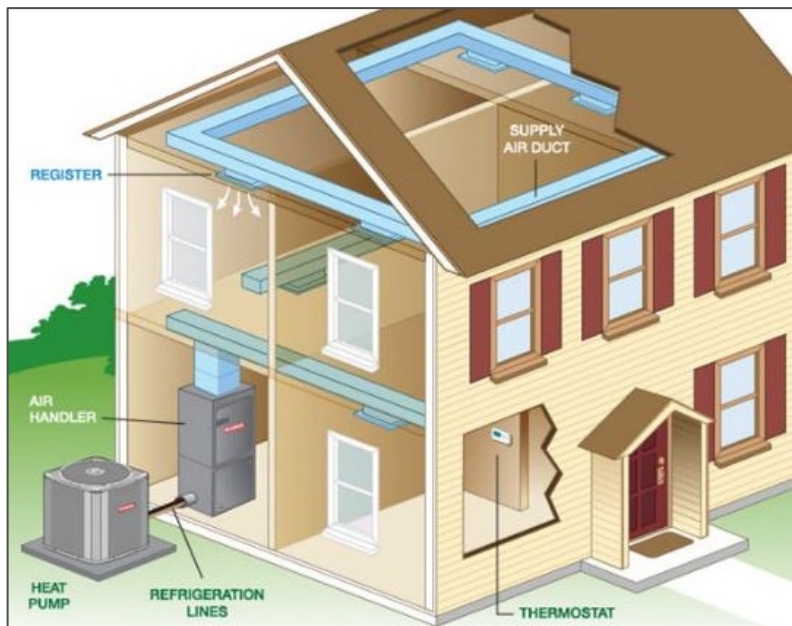


- Generally, a single-or two-stage system
- Uses ductwork to distribute conditioned air
- One temperature controller for the whole house
- **Gas furnace** provides heat
- **When on, it conditions the whole house** (like one light switch for the whole house)

Split System Air Conditioners									
MODELS	DX20VC	DX18TC	DX17VSS	DX16TC	DX16SA	DX14SA	DX14SN	DX13SA	DX13SN
Unit Replacement Limited Warranty*									
12-Year Parts Limited Warranty*									
Communicating (Compatible with the Daikin One+ smart thermostat and other Daikin communicating equipment)	■	■	■	■	N/A	N/A	N/A	N/A	N/A
SEER	Up to 24.5	Up to 19	Up to 18	Up to 17	Up to 16	Up to 15.5	Up to 15.5	Up to 14.5	Up to 14.5
Compressor Type	Variable-Speed Scroll and Swing	Two-Stage High-Efficiency Scroll	Variable-Speed Swing	Two-Stage High-Efficiency Scroll	High-Efficiency Scroll	Energy-Efficient Scroll	Energy-Efficient	Energy-Efficient Scroll	Energy-Efficient
Internal Diagnostics	■	■	■	■	■	■	N/A	■	N/A
ECM Condensing Unit Fan Motor	■	■	DC	■	N/A	N/A	N/A	N/A	N/A
High-Density Compressor Sound Blanket	■	■	■	■	■	■	N/A	■	N/A
Filter Drier	Field Installed	Factory Installed	Field Installed	Factory Installed	Factory Installed	Factory Installed	Factory Installed	Factory Installed	Factory Installed
ENERGY STAR® Certified**			NO			NO	NO	NO	NO

Daikin's Central Heat Pump & Dual-Fuel Units

Central Heat Pump / Dual Fuel



- Generally, a single- or two-stage system
- Uses ductwork to distribute conditioned air
- One temp controller for the whole house
- Outdoor unit provides primary heat. **Gas furnace** or **electric resistance** provide backup heat in colder conditions
- **When on, it conditions the whole house** (like one light switch for the whole house)

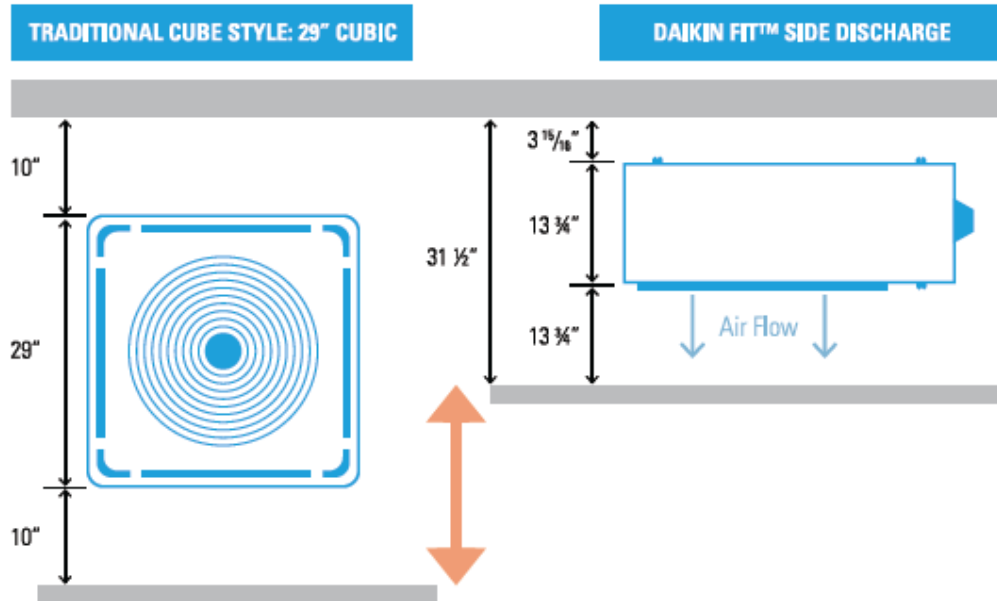
Heat Pumps								
MODELS	DZ20VC	DZ18VC	DZ18TC	DZ17VSA	DZ16TC	DZ16SA	DZ14SA	DZ14SN
Unit Replacement Limited Warranty*	12 YEAR UNIT REPLACEMENT LIMITED WARRANTY	12 YEAR UNIT REPLACEMENT LIMITED WARRANTY	12 YEAR UNIT REPLACEMENT LIMITED WARRANTY	12 YEAR UNIT REPLACEMENT LIMITED WARRANTY	12 YEAR UNIT REPLACEMENT LIMITED WARRANTY	6 YEAR UNIT REPLACEMENT LIMITED WARRANTY	6 YEAR UNIT REPLACEMENT LIMITED WARRANTY	2 YEAR UNIT REPLACEMENT LIMITED WARRANTY
12-Year Parts Limited Warranty*	12 YEAR PARTS LIMITED WARRANTY	12 YEAR PARTS LIMITED WARRANTY	12 YEAR PARTS LIMITED WARRANTY	12 YEAR PARTS LIMITED WARRANTY	12 YEAR PARTS LIMITED WARRANTY	12 YEAR PARTS LIMITED WARRANTY	12 YEAR PARTS LIMITED WARRANTY	12 YEAR PARTS LIMITED WARRANTY
Communicating (Compatible with the Daikin One+ smart thermostat and other Daikin communicating equipment)	■	■	■	■	■	N/A	N/A	N/A
SEER	Up to 21	Up to 19	Up to 19	Up to 18	Up to 17	Up to 16	Up to 15	Up to 15
HSPF	Up to 10.0	Up to 10.0	Up to 10	Up to 10.0	Up to 9.7	Up to 9.5	Up to 9.0	Up to 9.0
Compressor Type	INVERTER Variable-Speed Scroll and Swing	INVERTER Variable-Speed Swing	Two-Stage High-Efficiency Scroll	INVERTER Variable-Speed Swing	Two-Stage High-Efficiency Scroll	High-Efficiency Scroll	Energy-Efficient Scroll	Energy-Efficient Scroll
Defrost Technology (with SmartShift®)	Demand	Demand	Time / Temp	Intelligent	Time / Temp	Time / Temp	Time / Temp	Time / Temp
High-Density Compressor Sound Blanket	■	■	■	■	■	■	■	N/A
Filter Drier	Field Installed	Field Installed	Factory Installed	Field Installed	Factory Installed	Factory Installed	Factory Installed	Factory Installed
ENERGY STAR® Certified**	Most Efficient 2021	NO	Most Efficient 2021	NO	ENERGY STAR	ENERGY STAR	ENERGY STAR	NO

Daikin *Fit* – Premium Inverter-driven Unitary Ducted System

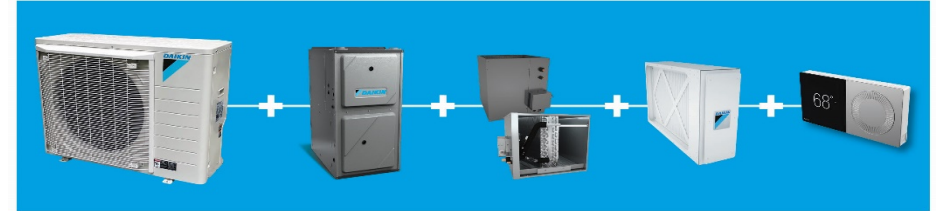
Space-saving. Efficient. Affordable.

Daikin *Fit* System Features:

- Up to **18 SEER / 10 HSPF** (for Heat Pump)
- **Inverter (variable-speed) Compressor**
- **Quiet-mode** – Provides enhanced indoor comfort
- **Blue Fin Corrosion Coating**
- **Swing Compressor** – Quiet and dependable
- **Low outdoor unit operational sound levels**
- **Compact and lightweight outdoor unit**



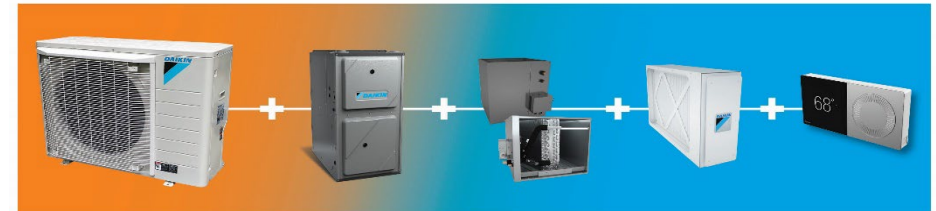
DAIKIN *FIT* AIR CONDITIONER



DAIKIN *FIT* HEAT PUMP



DAIKIN *FIT* HEAT PUMP WITH DUAL FUEL



Daikin *Fit* Heat Pump Features:

- **Intelligent Defrost Mode** –helps prevent frost/ice buildup in cold climates
- **Advanced water-shedding drain pan**
- **Hot start technology** – no cold drafts when changing from cooling to heating

Daikin's Decentralized Heat Pump Units

- 13 non-ducted single-zone systems
- 5 ducted single-zone systems
- 3 multi-zone systems w/ 6 indoor unit options
- Cold climate options w heating down to -13°F




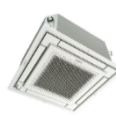




Decentralized Heat Pump



- Uses variable speed, inverter technology
- Very little or no ductwork
- Outdoor unit provides primary heat
- Each room can have independent temps
- **When on, it conditions each room to its individual comfort level** (separate light switch for each room)
- **Best option for decarbonization**

























Multi-Zone Heat Pumps

High Level Lineup Summary

		Outdoor Units							Indoor Units						
		RMXS		5MXS	2-4MXS		4MXL	2-3MXL							
		Standard Model					Daikin AURORA Models			EMURA Wall Mounted	VISTA Ceiling Cassette	FTXS / CTXS Wall Mounted	FVXS Floor Mounted	FDMQ Ducted Concealed	FDXS / CDXS Slim Ceiling Concealed
		RMXS	5MXS	4MXS	3MXS	2MXS	4MXL	3MXL	2MXL						
Inverter Compressor		●					●								
Heat Pump		●	●	●	●	●	●	●	●	●	●	●	●	●	●
Nominal Cooling Capacity (Ton)		4-Ton	4-Ton	3-Ton	2-Ton	1.5-Ton	3-Ton	2-Ton	1.5-Ton	0.75-1.5-Ton	0.75 - 1.5-Ton	0.6 - 2-Ton	0.75 - 1.5-Ton	0.75 - 2-Ton	0.75 - 2-Ton
Efficiency (SEER)		Up to 18.8	Up to 20.2	Up to 17.7	Up to 18	Up to 18.9	Up to 21.7	Up to 18	Up to 17	Based on Configuration and Outdoor Unit Connection					
ENERGY STAR® (Non-Ducted Config)						●	●		●						
Low Ambient Heating Operation							● -13° F								
# of Connected Indoor Units		2 - 8	2-5	2 - 4	2 - 3	2	2-4	2 - 3	2						
Outdoor Unit Features		Small Installation Footprint, Low Sound Levels, Anti-Corrosion Treatment on Heat Exchanger, Priority Room Function, Auto-Restart after Power Failure													
Indoor Unit Options & Features	Wi-Fi Adaptor / App								●	●	●	●	●	●	
	Wired Controller / T-Stat								●	●	●	●	●	●	
	Field-Installed Electric Heat													●	
	Multi-Zone Via Duct/Zone Kit									option				●	
	Occupancy Sensor								●	●	●				
	Choice of Color Options								●	●					
	Powerful Operation								●		●	●		●	

Residential & Light Commercial Rooftop Packaged Units

High Level Lineup Summary

Packaged Air Conditioners			Packaged Heat Pumps					Dual Fuel	Packaged Gas/Electric	
MODEL	DP15CH	DP14CH	MODELS	DP16HH	DP16HM	DP14HH	DP14HM	DP14DM ⁺	DP16GM ⁺	DP14GM ⁺
12-Year Parts Limited Warranty*			Unit Replacement Limited Warranty*							
6-Year Unit Replacement Limited Warranty*		N/A	Lifetime Heat Exchanger Limited Warranty*	N/A	N/A	N/A	N/A			
2-Year Unit Replacement Limited Warranty*	N/A		12-Year Parts Limited Warranty*							
SEER	15	14	SEER	Up to 16	Up to 16	14.5	14	Up to 14.5	Up to 16	14
Capacity (Tons)	2 to 5 Tons	2 to 5 Tons	AFUE	N/A	N/A	N/A	N/A	81% AFUE	81% AFUE	81% AFUE
Installation Options	Dedicated Horizontal	Dedicated Horizontal	HSPF	Up to 8.2	Up to 8.2	8.0	8.0	8.0	N/A	N/A
Scroll Compressor	■	■	Capacity (Tons)	2 to 5 Tons	2 to 5 Tons	2 to 5 Tons	2 to 5 Tons	2 to 4 Tons	2 to 5 Tons	2 to 5 Tons
Louvered Condenser Coil Protection	■	■	Scroll Compressor	■	■	■	■	■	■	■
Heavy-Gauge Galvanized Steel Cabinet	■	■	Heavy-Gauge Galvanized Steel Cabinet	■	■	■	■	■	■	■
ENERGY STAR® Certified		NO	Louvered Condenser Coil Protection	■	■	■	■	■	■	■
			Tubular Heat Exchanger	N/A	N/A	N/A	N/A	Stainless Steel Dual-Diameter Tubular Heat Exchanger	Stainless Steel Dual-Diameter Tubular Heat Exchanger	Stainless Steel Dual-Diameter Tubular Heat Exchanger
			Installation Option	Dedicated Horizontal	Multi Position	Dedicated Horizontal	Multi Position	Multi Position	Multi Position	Multi Position
			ENERGY STAR® Certified	NO		NO	NO	NO		NO

Daikin VRV Lineup

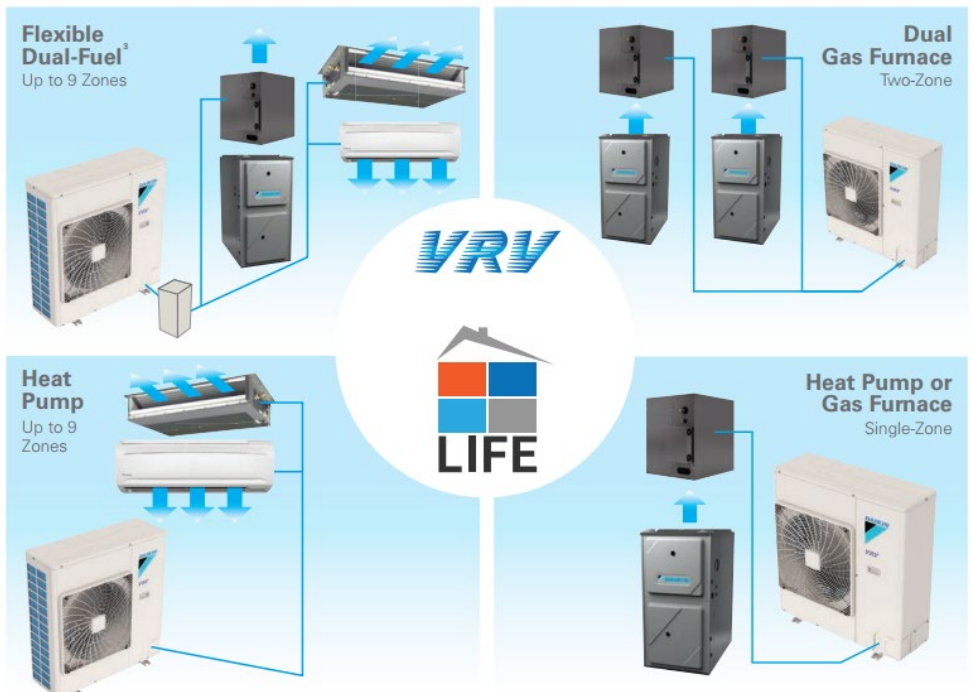
		Capacity (tons)																			
		3	4	5	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38
AC 3 ph	VRV IV X Heat Pump Heat Recovery 230/460/575V				Single					Double					Triple						
					up to 14 Tons					up to 28 Tons					up to 38 Tons						
WC 3 ph	VRV AURORA Heat Pump Heat Recovery 230/460/575V	Single						Double													
		up to 10 Tons						up to 20 Tons													
1 ph	VRV WC Heat Pump Heat Recovery 230/460/575V	Single						Double						Triple							
		up to 12 Tons						up to 24 Tons						up to 36 Tons							
1 ph	VRV IV S VRV LIFE Heat Pump 230V	Single																			
		up to 5 Tons																			

VRV LIFE™ – Line up

First dual-fuel VRV/VRF system in the industry

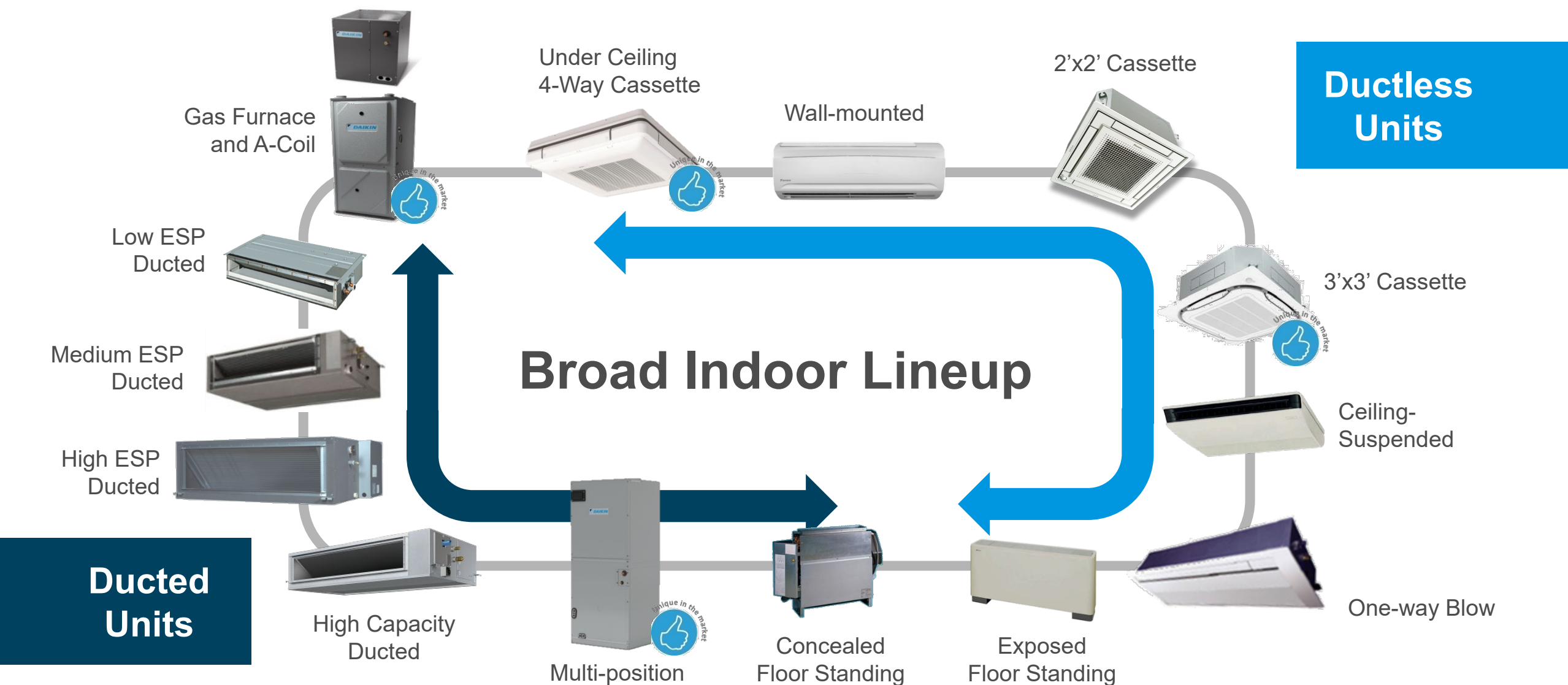
Daikin's *VRV LIFE* reinvents the heart of the central ducted home system – the condensing unit:

- **Dual fuel** (heat pump and gas furnace) connectivity
- **Lower sound** levels than traditional (outdoor) unitary systems
- **Flexible installation** with multiple indoor unit configuration options
- **Compact** and ideal for zero lot line applications
- **Daikin inverters and variable speed compressors** enable higher efficiency under part load conditions
- **Small size** saves installation time and allows for more units into a standard size truck or van
- Optional **Indoor air quality** (IAQ) modules



Capacity (Tons)	2	3	4	5
Seasonal Efficiency				
Maximum IDU	4	6	8	9
Height	39"	39"	39"	53"
Weight (lbs.)	172	172	187	238
Connection Ratio	50-130%			
Compressor	Daikin Inverter Swing			
Operation Range	23 ~122 °FDB -4 ~ 60 °FWB			

Design – Indoor Unit Flexibility



Daikin One EcoSystem

Elegant, User-Friendly Thermostat




DAIKIN ONE
HOME AIR MONITOR

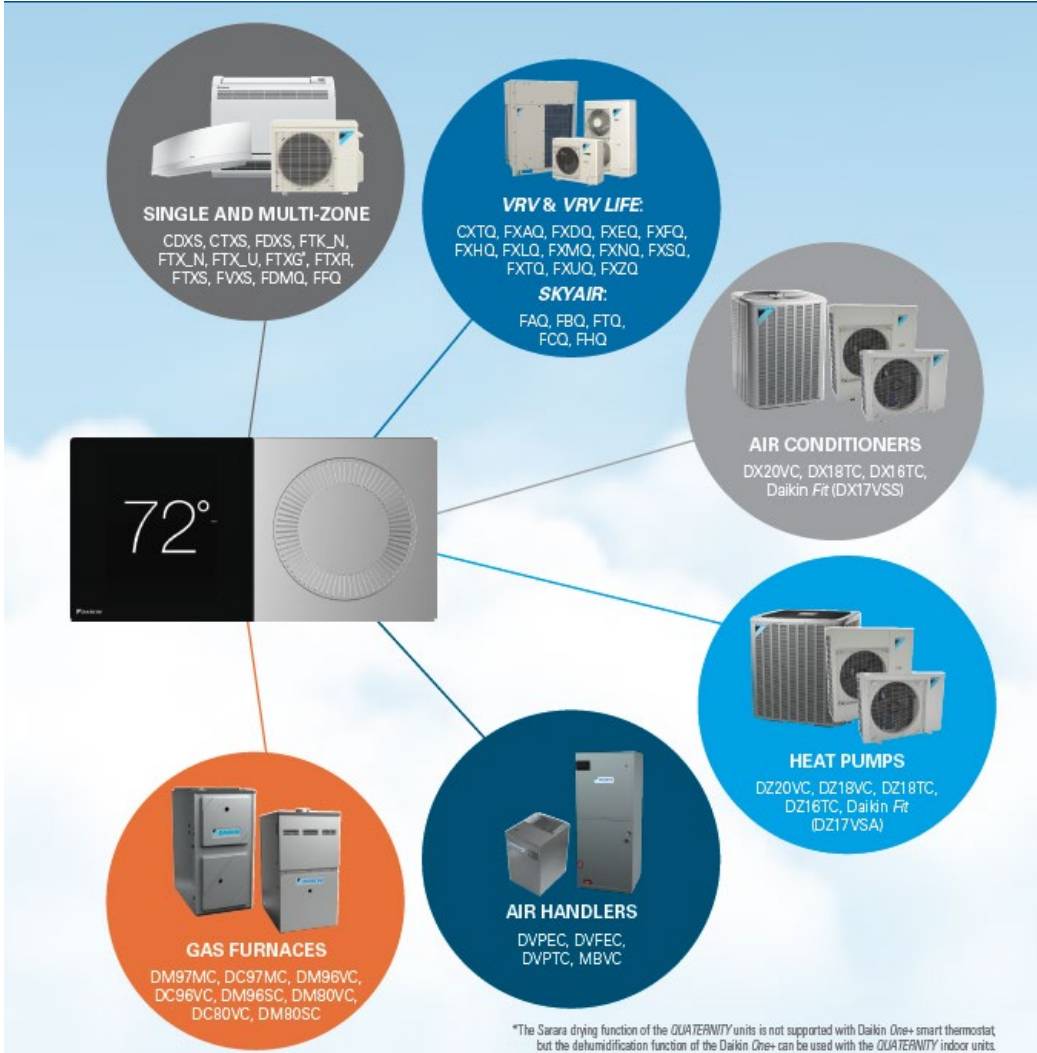



DAIKIN ONE
POWERED VENTILATOR*




DAIKIN ONE
AIR CLEANER*

Universal Compatibility



*The Sarara drying function of the QUATERNITY units is not supported with Daikin One+ smart thermostat, but the dehumidification function of the Daikin One+ can be used with the QUATERNITY indoor units.

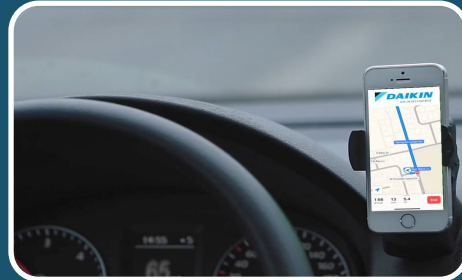
Contractor Benefits: Cloud Services

ONE IoT PLATFORM



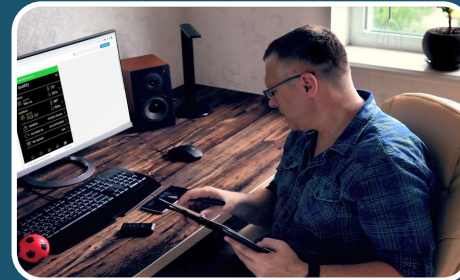
Revenue Generation

- Lead generation
- Value-added services
- Up-Sell Opportunities (such As IAQ)
- Preventive maintenance
- Increased profitability due to remote resolution
- Homeowner loyalty



Remote Diagnostics

- Remotely adjust thermostat & system settings
- Reduce unpaid truck rolls and time of service visits
- Diagnose before dispatch
- Reduce unpaid warranty expense
- Contactless Service



Cloud Commissioning

- Save time, improve quality
- Commission remotely
- Generate commissioning report
- Generate warranty registration documents
- AHRI system rating reference number



Cloud Monitoring

- Customers' system data 24/7
- Alerts and faults in both real time and over time
- Temperature, humidity, heat and cool demand
- Thermostat settings
- Homeowner peace of mind and satisfaction

Extended Service Plans

AsureSM Extended Service

An AsureSM Extended Service Plan gives the homeowner the peace of mind that they won't be faced with unexpected repair or part replacement costs for their heating and air conditioning system. We give them comfort knowing they won't have to endure any long periods without heating or cooling – they're covered!

- The AsureSM Extended Service Plan complements the standard limited product warranty by providing labor coverage and additional years of parts coverage, based on the plan selected. Your distributor sales manager can provide details on the different coverage options available.
- These will include the rate schedule for covered repairs, as well as the plan numbers that can be offered on Daikin equipment.



Agenda

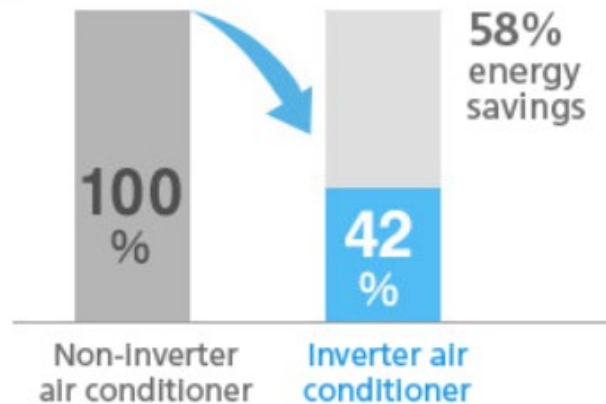
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Inverter Technology

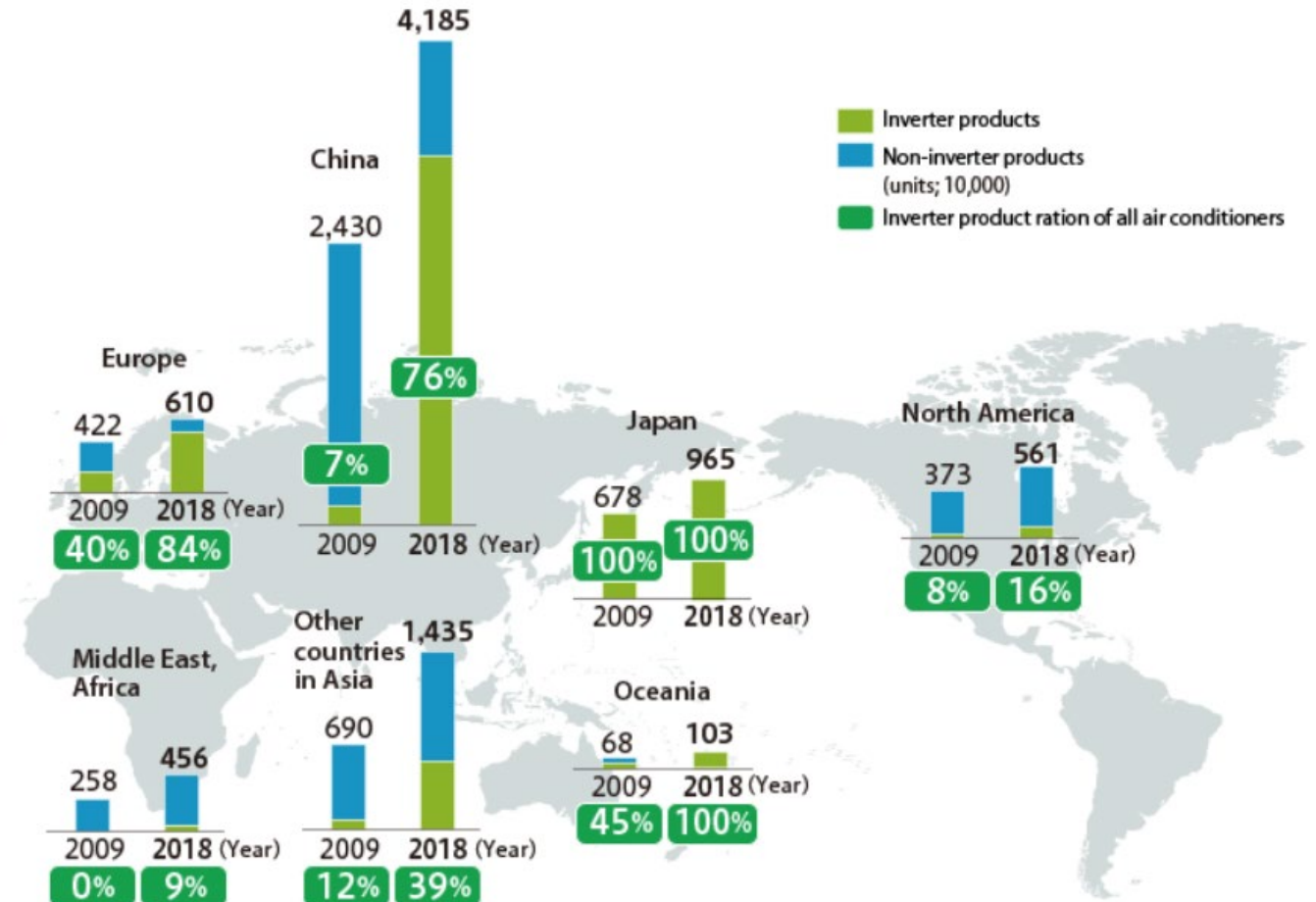
Enabling Variable Capacity Systems

- Can Reduce Power Consumption by Approx. 58%
- Inverters are frequency conversion devices that control electrical voltage, current, and frequency. Inverters precisely control the compressor motor, the heart of an air conditioner. Furthermore, in addition to having modified conventional motors and heat exchangers, inverter air conditioners use approximately 58% less energy than non-inverter models.

Comparison of energy consumption (Non-inverter air conditioner 100%)



Inverter Products as Percentage of All Residential Air Conditioners Worldwide (2018)

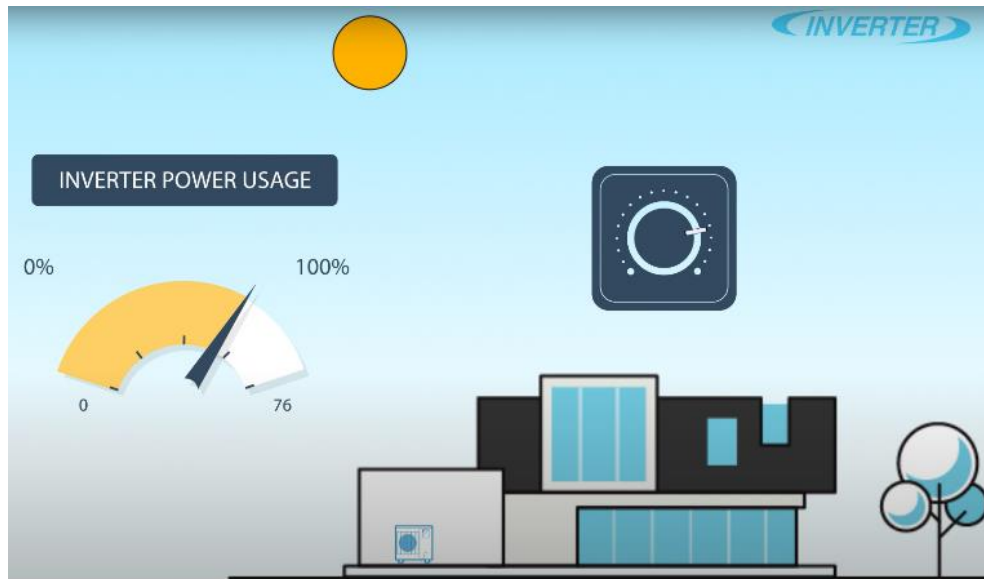
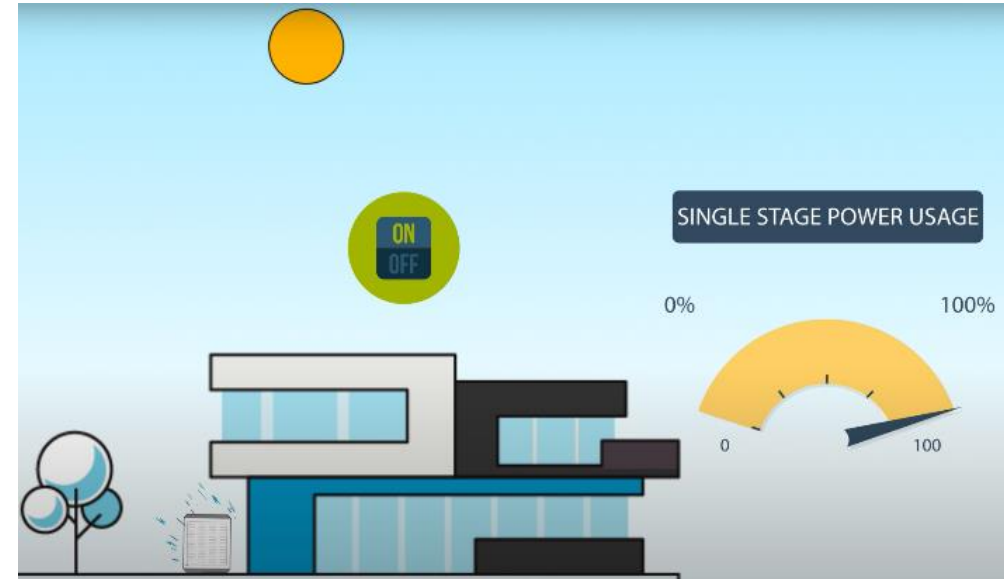


Benefits of Inverter Technology

When the system is running...

Traditional (single-speed) System

- When it's on, it is all on
- A traditional system uses max power no matter how much work is required



Inverter System

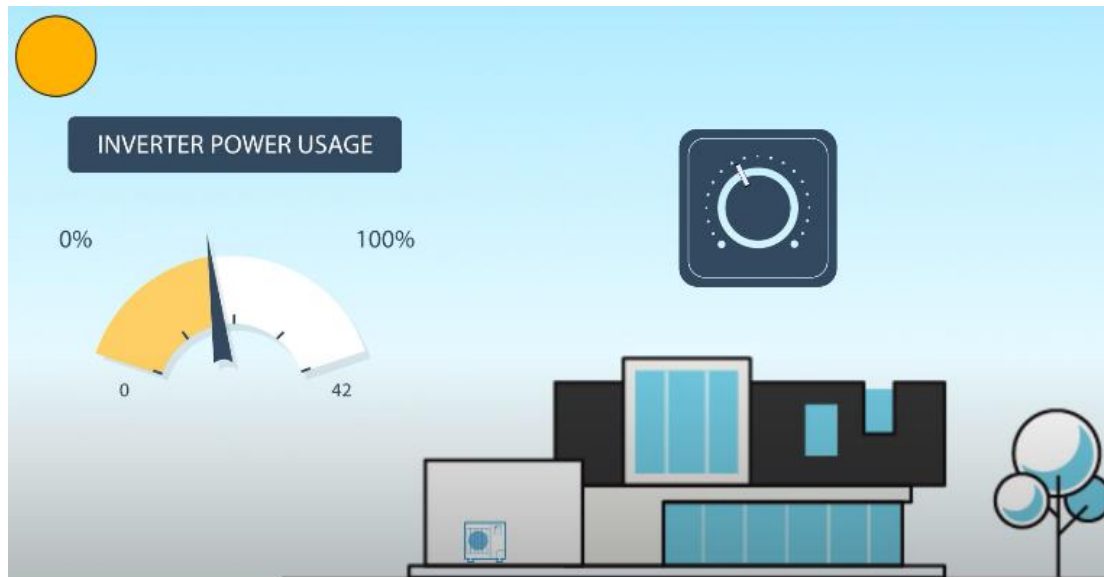
- The difference between the desired temperature and the actual temperature = work
- An inverter system uses advanced algorithms to calculate the work required and then only uses enough power to get the work done

Benefits of Inverter Technology

Once the setpoint has been met...

Traditional (single-speed) System

- When it's off, it is all off
- When the setpoint is met, the system stops cooling entirely



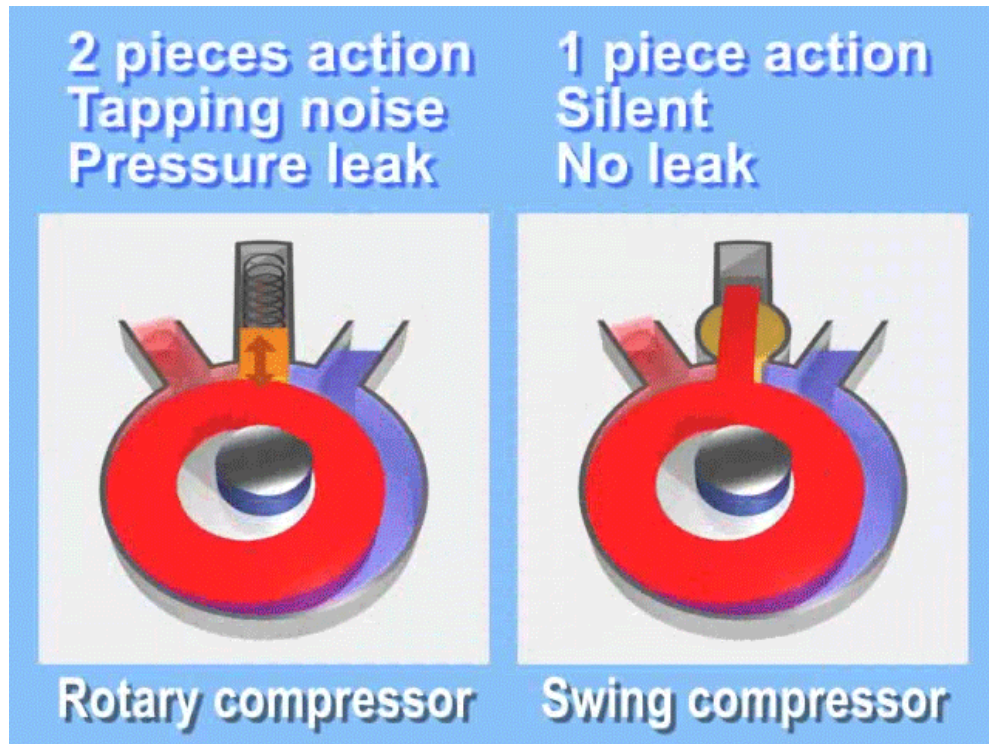
Inverter System

- As the system nears the setpoint, the smaller workload = smaller amount of power usage
- With an inverter system, as the workload gets smaller, the power consumption also gets smaller
- The power usage is representative of the workload

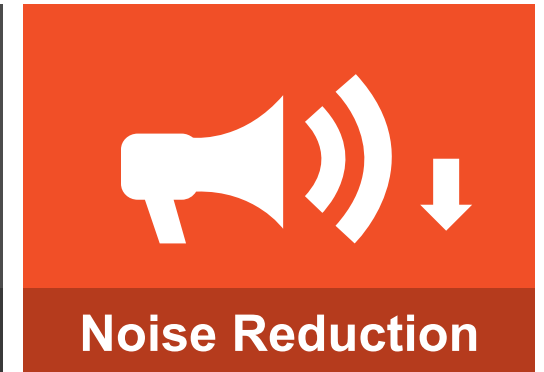
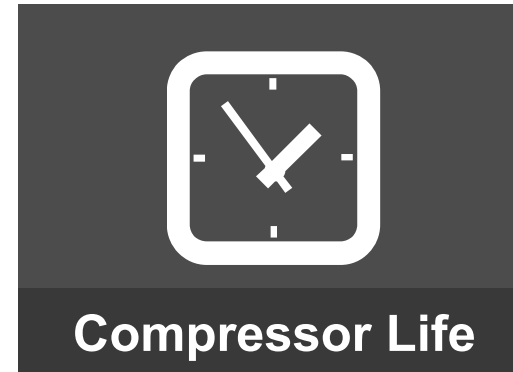
Daikin Swing Compressor

Swing Compressor vs Rotary Compressor

- Friction and refrigerant leakage are suppressed
- Longer compressor life



Benefits of a Swing Compressor



Over **30 million** in the field worldwide

Low-Global-Warming-Potential (low-GWP) Refrigerants

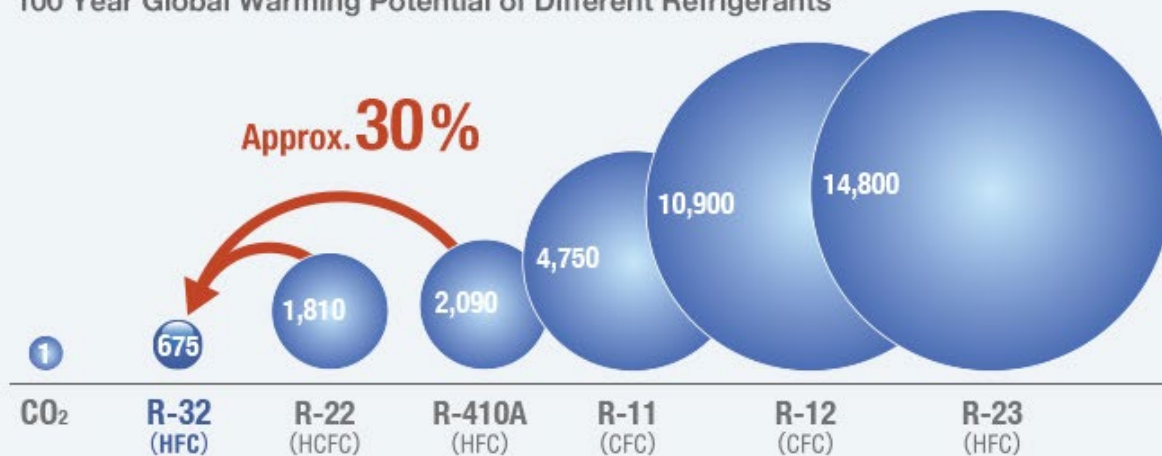
A2L Refrigerants

R-32

NEXT-GENERATION REFRIGERANT

100 Year Global Warming Potential of Different Refrigerants*

Approximately
10%
Reduction
in Electricity
Consumption



R-32 refrigerant may be familiar to some, as it makes up 50% of the R410A refrigerant which is widely in use in newer HVAC systems in the US.

If all machines using R410A were converted to R-32, HFC contribution to global warming would be reduced by the carbon dioxide equivalent of 800 million tons.

Daikin has offered worldwide free access to patents for equipment using this next-generation refrigerant since 2015

Questions

