Leveraging

Low GWP

An introduction to regulations, refrigerants and MAGNA Industrial Refrigeration™ for your cold storage applications.

MAGNA
INDUSTRIAL REFRIGERATION®
BY HEATCRAFT REFRIGERATION PRODUCTS

What is **Low GWP?**

An overview of the regulatory landscape and why it matters to you.

Global warming potential (GWP) is the measure of how much energy the emissions of 1 ton of gas will absorb over a given period, relative to 1 ton of carbon dioxide (CO_2). The larger the GWP, the more the gas warms up the Earth. Globally and domestically, we are moving toward a low GWP regulatory framework.

Governments and regulatory bodies across the world are taking action to reduce the impact of industry on climate change. But how regulations apply to industrial refrigeration and cold storage, and specifically how and where you do business, can be tricky to navigate. The team at MAGNA Industrial Refrigeration has put our resources, research and expertise into providing you the education and products necessary to get ahead of the game on low GWP.

What regulations should I know about, and what's ahead?

There are many laws and regulations that have led toward a phase out of high GWP refrigerants in North America. The American Innovation in Manufacturing (AIM) Act, which passed in December 2020 authorizes the EPA to phase down hydrofluorocarbon (HFC) production, restrict its uses based on sector and adopt refrigerant management standards.

Regulations to limit GWP thresholds below 300, and in some cases under 150, are already under way. Some even took effect as early as January 1, 2022, and others will take effect through 2026 and beyond. It's important to know not only the time frame and scope of the regulations, but also where and which governing bodies are imposing them. Federal regulations are in place and more in development in the U.S. by the EPA, and in Canada by the Environmental and Climate Change Canada (ECCC). There are also regulations in place and being developed at the state and provincial levels, with states having governors in the US Climate Alliance (USCA) being most active.

A few laws and regulations likely to impact you:

- CARB
- AHRI
- EPA SNAP 23
- EPA Section 608
- AIM (American Innovation in Manufacturing) Act
- Several state and provincial laws and regulations

MAGNA is involved in key committees and working groups at trade associations to monitor regulations and help develop standards. Because we have our ear to the ground on what lies ahead for low GWP, we can help you understand the regulations that will pertain not just to your operating location, but to your applications too.

Have questions on Low GWP regulations? Ask us. We're happy to walk you through every step.

The evolution of refrigeration regulations: All roads lead to Low GWP

As you can see at the bottom of the table, ODP or Ozone Depletion Potential was originally the standard by which regulatory bodies determined environmental impact of refrigerants. As we entered the 21st century and ODP innovation plateaued, GWP became the new standard.

	CFC (1920s - 1996)	HCFC (1960s - 2020)	HFC (1990s - 2020)	HFC/HFO/ BLENDS (2021)	NATURAL AND/ OR FLAMMABLE (2025/2026)
	R-12 R-502	R-22	R-404A R-507A R-407A	R-134A R-407A R-448A R-449A	CO_2 NH_3 R-454A R-454C R-455A R-290
ODP	0.23 - 0.82	0.055	0	0	0
GWP	4657 - 10910	1810	2100 - 3985	1200 - 2200	0 - 150/300

CFC = Chlorofluorocarbon | **HCFC** = Hydrochlorofluorocarbon | **HFC** = Hydrofluorocarbon | **HFO** = Hydrofluoroolefin

What types of refrigerants **are Low GWP?**

The refrigerants that are certain to satisfy even the strictest GWP standards by 2026 are natural and HFO or hydrofluoroolefins. HFO refrigerants are made of organic compounds and have significantly lower GWP than their HFC counterparts. Carbon dioxide (CO_2) is a refrigerant that is gaining rapid adoption in cold storage applications throughout Europe and North America for its low GWP properties, nonflammability and low toxicity. Another natural refrigerant such as Ammonia (NH_3) has a GWP of 0, the lowest of any product available. However, ammonia is becoming increasingly restricted due to its toxicity.

Other refrigerants, such as propane (R-290), satisfy low GWP standards but are highly flammable and have limited applicability due to charge limits set by product safety standards. Finding the balance for your business is key. The good news is Magna has you covered. Our product lines are designed for low GWP refrigerants both natural and synthetic, and we're dedicated to providing you with the low GWP products that best suit your business for the present and the future. With MAGNA, you can make the GWP transition with comfort and confidence.

Here is a quick summary of the characteristics of low GWP refrigerants

	CO_2	NH_3	HFOS & BLENDS (A2L)	R-290
Global Warming Potential	GWP of 1	GWP of 0	Most satisfy Low GWP (< 300) thresholds	GWP of 3
Flammability	Not flammable	Mildly flammable	Low to mildly flammable	Highly flammable
Toxicity	Low toxicity	High toxicity	Low toxicity	Low toxicity

Why should you adopt **low GWP?**

Stay compliant and competitive

Transitioning to low GWP products now will avoid headaches later. While your competitors are scrambling to navigate new regulations down the road, you'll be sleeping well.

Lower your Total Cost of Ownership (TCO)

There are many ways you can save with low GWP products such as increasing efficiency, potentially reducing material and energy costs (energy rebates) and avoiding hidden liabilities. Let us help you with a total cost assessment.

Environmental benefit

Low GWP products are better for your business, and the planet. The imperative to uphold our responsibility to the environment isn't just a moral one. Customers are consistently choosing to spend with companies actively reducing their impact on climate change.

Are you interested in avoiding regulatory issues for decades, lowering TCO and reducing your environmental impact? Let MAGNA Industrial Refrigeration be your guide.

Low GWP in action:
Applications for your business

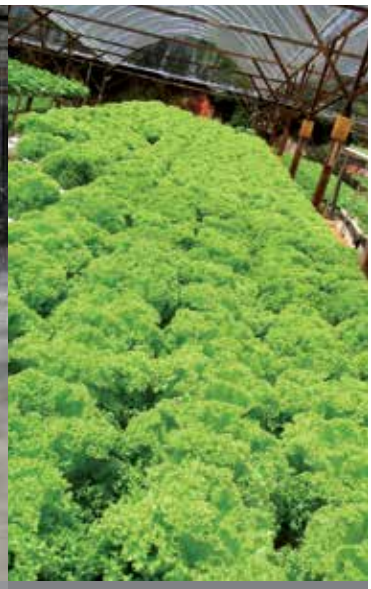
Regardless of the size, scope or scale of your industrial refrigeration cold storage needs, MAGNA has the expertise and product range to successfully apply low GWP to your new and existing applications and deliver equal levels of performance and reliability.

Your industry, our expertise. We specialize in areas such as:

Food and industrial process cooling

Rapid chilling/ blast cooling

Cold storage warehousing



Post-harvest storage

Oftentimes applications require a variety of combined solutions that span the gamut of cold storage temperature ranges – including blast chilling. Our experts have seen it all. We'll analyze your facilities and determine the best course of action for low GWP compliance based on the regulatory requirements of your location (federal, state and local), your business needs and more!

Product Offerings

We'll conduct extensive application assessments for:

New installations

Did you know California passed a state regulation that imposes a limit of 150 GWP for new stationary refrigeration systems with greater than 50 lbs. of charge for new facilities? This law took effect Jan 1, 2022. How could this regulation affect you? Let us help you navigate the complex regulatory landscape and what this law could mean for commercial cold storage across the U.S. and Canada.

Retrofits

Low GWP regulation doesn't just apply to new installations. CARB (California Air Resources Board) and SNAP regulations offer specific language for handling retrofit applications in existing facilities. Are you replacing a complete refrigeration system, several systems or just a component? We can guide you on the requirements and options available to you.

Remove the risk of going it alone. Choose MAGNA and choose the best partner for low GWP.

Industrial Unit Coolers

MAGNA Industrial Warehouse Unit Coolers provide extended capacity ranges and air throw capability required by large cold storage and food processing facilities. Built on a rugged and durable chassis, these industrial-grade units are uniquely suited for extreme applications, such as blast freezers and coolers. Service-friendly features and rigorously tested components are united with durable, heavy gauge construction to deliver units built to last!

eCO_2Boost Racks

MAGNA eCO_2Boost Transcritical Booster System is a cost-effective solution for cold storage applications. It uses naturally occurring, environmentally friendly and energy efficient CO_2 refrigerant. We carefully designed and optimized this rack to meet the needs of your unique applications, and it is offered in a wide range of capacities. With eCO_2Boost racks, unit coolers and gas coolers, MAGNA Industrial Refrigeration offers a complete Low GWP refrigeration package that provides efficiency, top performance and reliability.

Industrial Condensing Units

MAGNA Industrial Vertical Condensing Units are engineered to meet the growing needs of the industrial refrigeration market. Each unit is custom-built with robust, durable components and panels to withstand the harshest operating environments. Flexible in design and construction, MAGNA vertical condensing units provide substantial system reliability and reduced installation and operation costs.

Third-party system integration

Depending on your operations or location, we know you may have unique application requirements that could call for specific technologies. That's why MAGNA partners with adiabatic gas cooler, control system and other providers to help you assess and address your individual needs.

Why MAGNA for **Low GWP?**

MAGNA leverages more than 100 years of Heatcraft's refrigeration experience – the most of any manufacturer in the North American market – to provide the technical and regulatory expertise, as well as the broadest range of low GWP compliant products to meet your needs. You won't find a more complete low GWP partner to educate, advise and actualize low GWP regulation information to your business – regardless of your location, size or scale. Navigating the landscape of future regulations, at every level, can be a daunting task. Allow MAGNA to guide you along the way.

The low GWP landscape is rapidly evolving. For the latest information or questions, please contact MAGNA at low.gwp@magnarefrigeration.com.

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