

**MARSTAIR**

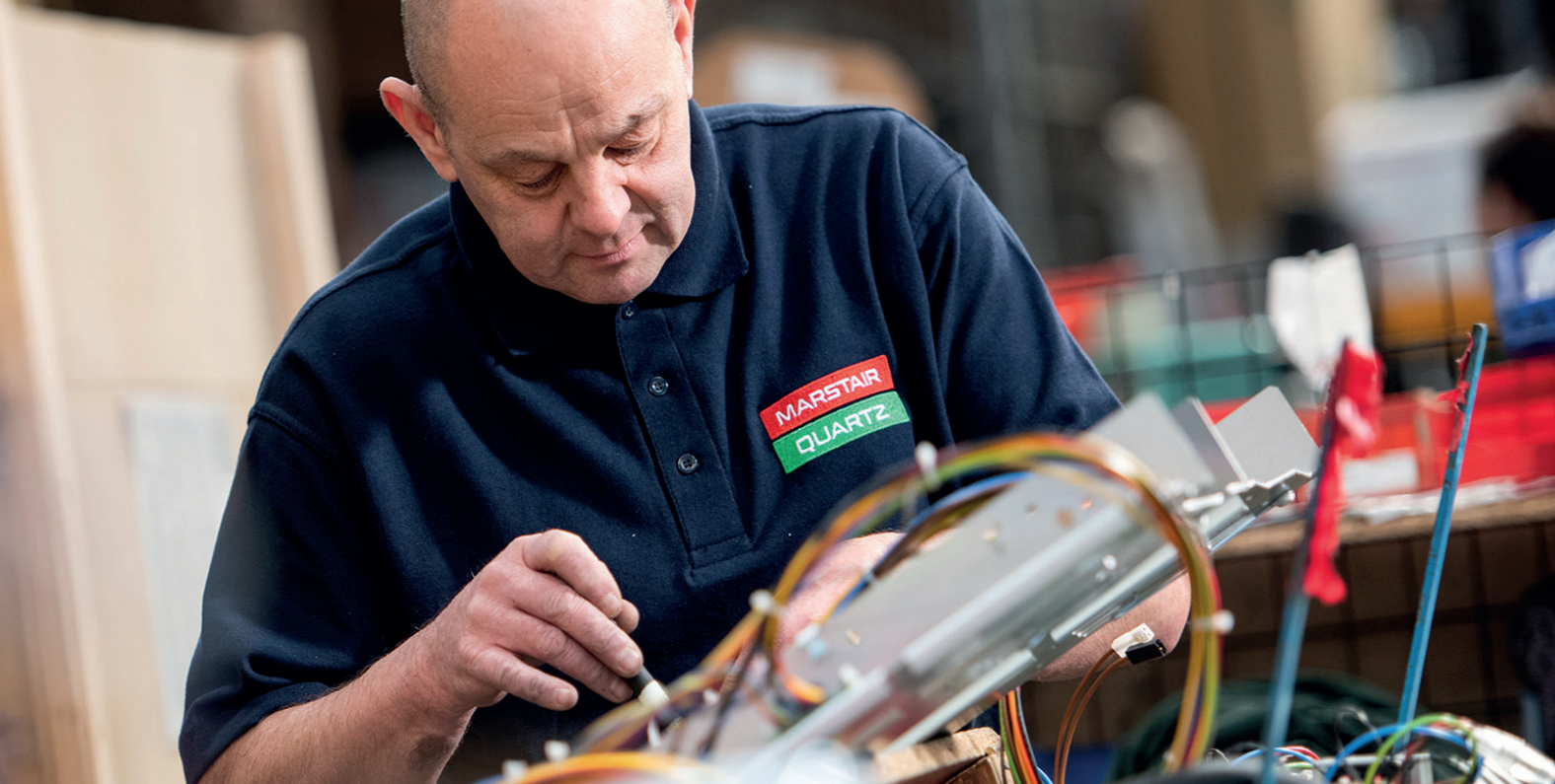
REFRIGERATION AND SPECIALIST AIR CONDITIONING



Upgrade to  
**A2L SYSTEM MATCH**  
for the UK's most efficient  
cold room solution



[WWW.MARSTAIR.COM](http://WWW.MARSTAIR.COM)



We are your **trusted partner** for HVAC-R **product solutions**, with a proven ability to deliver bespoke designs for all project applications. Ensuring market leading **customer satisfaction** in our chosen HVAC-R sectors.

Experts in superior product quality, efficiency and innovation we deliver British designed and built manufacturing to the very highest standard with 50-years of proven expertise & excellence. We are your preferred partner for bespoke design and project applications. Using only quality & reliable A-grade components gives us the confidence to offer our 5 year warranty for total piece of mind.



## Introducing **A2L**SYSTEM**MATCH**

A2LsystemMatch challenges current thinking, providing a critically charged cold room solution, **engineered to keep the refrigerant charge to a minimum.**



### Key Features & Benefits

- ✓ Designed and developed to BS EN 378: 2016 Standard
- ✓ Delivering a 93% reduction in refrigerant GWP with huge environmental benefits
- ✓ 3% more efficient than current ECO/ETL Listed Product Range
- ✓ Up to 33% lower 'Total cost of ownership' VS CO2
- ✓ Simple skill level uplift required to install
- ✓ Can be set up using standard known controllers
- ✓ Suitable for standard general access cold room applications
- ✓ Up to 80m pipe runs available
- ✓ Simple system selection and easy installation
- ✓ Full compliance within the box
- ✓ DSEAR Risk Assessment Guidance Provided
- ✓ No requirement for extra safety measures such as emergency ventilation
- ✓ 5 year Parts Warranty as Standard

**UK 1st  
innovative  
A2L solution  
for cold room  
applications**

# Development & Testing

Following recent investment in newly built R&D testing facilities at Marstair's UK manufacturing plant, eight months of comprehensive testing have been completed, ensuring A2LsystemMatch has been developed fully in accordance to BS EN 378: 2016 standards.

## Testing different components to reduce the refrigerant charge

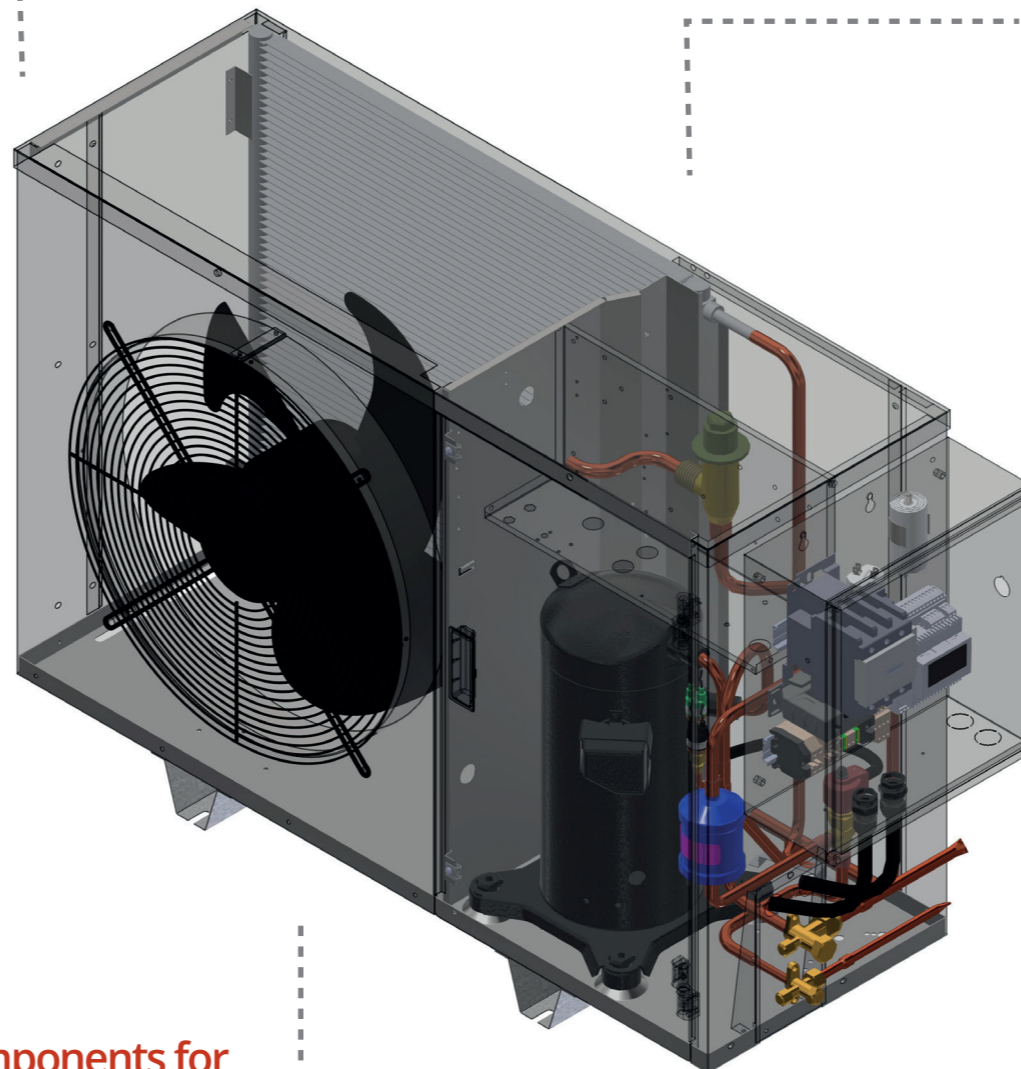
This is to ensure the refrigerant charge levels are low enough for the Marstair A2LsystemMatch to be suitable for reasonable pipe runs within the **stringent requirements** of the regulations.

## Extensive testing on multiple condensing units and evaporators

Ensuring the published refrigerant charge level information is **accurate** for every Marstair A2LsystemMatch.

## Testing different components for improved efficiency

These new Marstair A2LsystemMatch **solutions** are even better with more efficient condensers and evaporators supplied with EEV's as standard.



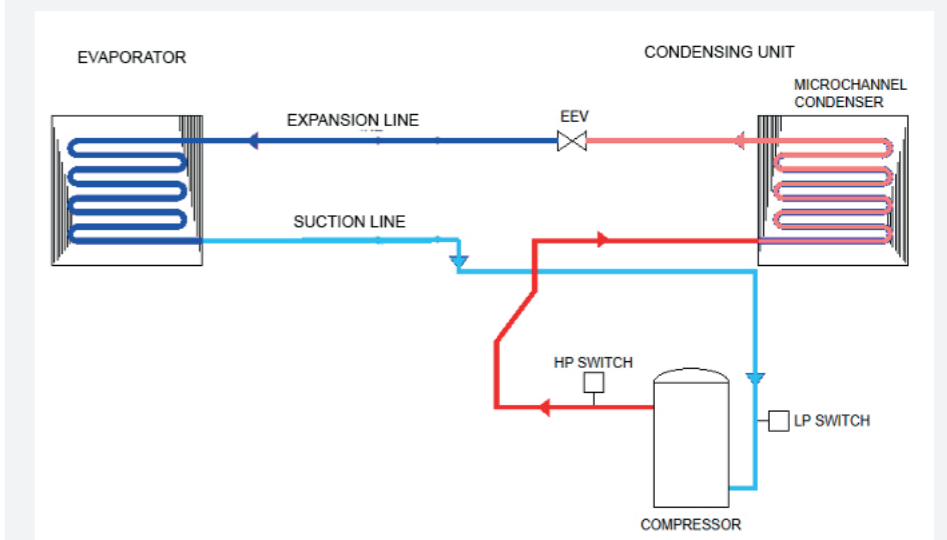
Testing with multiple refrigerants such as R454A, R454C & R455A

To give **maximum choice** to the customer and ensure that the new systems are as widely available as possible.

Duties from 1-6kW

0.2 seasonal energy efficiency improvement based on BS EN 14825:2008 Seasonal calculation for condensing units

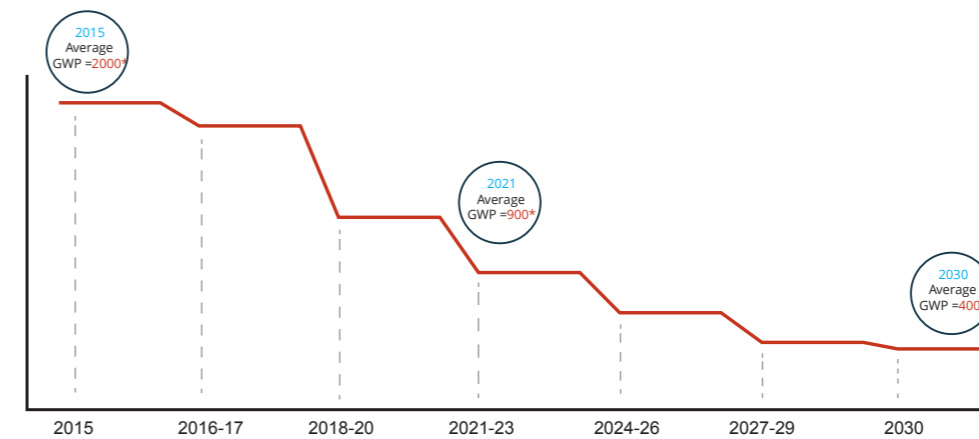
Critically charged system schematic with expansion lines



# Environmental 'Step-Change'

Marstair's A2LsystemMatch provides the **solution** to accelerate the step-change needed in the cold room sector, allowing a major shift in refrigerant GWP reduction. Critically this will also give end user clients seeking greener future-proof alternatives, confidence for better total cost of ownership during this challenging economic time.

F-gas phase-down & average GWP



**93%**  
Reduction  
in GWP

**3%**  
More  
Efficient

**33%**  
Lower  
TCO

These new systems are also **3% more efficient** than the already highly efficient Marstair ECO design certified and ETL listed range of condensing units and come with a 5 year parts warranty as standard for total piece of mind.

A2LsystemMatch delivers the **lowest 10 year life cycle cost (LCC)** and **total cost of ownership** for end users than any other technology.

CO2 reduction for the increased energy efficiency for the Marstair A2LsystemMatch

System type	Annual energy usage based on BS EN 14825: 2018 seasonal calculation for condensing units kW Hour / Annum	1kW Hour in kg CO2	Annual CO2 from energy usage kg	20yr life CO2 from energy usage kg
Original 3.0kW R449A system	5508	0.352	1939	38776
New equivalent R454C system	5333	0.352	1877	37544
<b>Saving</b>	<b>175</b>	<b>0</b>	<b>61.6</b>	<b>1232</b>

Potential kg CO2 reduction for reduced refrigerant charge and refrigerant GWP for the critically charged Marstair A2LsystemMatch per system

System type	Typical refrigerant charge kg	Refrigerant GWP per kg	Total Kg CO2 per system
Regular system R449A	2.5	1282	3205
A2LsystemMatch R454C	1.5	148	222
<b>Saving</b>	<b>1</b>	<b>1134</b>	<b>2983</b>



## Selection made easy

A2LsystemMatch is the **only solution** which provides a complete system solution on A2L refrigerant for cold rooms. Installed using standard controllers, it is also suitable for applications with up to 80m pipe runs, and which requires no extra safety measures.

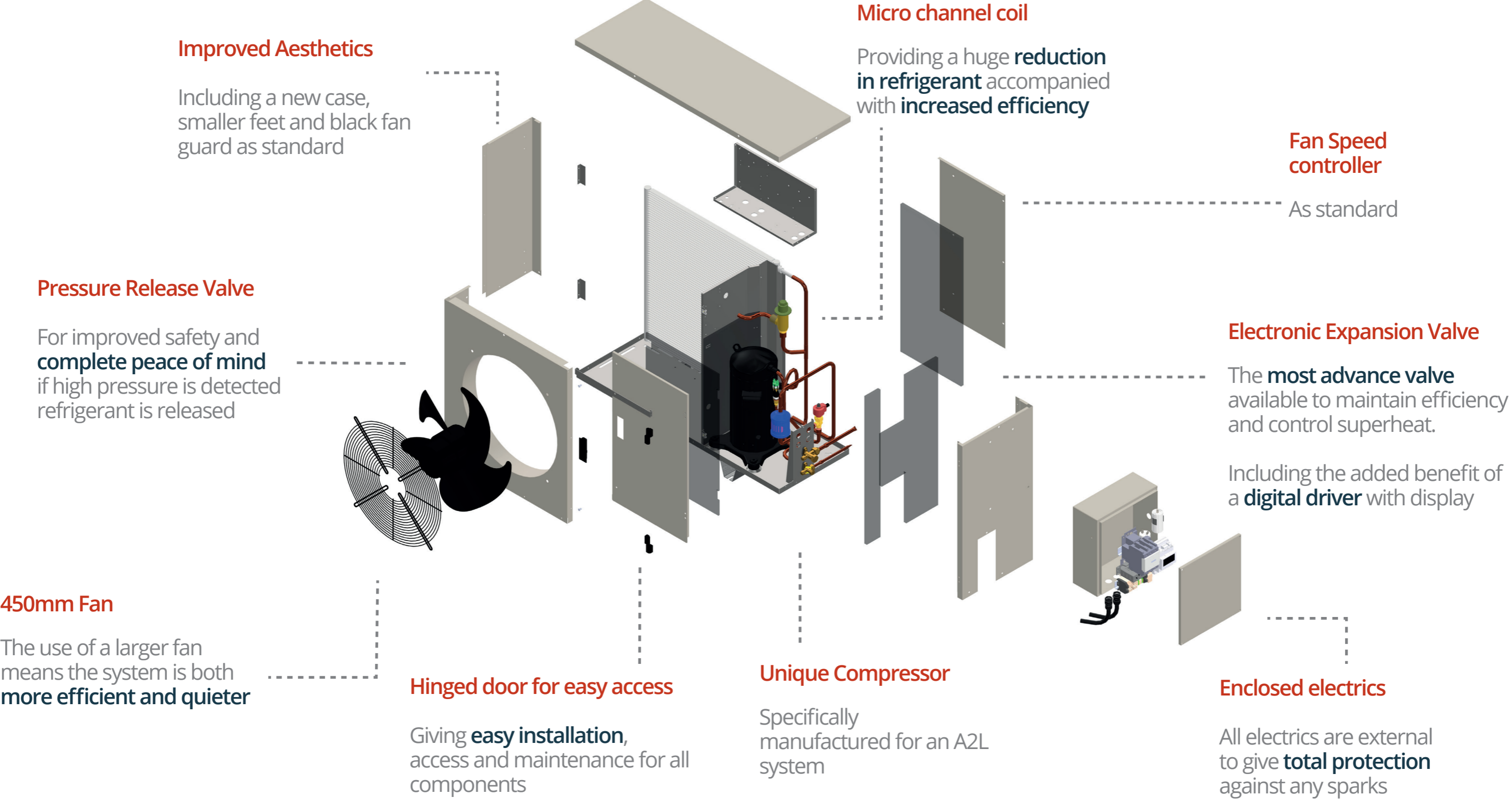
The refrigerant charge for any system match with a known pipe run can **easily be calculated**, meaning A2LsystemMatch can easily be selected giving clients **complete confidence** their selection can be applied both safely and in compliance with regulations.

## A2L SYSTEM MATCH Selection tool

Medium Temperature - R454C (-8°C Evaporating temperature / 0°C return Air / 32°C External)												
Cooling kW	Condensing unit	Box Evaporator	System charge 0m	5m Pipe Run			10m Pipe Run			20m Pipe Run		
				System charge	BS EN 378 Min. Room Size m³	Dsear ass. Req. Free area m²	System charge	BS EN 378 Min. Room Size m³	Dsear ass. Req. Free area m²	System charge	BS EN 378 Min. Room Size m³	Dsear ass. Req. Free area m²
1.3	SMC+15	MBMTE125A	0.28	0.36	6.1	3.34	0.440	7.5	3.61	0.6	10.2	4.16
1.6	SMC+20	MBTME125B	0.295	0.375	6.4	3.39	0.455	7.8	3.66	0.615	10.5	4.21
1.9	SMC+30	MBMTE130B	0.350	0.430	7.3	3.58	0.510	8.7	3.85	0.67	11.4	4.40
2.4	SMC+40	MBMT130E	0.460	0.540	9.2	3.95	0.620	10.6	4.23	1.060	18.1	5.73
3.2	SMC+45	MBMT230B	0.654	0.734	12.5	4.62	0.814	13.9	4.89	1.254	21.4	6.39
4.6	SMC+50	MBMT230C	0.738	0.818	14.0	4.90	1.038	17.7	5.65	1.338	22.8	6.68
5.7	SMC+80	MBMT230E	0.955	1.035	17.7	5.64	1.255	21.4	6.39	1.555	26.5	7.42
6.5	SMC+90	MBMT230BE	1.280	1.430	24.4	6.99	1.580	27.0	7.50	1.880	32.1	8.53

# Engineered Quality & Reliability

This new A2LsysteMatch provides peace of mind for the safety, efficiency and ease of installation needed to ensure a positive switch to much lower GWP cold room solution.



# DSEAR Risk Assessment Guidance

To support you with pre-sales advice, Marstair also provide a DSEAR risk assessment template as standard covering the key areas within its technical instructions, ensuring best practice installation and maintenance guidance for both installers and end users.

- ✓ Risk assessment template questionnaire covering the following steps
  - Installation
  - Pressure Testing
  - Evacuation
  - Charging of refrigerant
  - Refrigerant recovery
- ✓ Free volume assessment for prevention of a flammable atmosphere through overloading of the cold room
- ✓ Information on the relevant installation standards
- ✓ Guidance on the use of refrigerant leak detection if required
- ✓ Safety information on what to do in the event of a leak of refrigerant
- ✓ End user safety guidance



## Step by Step Cold Room Selection

### Inputs

- 1 Establish **Duty requirement**
- 2 Confirm **Internal Room Temperature**
- 3 Estimate **External Ambient**
- 4 Confirm **Evaporating temperature**
- 5 Measure **Pipe run length**
- 6 Confirm **Room Volume**
- 7 Choose **Refrigerant type**

### Outputs

- 1 **Evaporator Selection**
- 2 **Condensing unit selection**
- 3 **Suction Pipe Size**
- 4 **Expansion Pipe size**
- 5 **Refrigerant charge**
- 6 **Minimum room size BS EN 378**
- 7 **Dsear Free volume Assessment**
- 8 **Free area proportion**

## Our Project Support

ENQUIRY	SELECTION ADVICE	QUOTATION PROPOSAL	ORDERING PROCESS	FOLLOW UP	MANUFACTURING	PRODUCT DELIVERY	COMPLETION MEETING	AFTERSALES SUPPORT
DEFINE REQUIREMENTS	EXPERT ADVICE	DISTRIBUTOR NETWORK	ORDER PLACED	PROJECT QUERIES	BRITISH DESIGNED & BUILT	NATIONWIDE DISTRIBUTORS	PROJECT CLOSE OUT	GENERAL QUERIES
PROJECT SCOPE	BESPOKE DESIGN	PRICE & LEAD TIME	TECHNICAL SUBMISSION	SITESUPPORT	EXCELLENCE IN TESTING	STOCK AVAILABILITY	ENCOURAGE FEEDBACK	TECHNICAL BACKUP
ACCURATE RESPONSE	COMPLIANT SOLUTION	LEAD TIME SCHEDULING	UNRIVALLED SUPPORT	PEACE OF MIND	QUALITY ACCREDITATION	ON TIME IN FULL	CONTINUOUS IMPROVEMENT	ENGINEER SUPPORT

# Client Testimonials

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## Wave Refrigeration

“ASDA, CBES, City FM and WAVE have been working closely in the development and implementation of A2L refrigeration system solutions. Our first aim was the development of systems to operate display cases – which we successfully landed in 2019. Arriving at a solution for cold rooms was always going to add layers of complexity due the environment in which they operate and the allowable charge volume. The team were delighted to find out that Marstair had developed a bespoke A2LsystemMatch solution that includes the supply of an A2L condensing unit and complimentary room cooler; all within the guidance and best practise as prescribed by BS EN 378. The team have worked closely with Marstair and are looking forward to implementing the first A2L cold room solution at ASDA Blantyre in 2020. Marstair have had great vision in seeing the benefits of A2L refrigerants and their client facing approach will ensure that they continually develop their A2L offering as an alternative option for the refrigeration industry”

**James Bailey CEng MA MIET MInstR, Founder and Director – WAVE**

## Keep it Cool Refrigeration

“Having worked closely for Riverford for some time, it was clear that a requirement for a greener, more cost effective solution for a cold store application to house their own organically farmed produce was needed.

Selecting Marstair’s A2LsystemMatch solution was simple, utilising an SMC+40 condensing unit and matched evaporator for the duty required. The service and support from Marstair through their local Distributor Heronhill was first class, and I’m pleased to say this A2L split-system solution is the first to be successfully installed within the UK”

**Charlie Patt, Managing Director - Keep it Cool Refrigeration Ltd**



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