



Mobile Climate Control

For a better climate



Off Road



On Road

MCC creates climate comfort

by supplying custom engineered HVAC-products and systems to OEM and Tier 1 customers



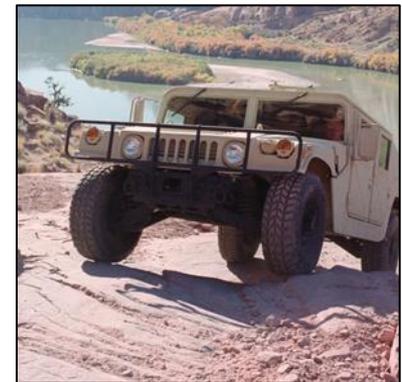
Bus



Off Road



Utility



Military

R134A- The superior choice for your transit bus fleet now and for the future

Current Benefits:

- R134A is the most commonly used refrigerant for the mobile industry resulting in stable pricing, abundant supply, easily sourced, PLUS the best performance for high ambient regions
- R134A has been researched and used exclusively by the automotive/mobile industry with continuous R&D proving it's performance and efficiency
- Manufacturers in Europe switched to HFO-1234yf in 2012. Other global manufacturers have committed to switch by 2018.

Future Benefits:

- The mainstream refrigerant after the HFC phase out in 2018 will be HFO-1234yf
- Fleets currently using R134a have a clearly established path to convert to HFO-1234yf
- Fleets converting to HFO-1234yf will benefit from all the rigorous testing, R&D and stable pricing based on the global momentum from the automotive industry



Compressor Strategy – Capacity Control Compressors Standard

Full Product Portfolio:

- Standard cylinder unloading on all models = fuel savings
- Superior efficiency across the operating rpm range for compressors vs a screw compressor
- Designed to optimize R134a systems, the most widely used refrigerant and systems in the Mobile HVAC industry
- Lightweight materials for maximum weight savings
- Rebuild kits available for ALL models offered



Bitzer 4 & 6 NFCY Series



Carrier/Carlyle 05G Series

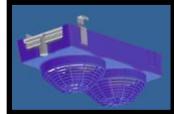


Bock Semi-hermetic Reciprocating Series



Bock FKX/40/50 Series

MCC HVAC Products

	Large Bus (Transit/Highway Coach)			Small Bus (School/Shuttle/Paratransit)		
Rooftop Convectional & Electric (Integrated)	ECO-353 	ECO-136 		ECO-430 	ECOLINE 8, 10, 12 	K-430 
Rear Mount Convectional & Electric (Split)	Highway Coach Module 	RM series, 35, 50 & 55 		EM-Series 1-3,7, 9, &17 	IW Series 1-2, 4 &10 	CM Series 2-5, & 16 
Driver's Control Units	ECC 	Micromax 	Enviromate 	MVC 	Easyturn 	Manual 
Defrosters & Heaters	Defroster 	Floor Heater Ducted/free-blow 		Defroster 	Convection heat 	Floor heater 
Compressors	Carlyle 05G 	Bitzer 	Bock 	Valeo TM 16 TM 21 TM 31 		

MCC HVAC Products – Rear Mount Enhancements

Summary

RM35 Phase II

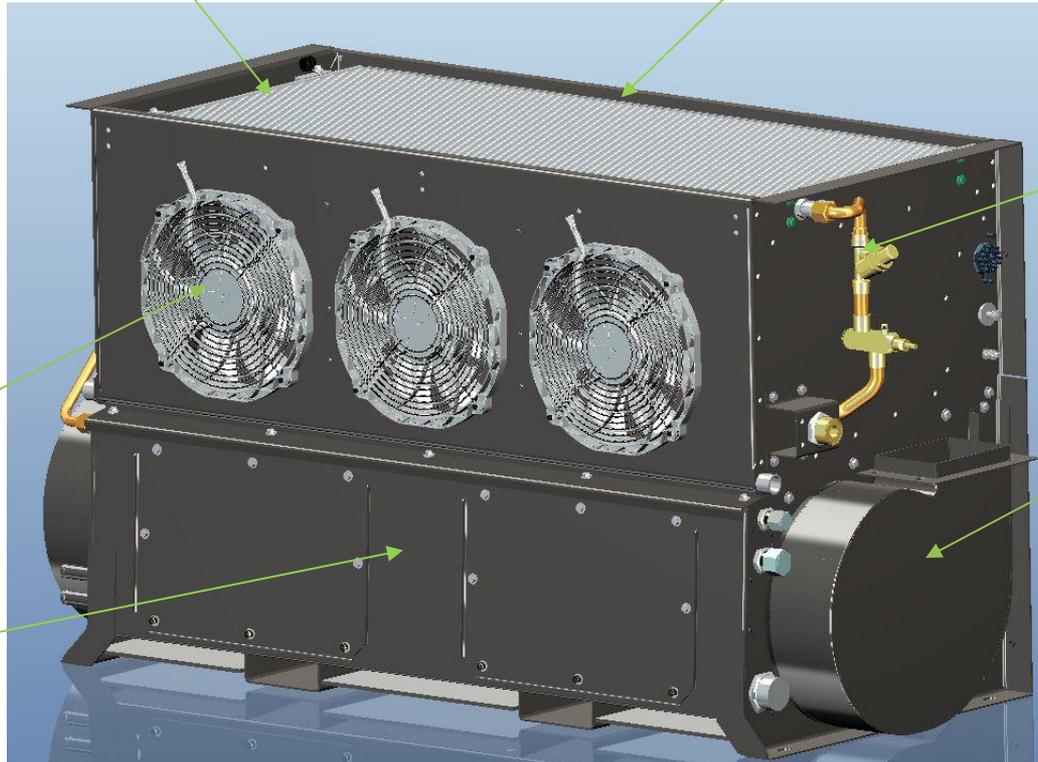


1. Larger MCHX Condenser Coil, 5% increase in heat rejection

2. Improved Receiver Design for improved corrosion resistance (not shown)

3. Relocated Condenser Fans, 3.5% increase in air flow

4. Two Piece Frame Design for simplified assembly and quality improvements



7. New MCC Controller, EcoTemp, CAN ready with increased functionality/diagnostic capabilities

6. Simplified Piping Configuration, reduces weight and congestion

5. New Brushless Motor w/10" Diameter Blower Wheel, reduced noise, increase in air flow and efficiency

ECO 353 Inline available in 40 & 60ft versions

Features/Advantages:

- Capacity range: 24kW to 40kW
- Innovative MCHX technology
- Reduced refrigerant charge
- R134-a refrigerant
- Reduced weight
- Reduced length
- Service access from inside the bus
- Narrow version available for shuttle and school bus
- Superior reliability
- **Over 8,000 units in the field**



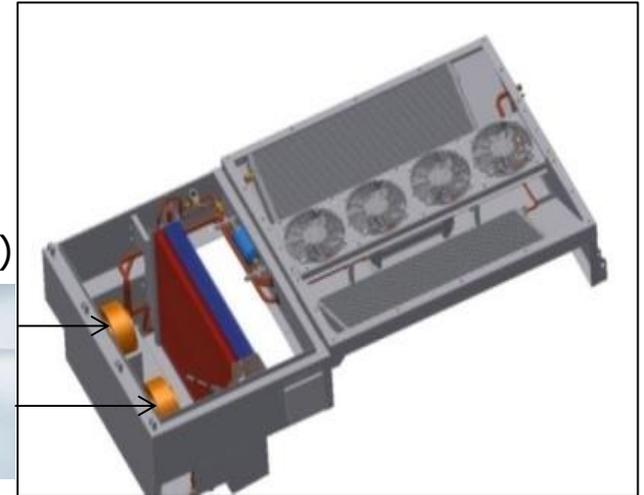
MCC Eco Xcel for New Flyer Xcelior

Results:

- Interior noise at driver area **reduced by 2.5db** versus competition
- System power draw **reduced by 24 amps** versus competition
- Performance results **exceeded** target Houston Pull down tests
- Target pull down achieved in **28.5 minutes** versus 30 minute specification
- Test weight of MCC system is **90-120 lbs lighter** than competitive replacement unit.



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Electric Platforms – Rear Mount – Field Results



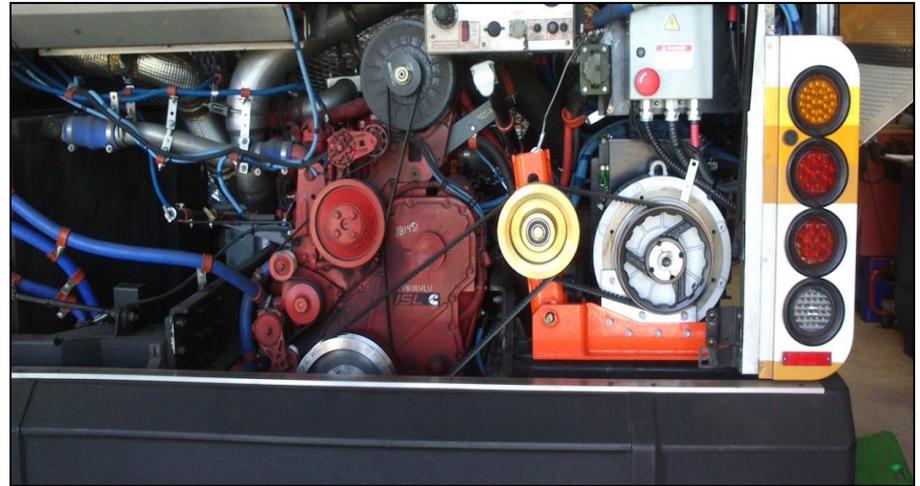
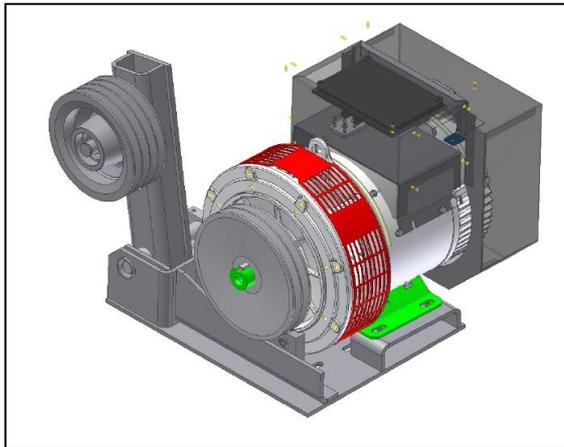
Electric Rear mount system developed to support new requirements for Electric powered AC systems. Design and field trial completed.

- Optimized to work with the more desirable refrigerant R134a
- In service for over 12 months at OTS in Honolulu
- Over 40,000 miles driven – full duty
- **6% fuel savings** at last report when compared to fleet average (i.e. weight and performance adv.)
- **No component failures**
- Data collection via cell enabled MCC fleet tracker system
- R134a system with single semi-hermetic compressor (vs two scroll compressors)

MCC Alternator Drive

Features/Advantages:

- High Output at Idle
- Electronically governed
- Air cooled – low weight
- Easy to align and tension belts
- For Alternators **and** Compressors
- Patent Pending





Mobile Climate Control

www.mcc-hvac.com