



Business Case for
Natural Refrigerants

June 12-14, 2018 – Long Beach



**R290 COMPRESSOR RANGE FOR SMALL LIGHT COMMERCIAL
APPLICATIONS**

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THE GROUP

HUAYI COMPRESSOR CO. LTD

First compressor manufacturer in the world. The company is held by Sichuan Changhong Electric Co. Ltd and operates in the household and commercial refrigeration sectors with its three trademarks:



Sales volume 2017 **45 Million** compressors



7,200 employees



7 factories worldwide
772.000 m²



More than
400 R&D Engineers



R&D investments
> 3% net sales

FAMILY OF COMPRESSORS FOR LIGHT COMMERCIAL REFRIGERATION



SMALL L

B

U

L

P

X

S

DISPLACEMENT:

2,2cc

38cc

COOLING CAPACITY:

102 Btu/h

21.495 Btu/h

ASHRAE conditions

CASE STUDY

The case study is based in demonstrating the benefits of using the an LMBP R290 compressor in a small deep freezer as replacement of the previous R134a compressor.

WHY PROPANE?



LOW ENERGY CONSUMPTION



NATURAL REFRIGERANT AND LOW GWP

IEC 60335-2-89 is expected to allow up to 500g. Final decision should be taken within 2018 and published in 2019.

GWP

R404A	3920
R22	1810
R134a	1430
R290	3



THE COMPRESSOR



MODEL	GL60AD	NBC30NR
REFRIGERANT	R134a	R290
DISPLACEMENT	5,98cc	3,10cc
EER	3,75 Btu/Wh	5,12 Btu/Wh
WEIGHT	20,90 lbs	12,80 lbs

ASHRAE32 conditions



Minimum
size



Maximum
**Effi.
ciency**



**green
cooling**

TEST RESULTS (COMMERCIAL DEEP FREEZER 100 LITERS)



green
cooling

30%
Energy Saving

50%
Less
Refrigerant

ENERGY CONSUMPTION	1,212 kWh/24h	0,848 kWh/24h
REFRIGERANT CHARGE	90 gr of R134a	45 gr of R290
CAPILLARY TUBE LENGTH	0,03 in x 7,55 ft	0,03 in x 16,05 ft



APPLICATION TECHNICAL DETAILS

Ambient temperature / RH	86°F / 55%
Average internal temperature	-13°F
Standard	IEC 62552

CONCLUSIONS AND ADVANTAGES OF R290

	HFC's	R290
Flamability Class	A1	A3
Environment Impact	High	Low
Displacement	Reference	Lower
System Efficiency	Reference	Higher
Charge limitation	No	150 gr

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EPA SNAP Approved:
Global refrigerant solution

Best environment
friendly alternative:
excellent GWP

Million units running in
Europe with R290

Up to 30%
energy savings

Depends on the system



ATMO sphere

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Thank you very much!

