

Transforming HFC to Future Green Technology Food Service Applications

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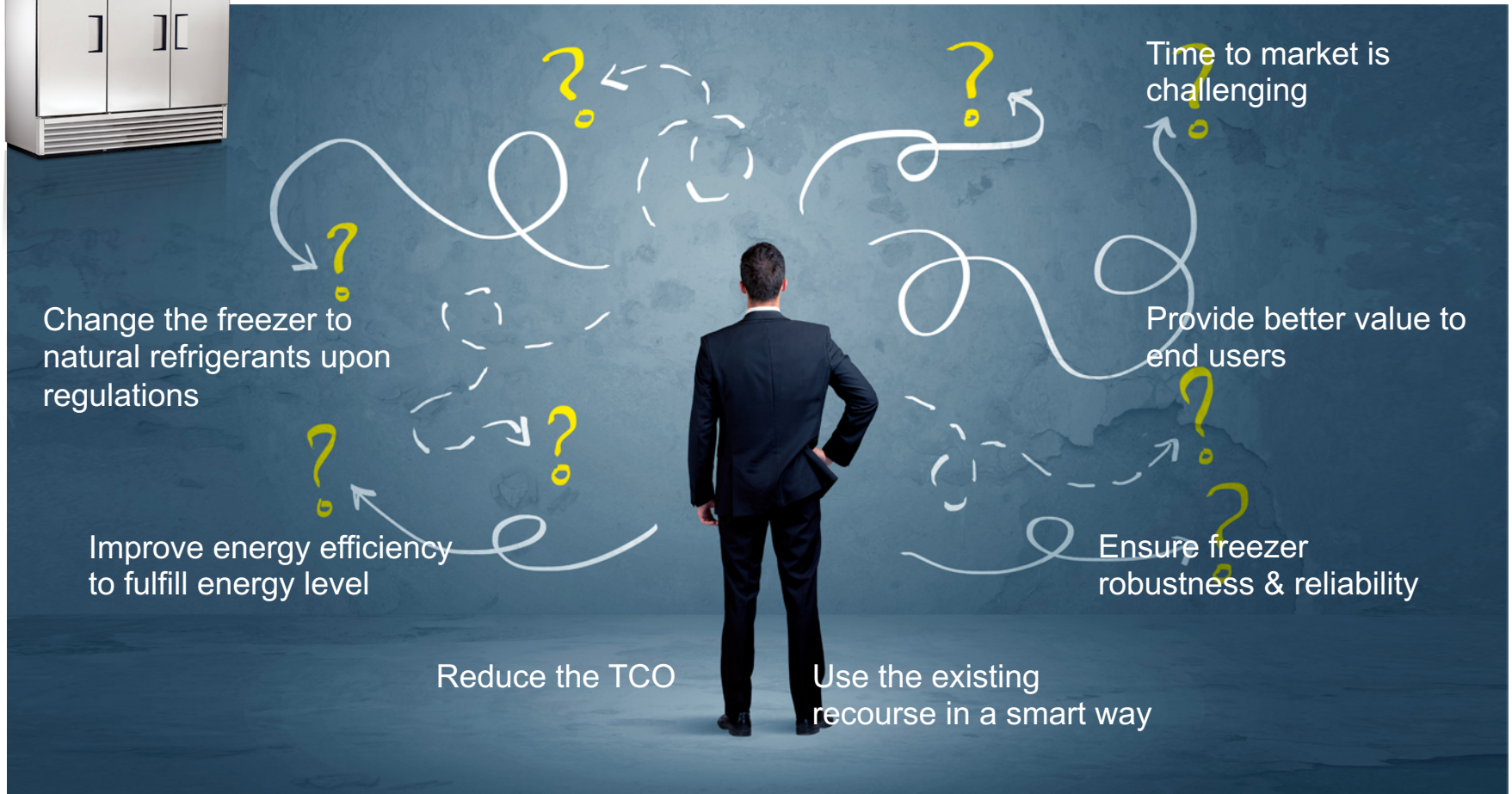
SETTING THE STANDARD



Agenda

- HFC Transforming is a must
- R404A to R290
- Fixed speed to Variable speed
- Optimized approach
- Company briefing

Various Drivers Push the Changes





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R404A to R290

Baseline



Kitchen Commercial Freezer

- Volume: 1270 liters
- Temperature: -18°C to -22°C
- Auto defrost
- Stand alone or combined island configuration
- 22Kg R404A compressor

1

New compressor

Selected from data simulation

- 14kg Green compressor for R290
- Low GWP
- Future-Proof: reduced costs with natural refrigerant and regulation compliance
- Energy savings: high efficiency concept

2

Definition & optimization

- Refrigerant charge
- Expansion device
- Heat exchangers

3

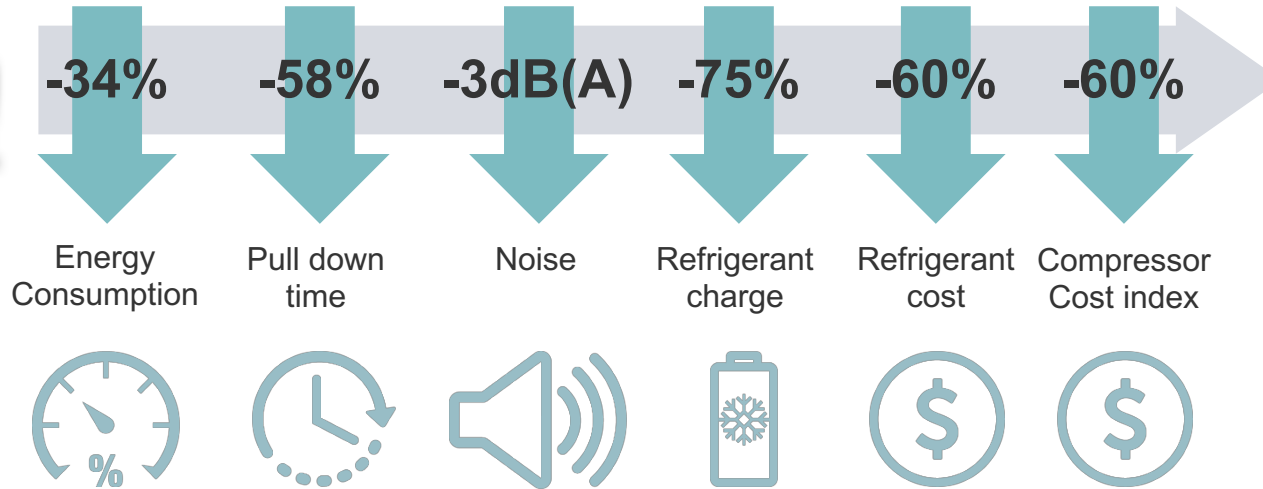
Components replacement

- Non-spark and HC proof fans, lights, switches, etc.

Benefits

R404A
Std. efficiency
compressor

R290
High efficiency
compressor





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R290 to R290 V-Speed

Baseline



Kitchen Commercial Freezer

- Volume: 1270 liters
- Temperature: -18°C to -22°C
- Auto defrost
- Stand alone or combined island configuration
- R290 fixed speed compressor

1

New compressor

Selected from data simulation

- Variable speed drive
- TOP energy savings (energy efficiency)
- Green compressor R290
- Lower noise level
- Reliable & robust operation
- Operation in any region (multi-voltage input)

2

Fine-tuning

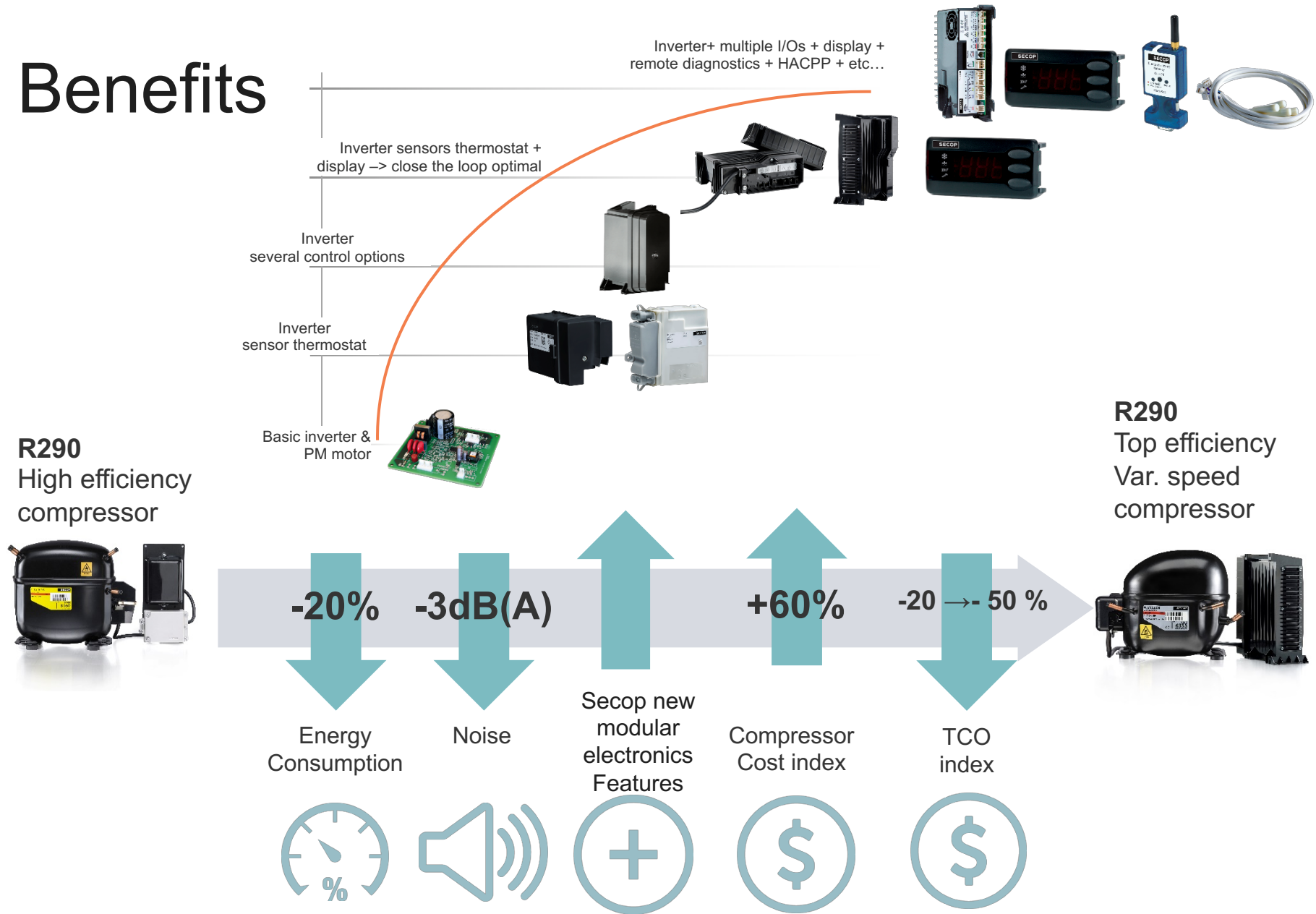
- Refrigerant charge
- Expansion device
- Heat exchangers

3

Components optimization

- Intelligent electronics controlling
- Higher efficiency AUX parts required

Benefits

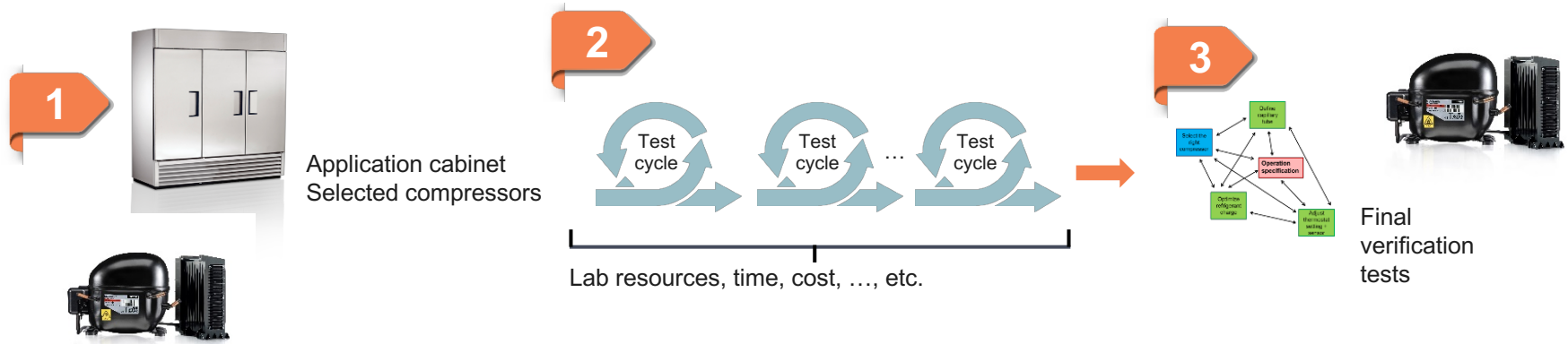




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Traditional Approach

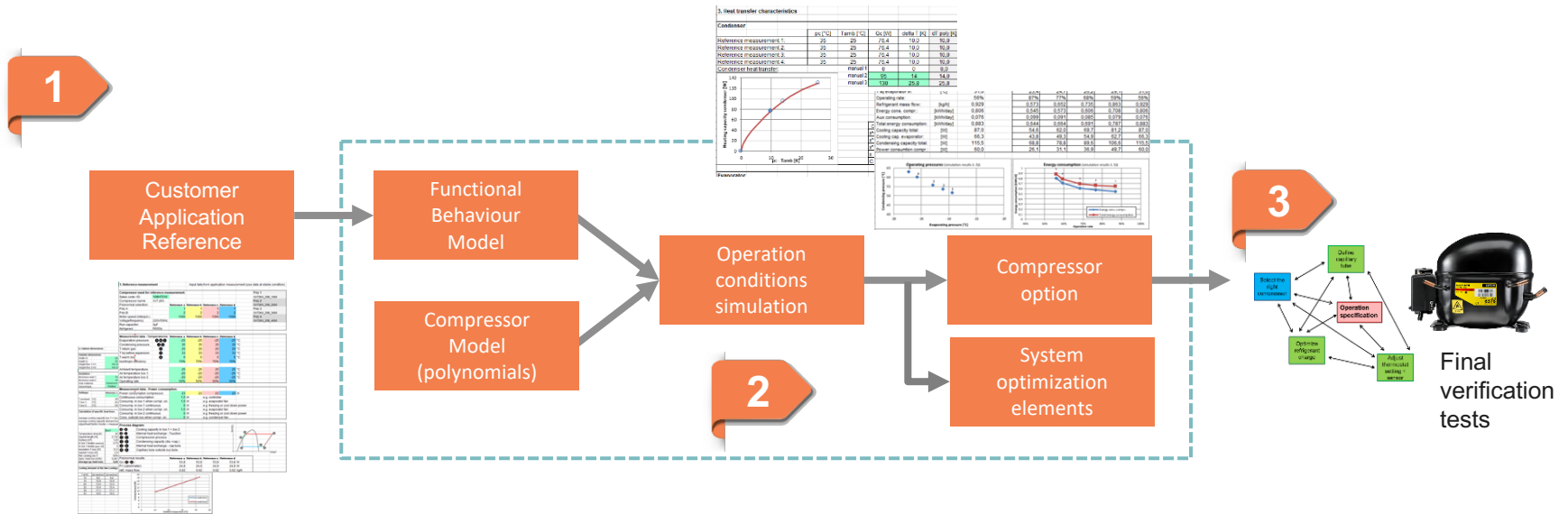


- 1 Select the testing compressors base on baseline cabinet
- 2 Repeat test cycles to define the best compromise compressor vs. system
- 3 Final verification tests

Many interactions in the labs to find the right compressor vs. system compromise – big amount of time + resources

Optimised Approach

Simulation + Lab = Time + Cost Efficiency



- 1** Select the testing compressors base on baseline cabinet
- 2** Repeat test cycles to define the best fit compressor vs. system
- 3** Final verification tests

High accuracy data simulation with hundreds of proven records
 Fulfill different customer requirements (i.e. different energy ratings) +>75% reduced test cycles



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Secop Group



Household
Mid- and high-end household refrigerators



Light Commercial
Food, beverage and medical equipment industry



Battery Driven
Mobile, medical, telecom and solar equipment industry

- ❖ Most customer-centric player
- ❖ Best-in-class service provider
- ❖ Indisputable technology leader



1956-2019 – more than 60 years of experience

SECOP

SECOP

Natural Refrigerants
16.07.2019 - Witten

Natural Refrigerants Product Portfolio

Well balanced and world-leading innovative portfolio,
Covering the full range of household, light commercial and mobile cooling markets

VSD



FSD



Low

Cooling Capacity

High

The logo for SECOP features the word "SECOP" in white, bold, sans-serif capital letters. The text is centered within a dark navy blue rectangular box. This box is positioned on top of a larger, bright yellow rectangular shape that extends further to the left and downwards, creating a stepped effect.

SECOP