

EURAMMON STUDENT'S DAY 2025

14. April 2025, Hochschule Karlsruhe

Hochschule Karlsruhe
University of
Applied Sciences

TIKA

eurammon
Refrigerants, naturally!

Efficiency and Availability with NH3 Compressor Packs

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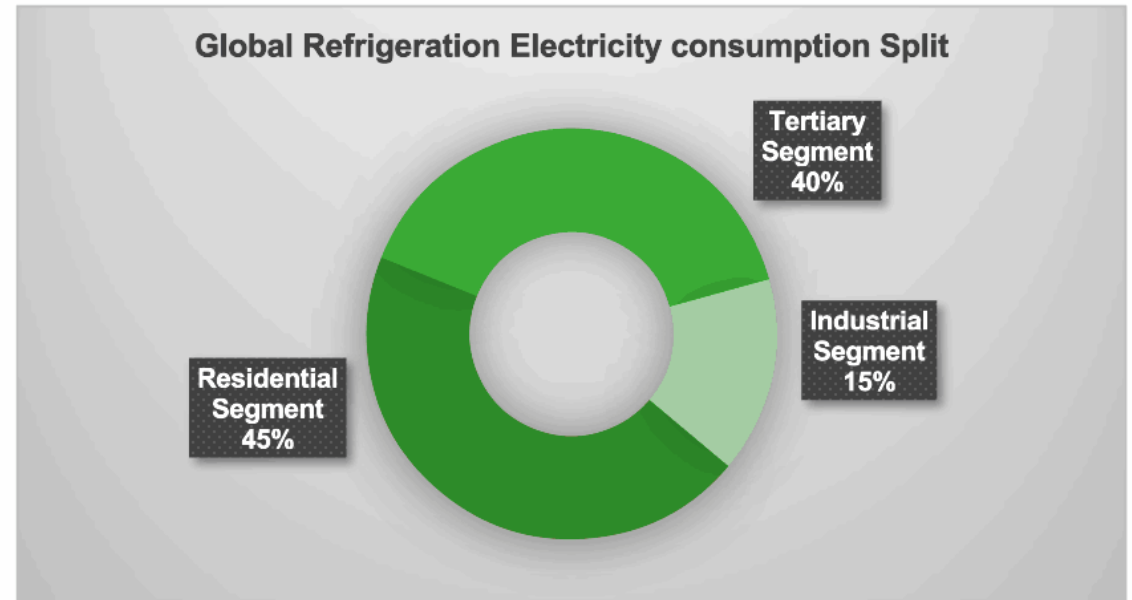
GLOBAL FACTS & PROJECTIONS



RAC accounts for ~17% of global electricity consumption



Global food production set to double by year 2050



Need for Refrigeration & A/C to grow multi fold



Electricity consumption by RAC systems will increase by factor of 3 to 5 in next decades

Source: IIR

EFFICIENCY 24/7

Full Load Process



Petrochemical

Semi-Full Load Process



Frozen Food Processing



Brewery



Dairy

Part Load Process



Leisure



Cold storage

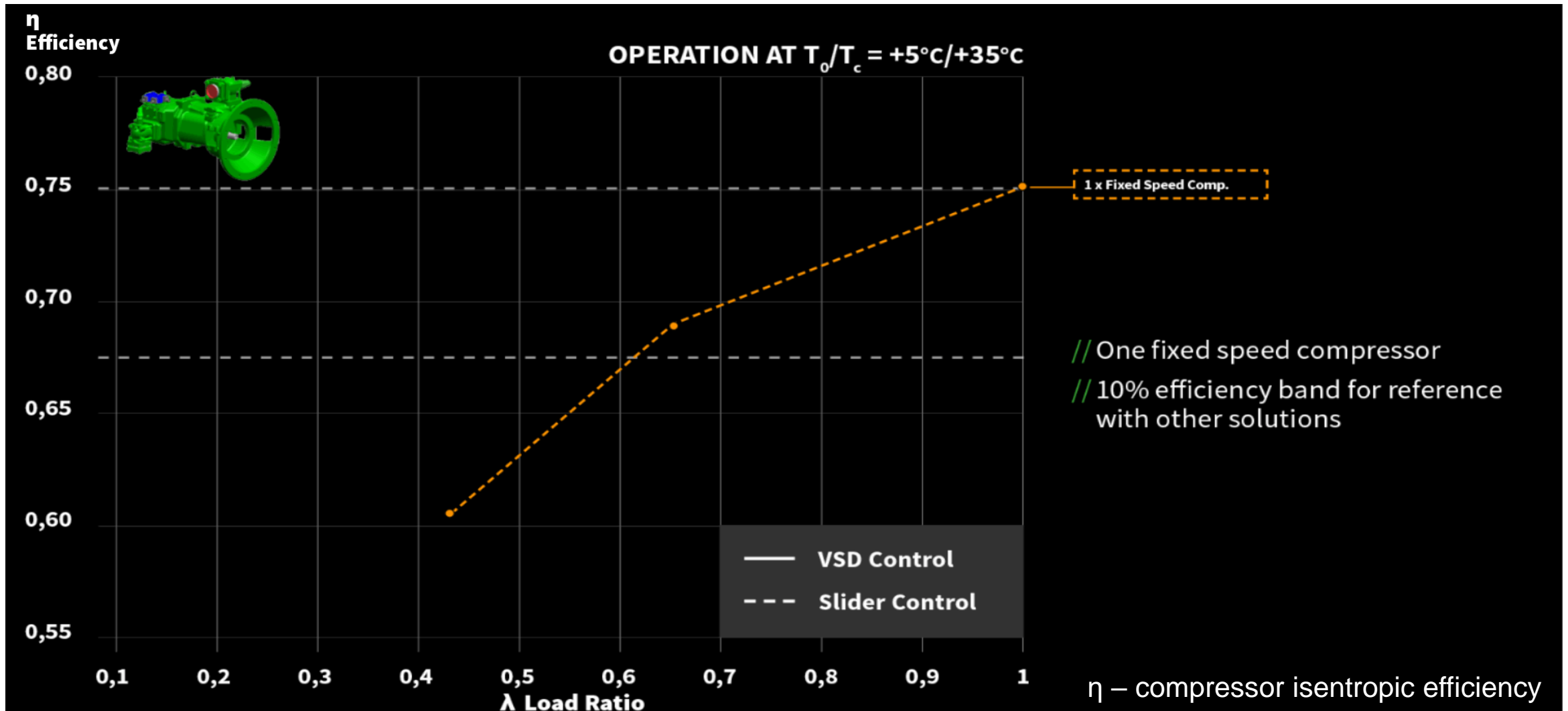


AC

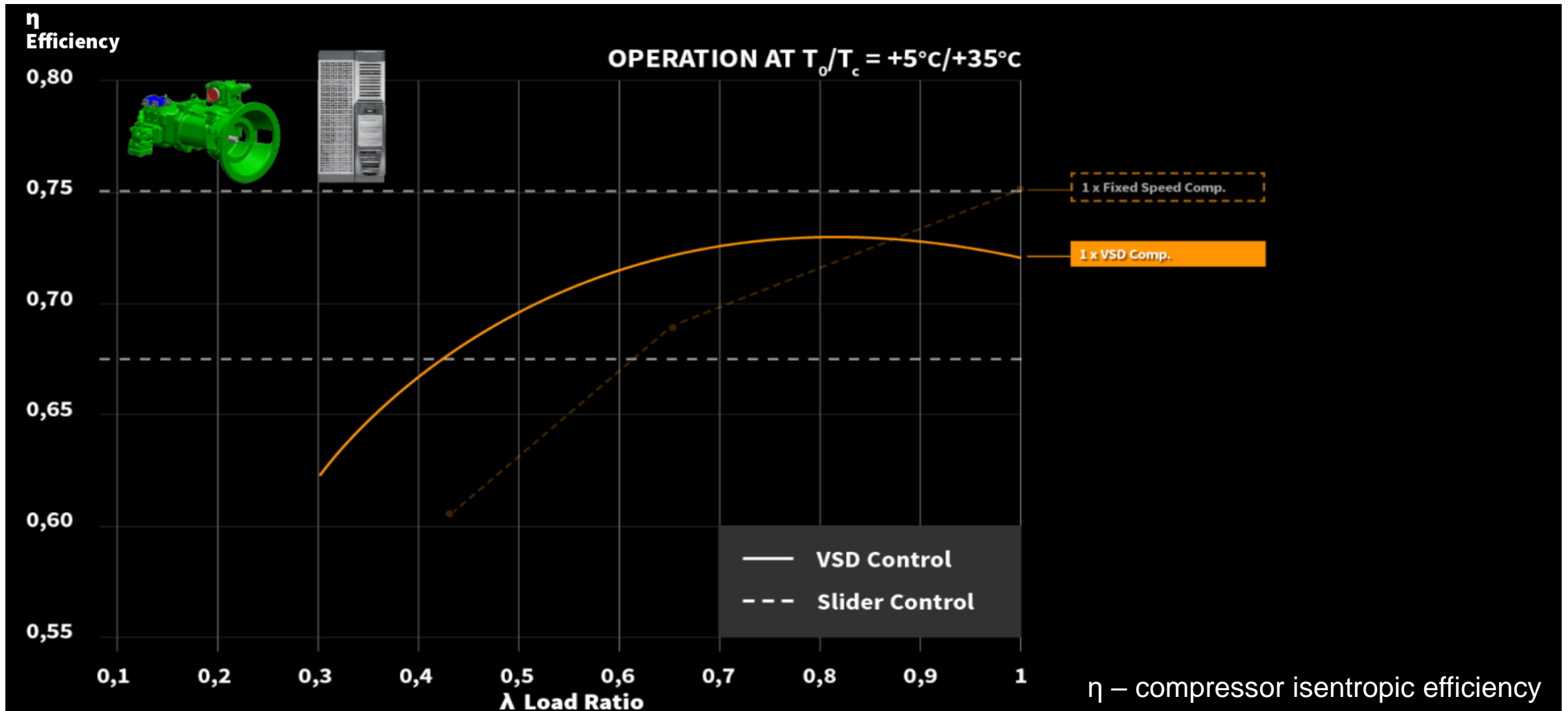
Part Load Efficiency needs to be as good as Full Load Efficiency in all applications

Variations in process load and ambient conditions drive the need for higher part load efficiency

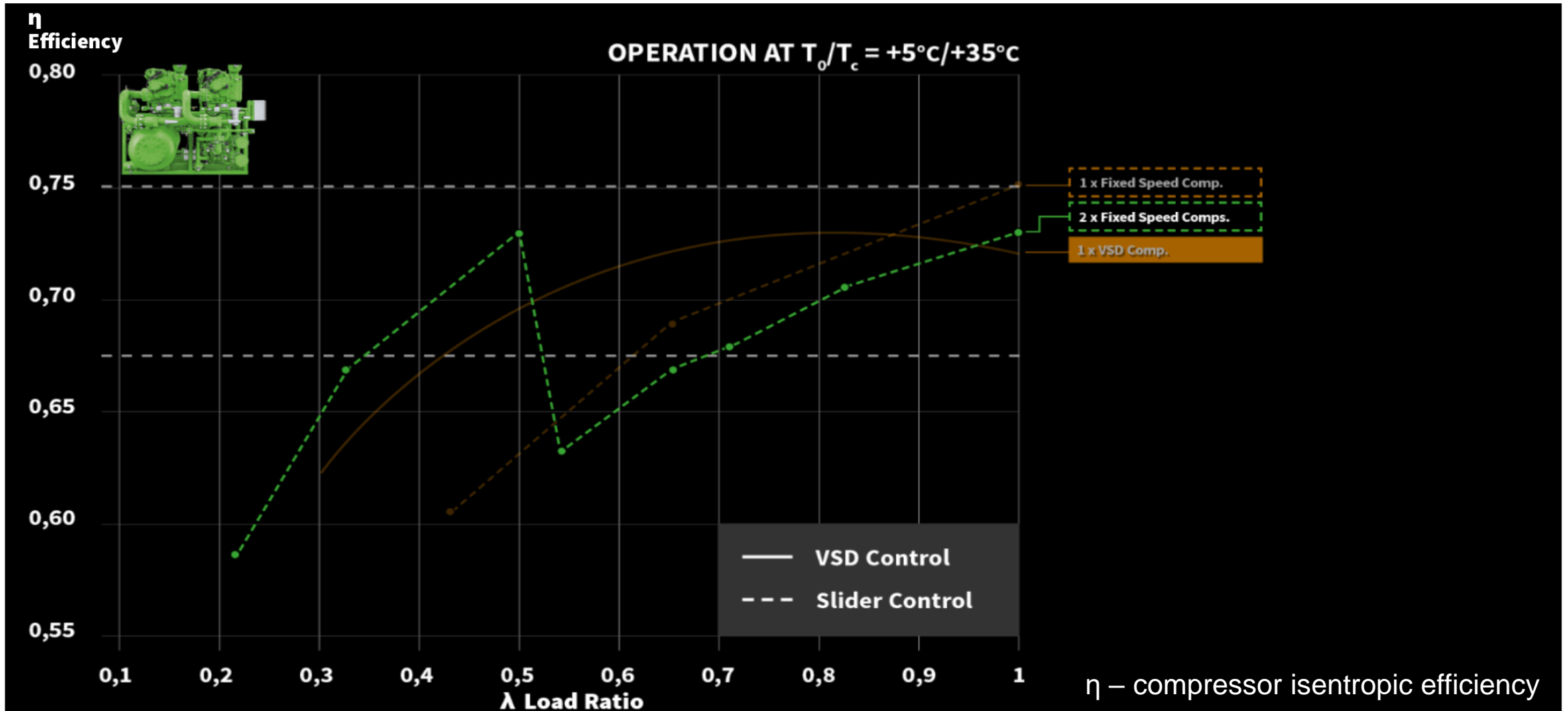
PART LOAD EFFICIENCY – 1 OR 2 COMPRESSORS



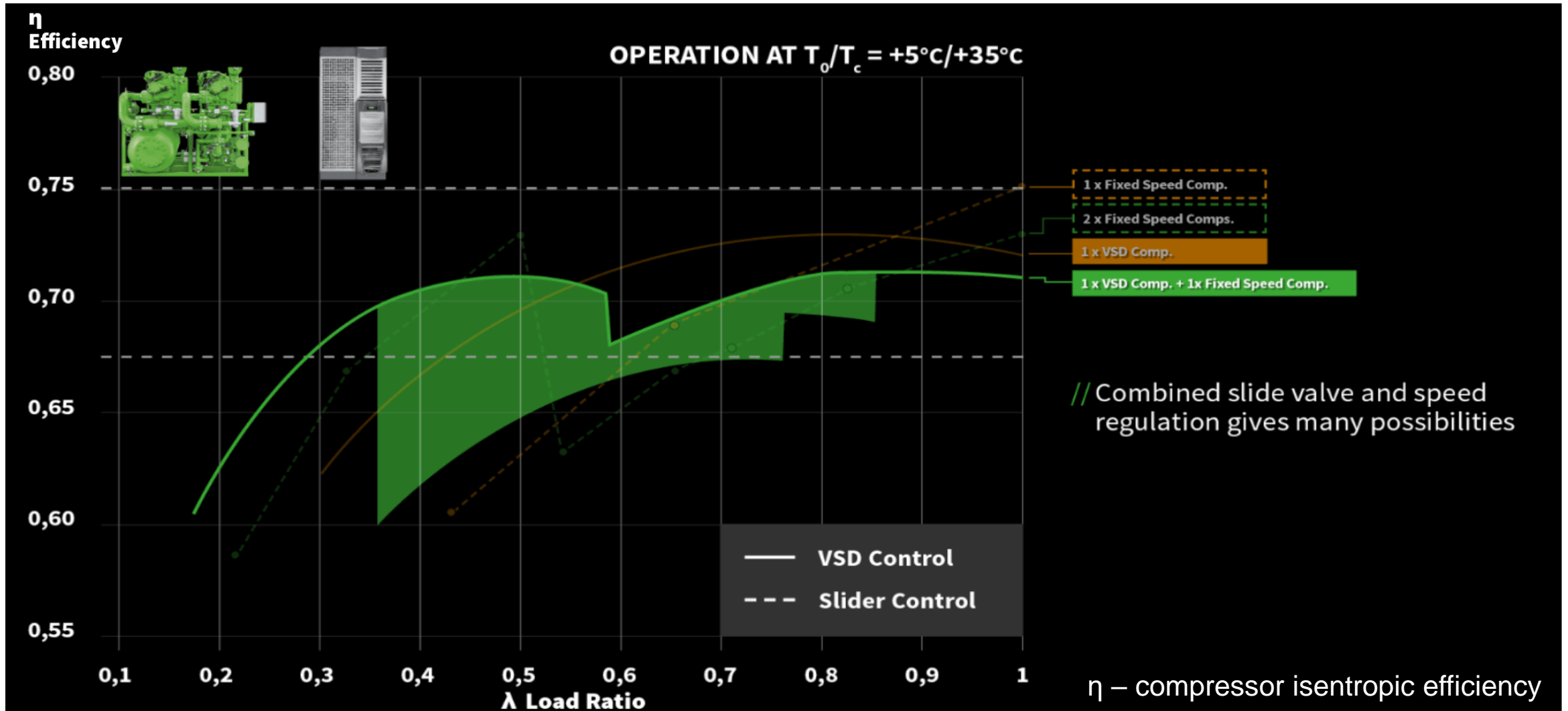
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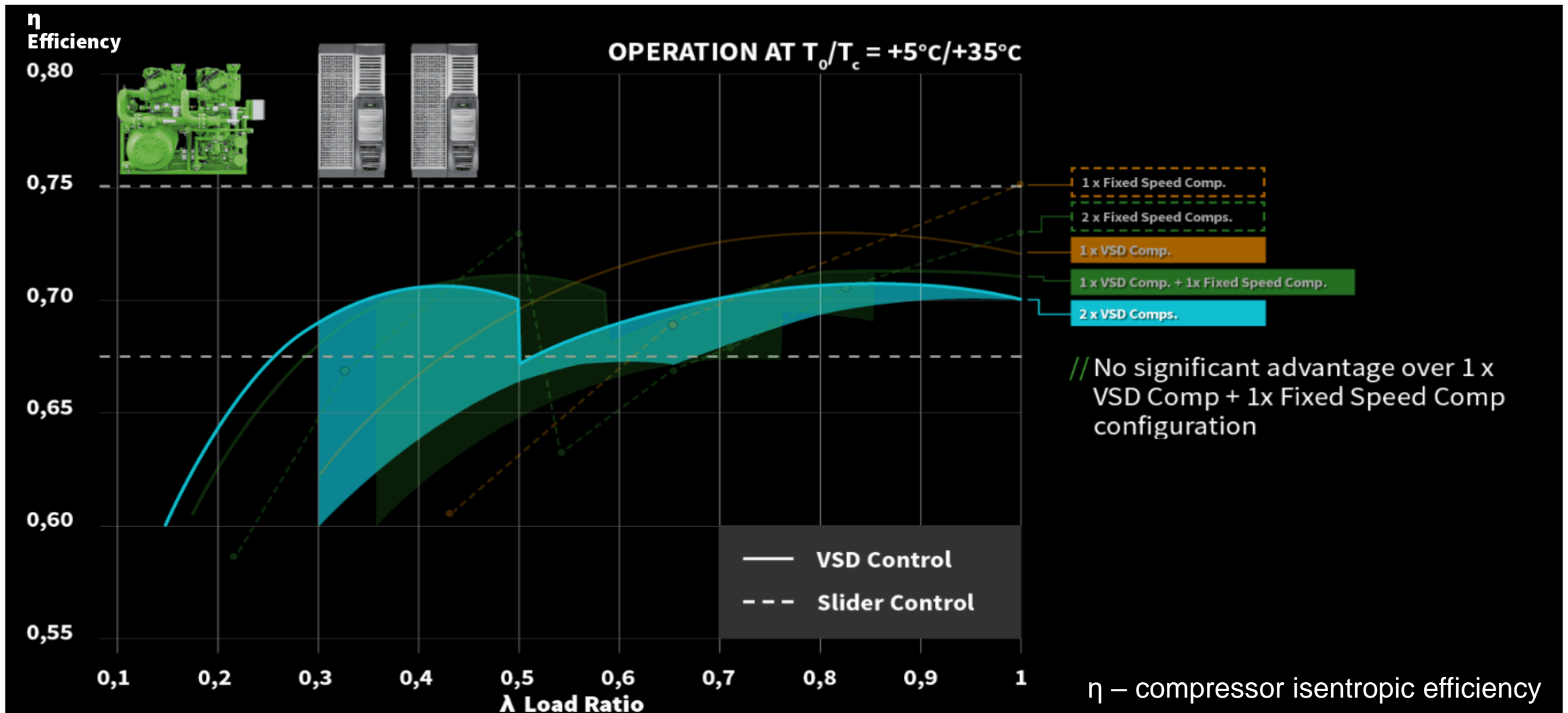
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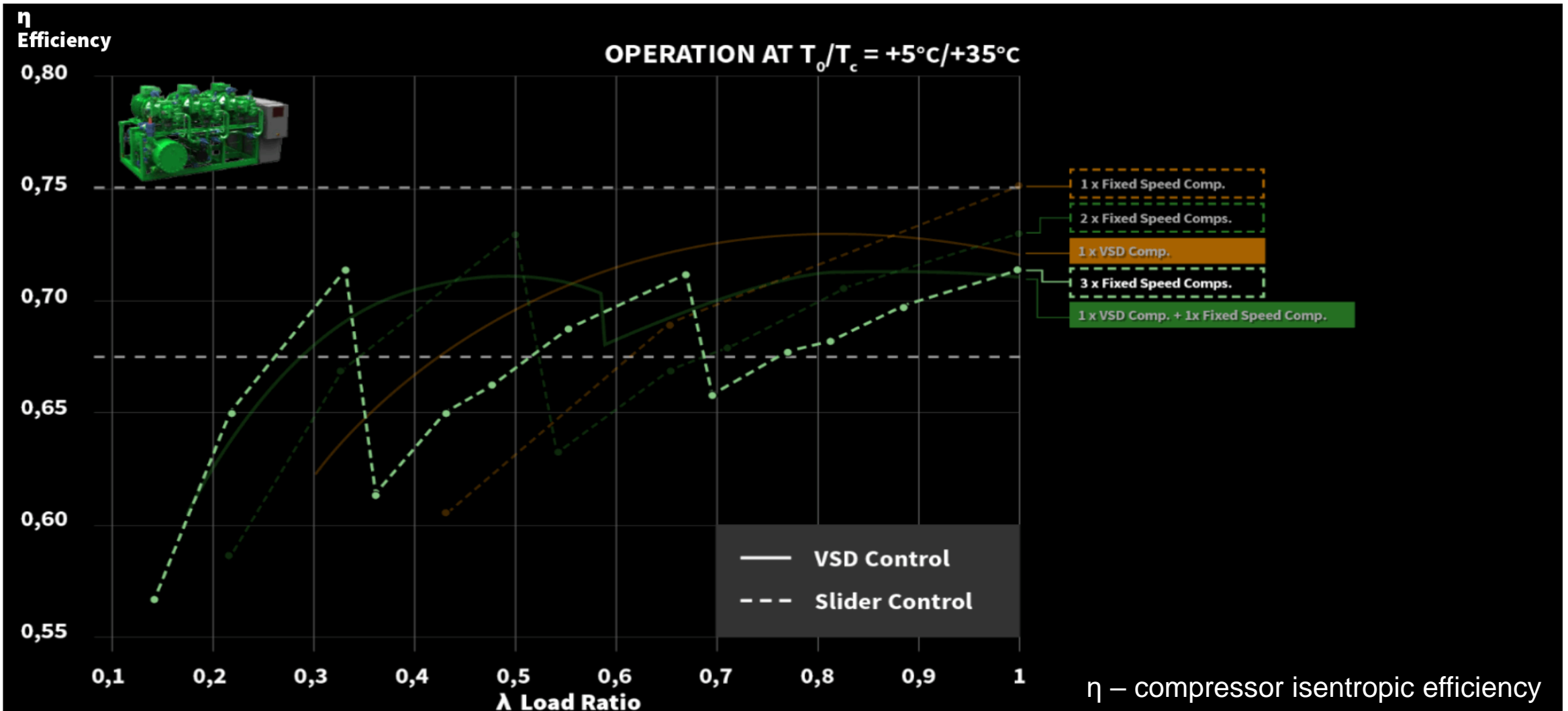
PART LOAD EFFICIENCY – 1 OR 2 COMPRESSORS



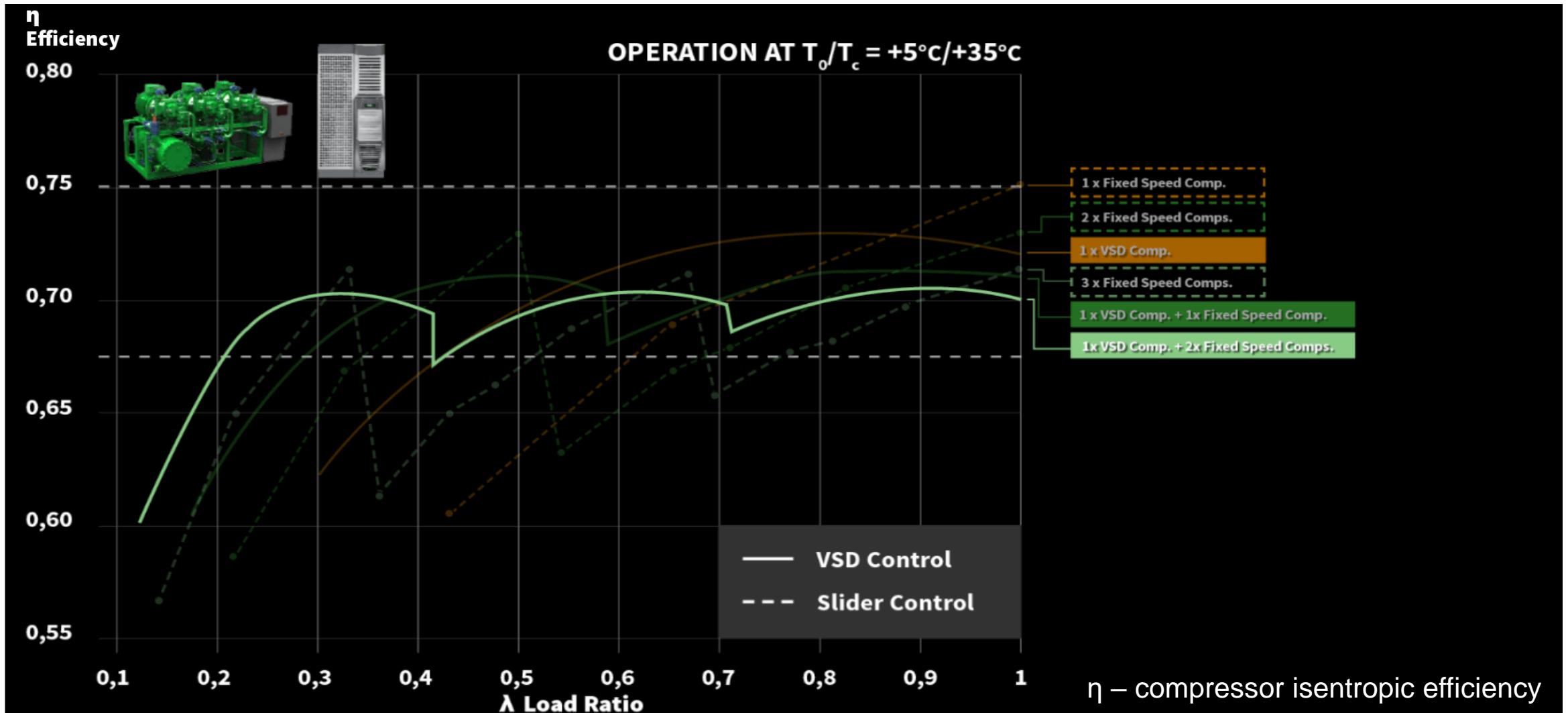
PART LOAD EFFICIENCY – 1 OR 2 COMPRESSORS



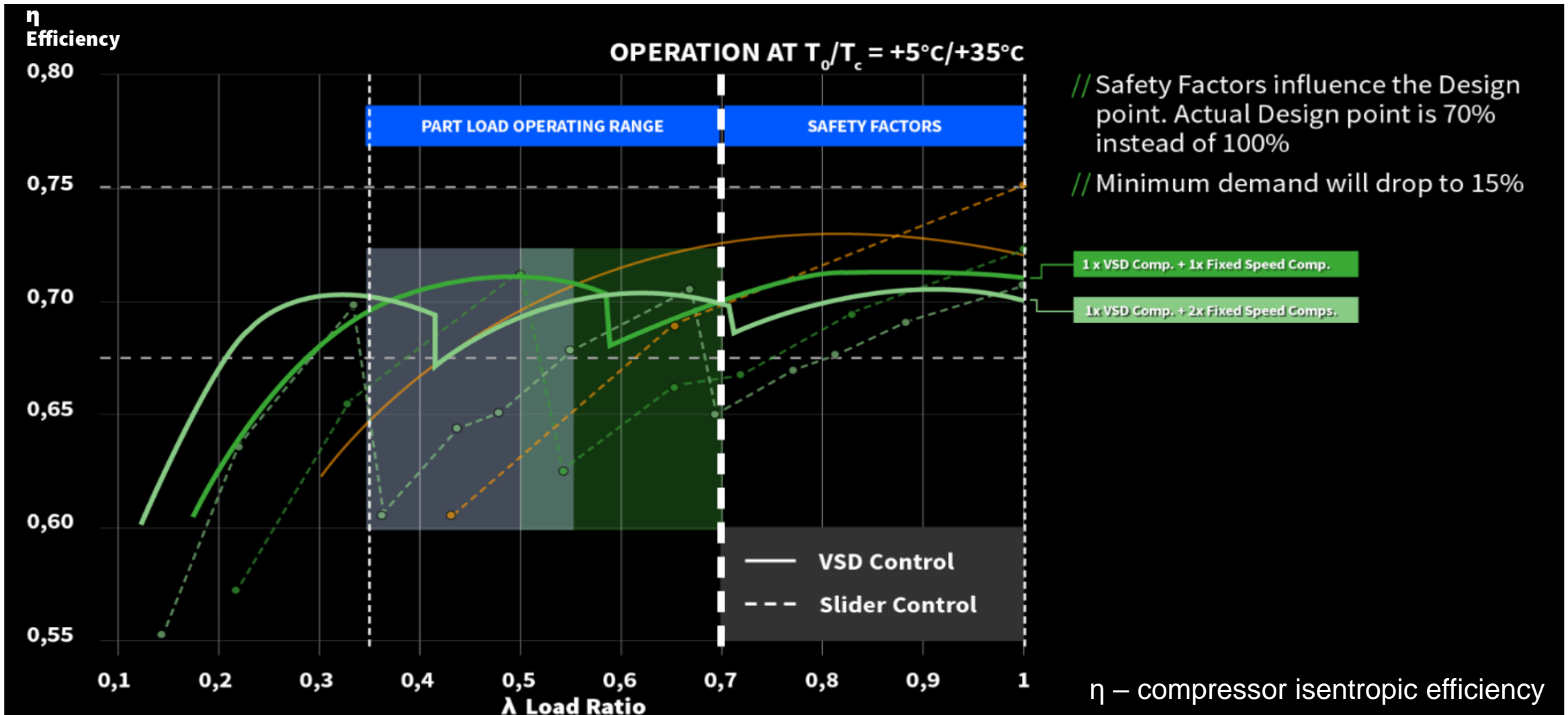
PART LOAD EFFICIENCY – 2 OR 3 COMPRESSORS



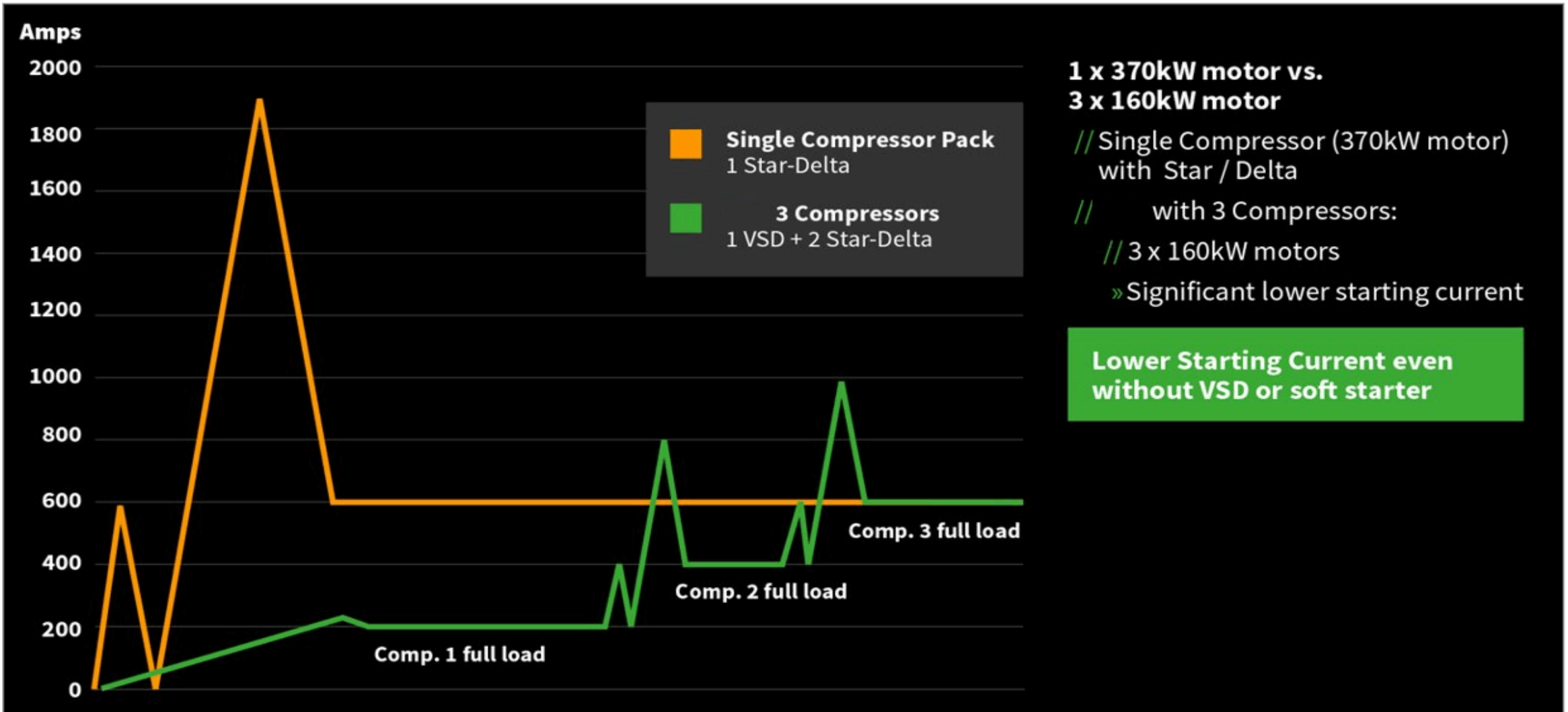
PART LOAD EFFICIENCY – 2 OR 3 COMPRESSORS



EFFECT ON OPERATION



LOWER STARTING CURRENT

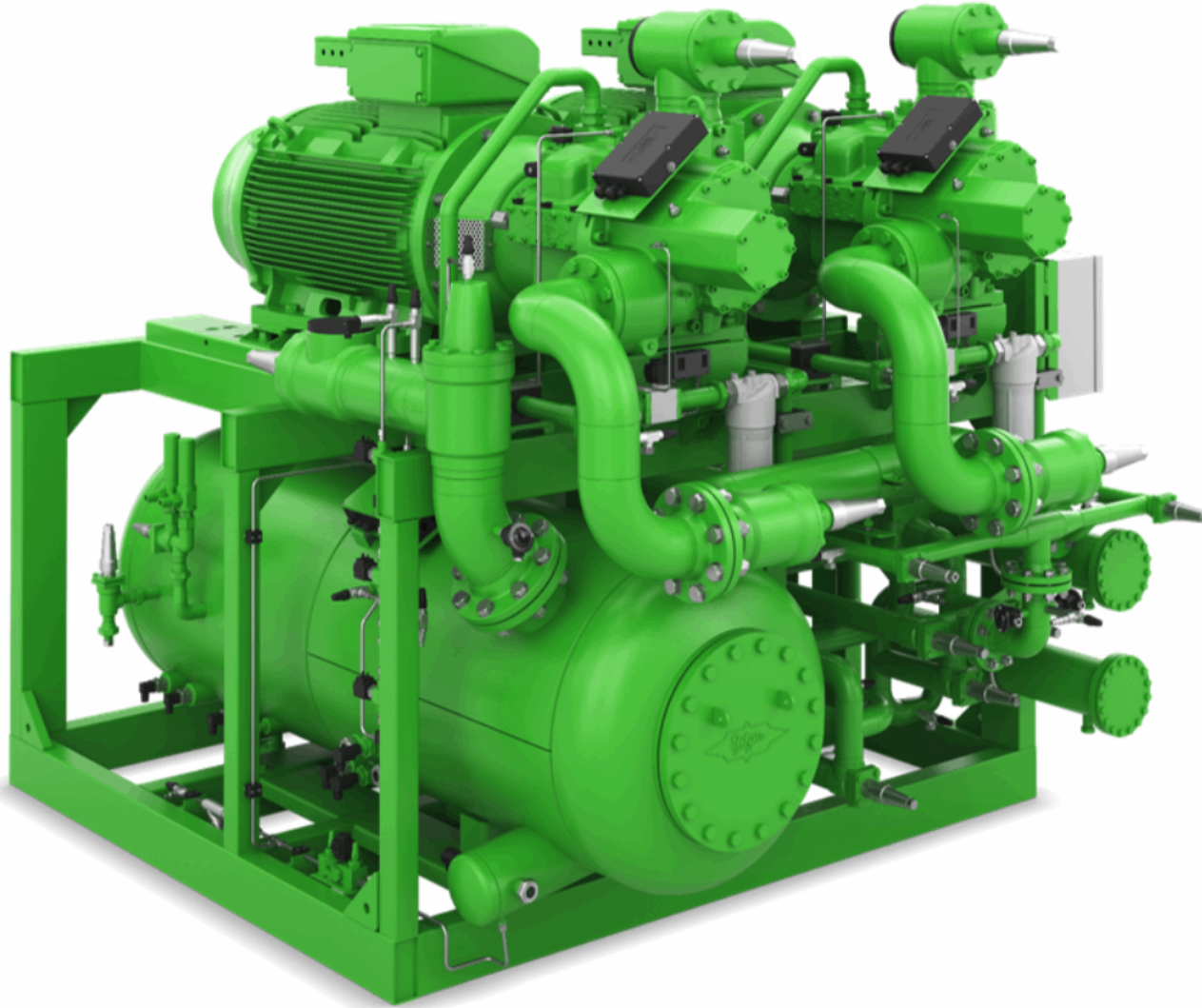


POSSIBLE SOLUTION: BITZER AMMONIA COMPRESSOR PACK (ACP)

Open type
compressor OS.A
85 or 95 series with
flanged IE3/IE4
motors

Rigid box profile
frame
All discharge, oil
and control pipes
incl.

Oil separator OAHC
series



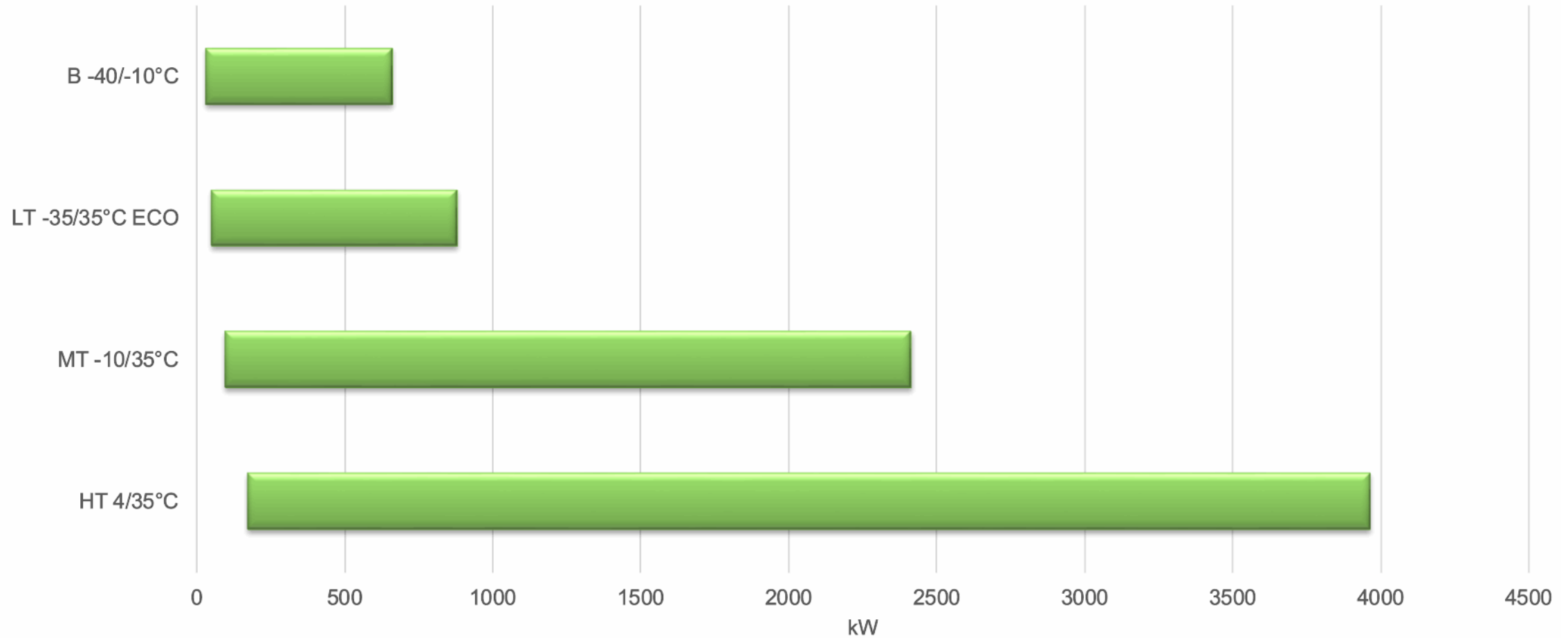
IQ Technology on
compressors and oil
separator prewired
& tested

ACP LINK for
optimum efficient
operation and
application envelope
surveillance

Oil cooler and oil
mangement system

ACP CAPACITY RANGE IN KW

Cooling Capacity @ 50Hz



OS.A105 - A NEW GENERATION OF BITZER AMMONIA SCREW COMPRESSORS



// Natural Refrigerant

- NH₃ // R717
- Applicable to *Low Charge NH₃* systems

// Higher Cooling Capacity

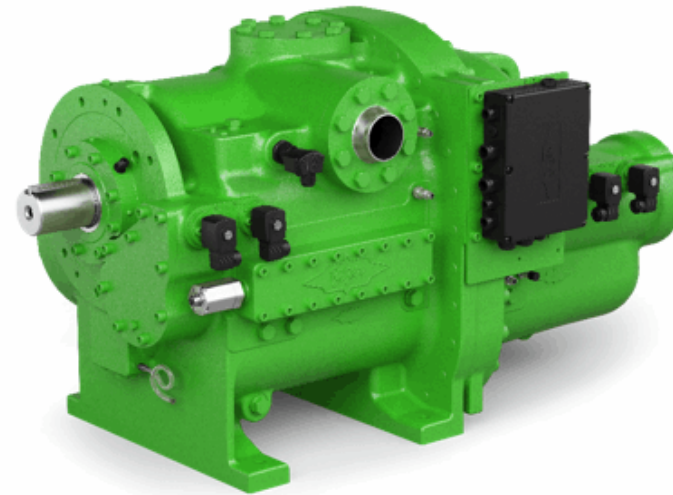
- up to 8.000 kW in A/C application with 3 compressors

// A new level of Full- and Part-Load Efficiency

- combined Vi + CR Slider Technology
- optimized for VSD operation

// Easy to use

- On-board IQ Module
- Easy Datalog and Communication
 - BEST
 - Modbus



INDUSTRIAL REFRIGERATION



INTELLIGENT PRODUCTS



NH₃



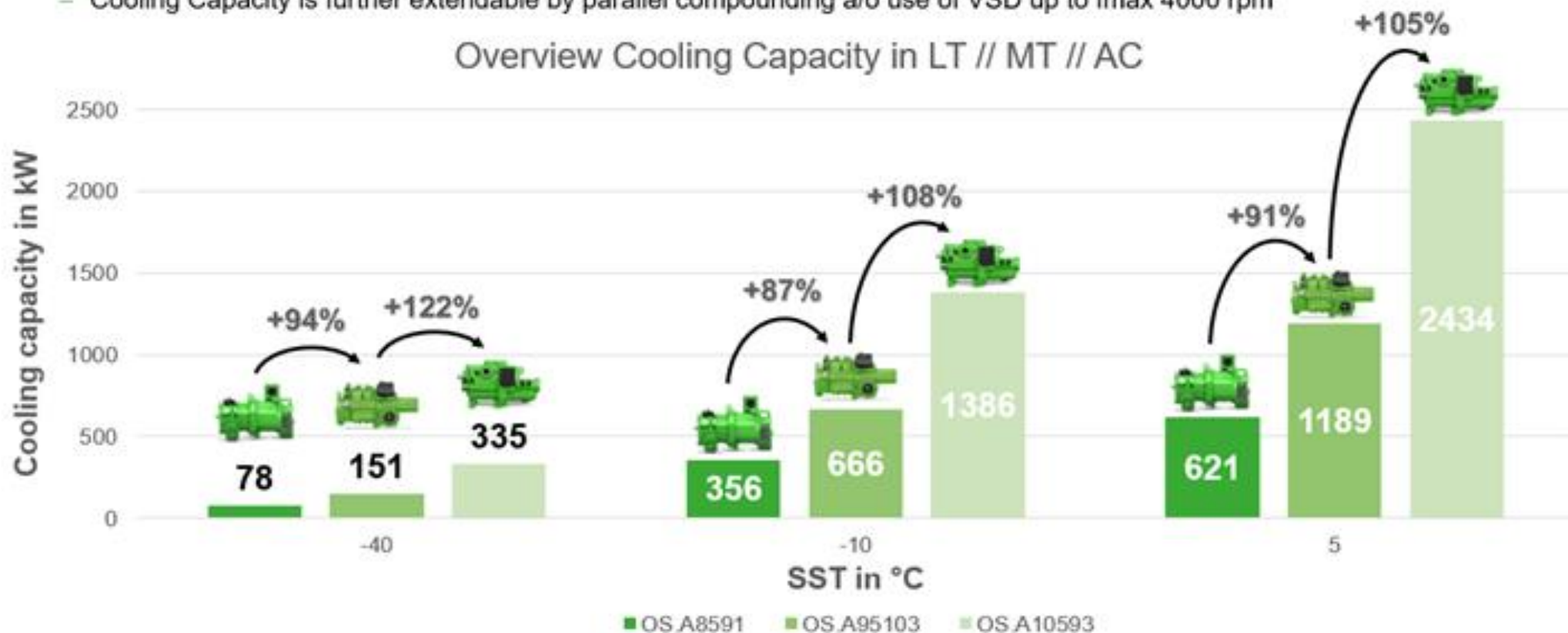
COOLING CAPACITY IN LT // MT // A/C



// Full-Load cooling capacity OS.A8591 vs. OS.A95103 vs. OS.A10593 @ 2900 rpm

- Cooling Capacity is further extendable by parallel compounding a/o use of VSD up to fmax 4000 rpm

Overview Cooling Capacity in LT // MT // AC



Conditions: SDT = 35°C / tsc=0K / toh=1K

Source: AS / A. Garbe / 08.04.2025
 Bitzer Software v7.0.4.11

COP - A NEW LEVEL OF EFFICIENCY



// Full-Load COP comparison OS.A8591 vs. OS.A95103 vs. OS.A10593 @ 2900 rpm

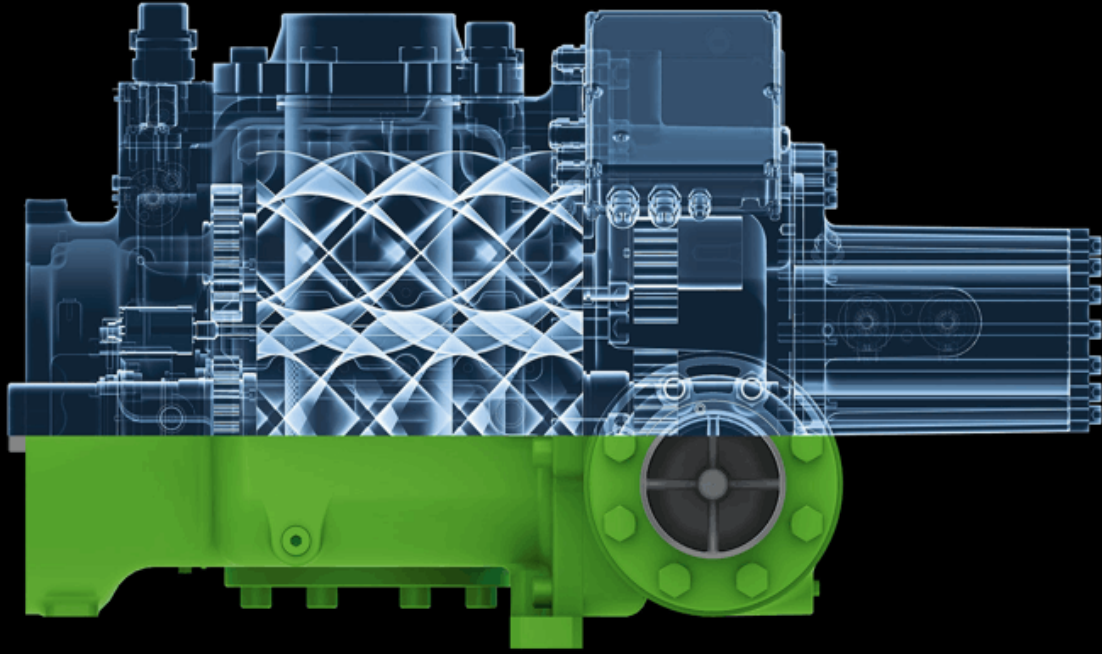
COP at LT // MT // AC without ECO



Conditions: SDT = 35°C / tsc=0K / toh=1K

Source: AS / Lothar Zwar / 06.10.2023

**ARE THERE ANY QUESTIONS?
COMMENTS, IDEAS OR INPUT?**





THANK YOU

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