

A photograph of a misty forest with tall, thin trees and a ground covered in fallen pine needles and some green ferns. The fog is thick, creating a soft, ethereal atmosphere.

Welcome

“If at first, an idea is not absurd, there is no hope for it.

- Albert Einstein

A novel concept based on Regenerative braking



N. Satheesh kumar

Dr. Michael Schier

Integrated **Traction** and A/C **Compressor** drive

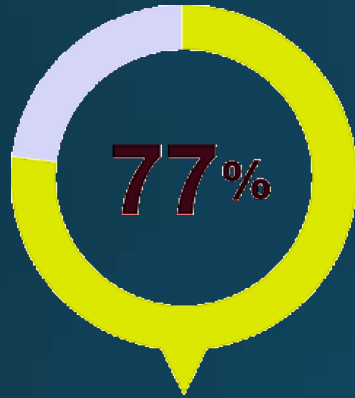


Introduction

Integrated **Traction** and A/C Compressor drive

| **Introduction** | Methodology | Design | Results | Conclusion |

Problem: Consumers are not buying EVs

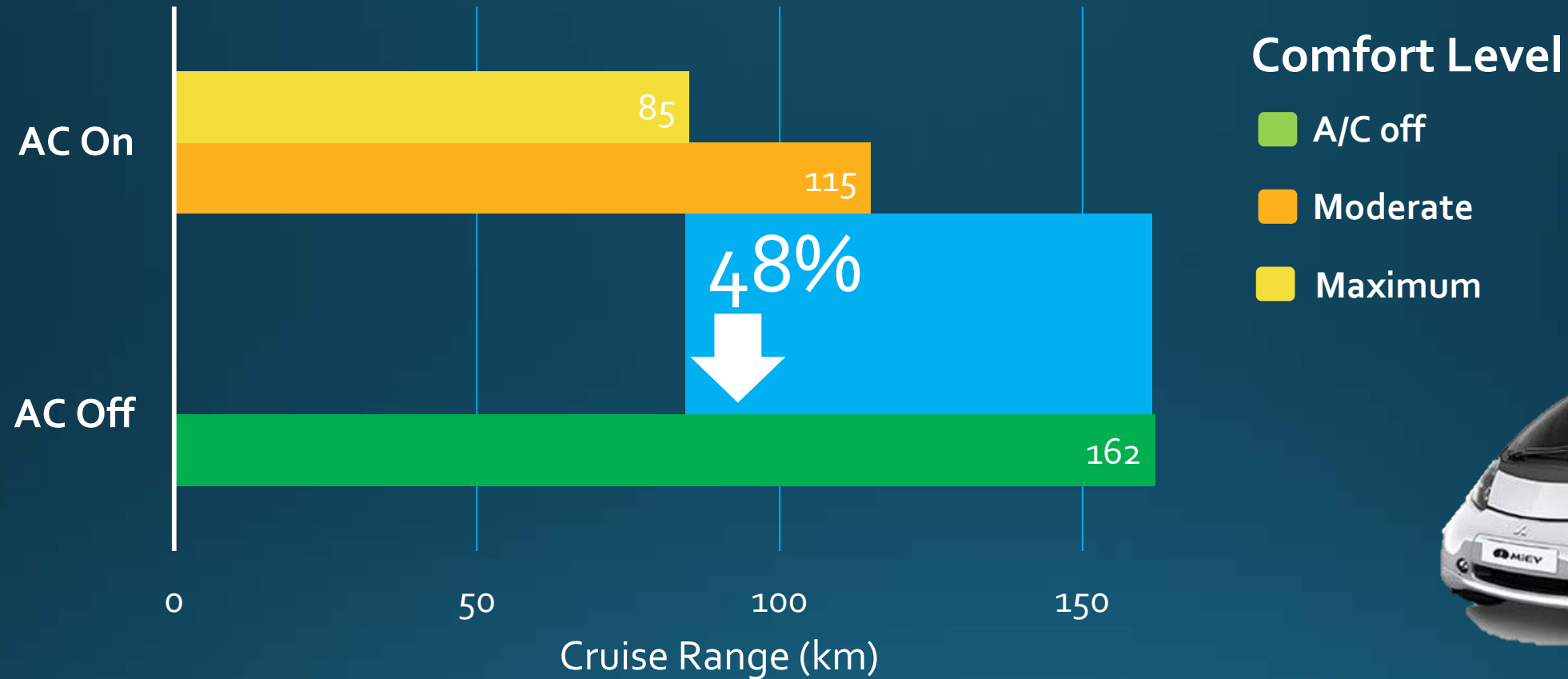


of responded cited poor
cruise range

Source: VroomVroomVroom

Integrated Traction and A/C Compressor drive

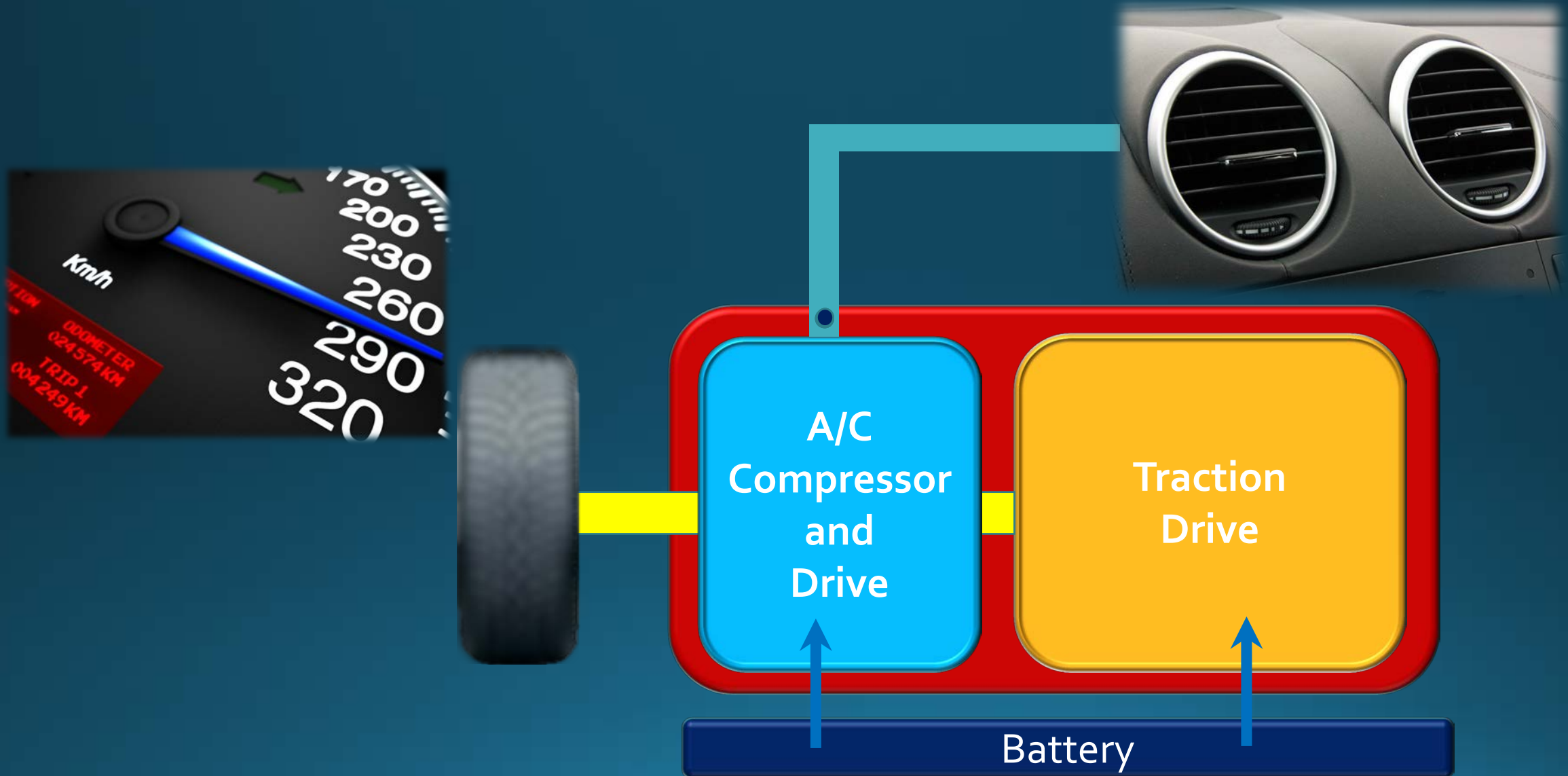
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Source: i-MiEV's cruise range performance (Mitsubishi Motors)

Integrated Traction and A/C Compressor drive

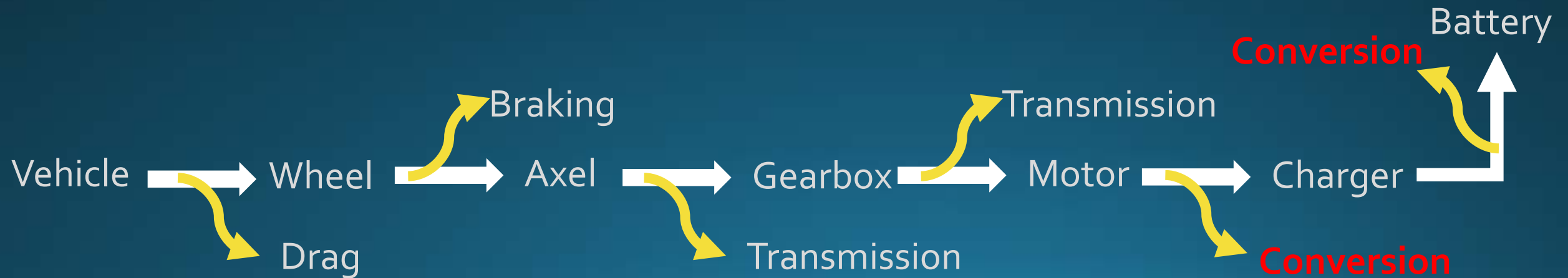
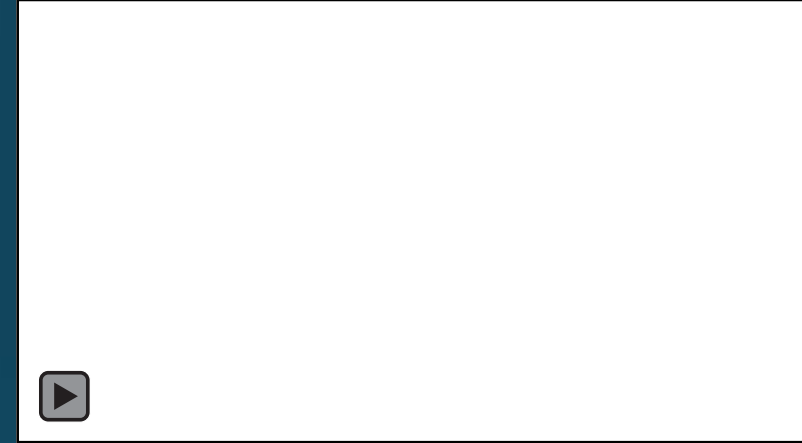
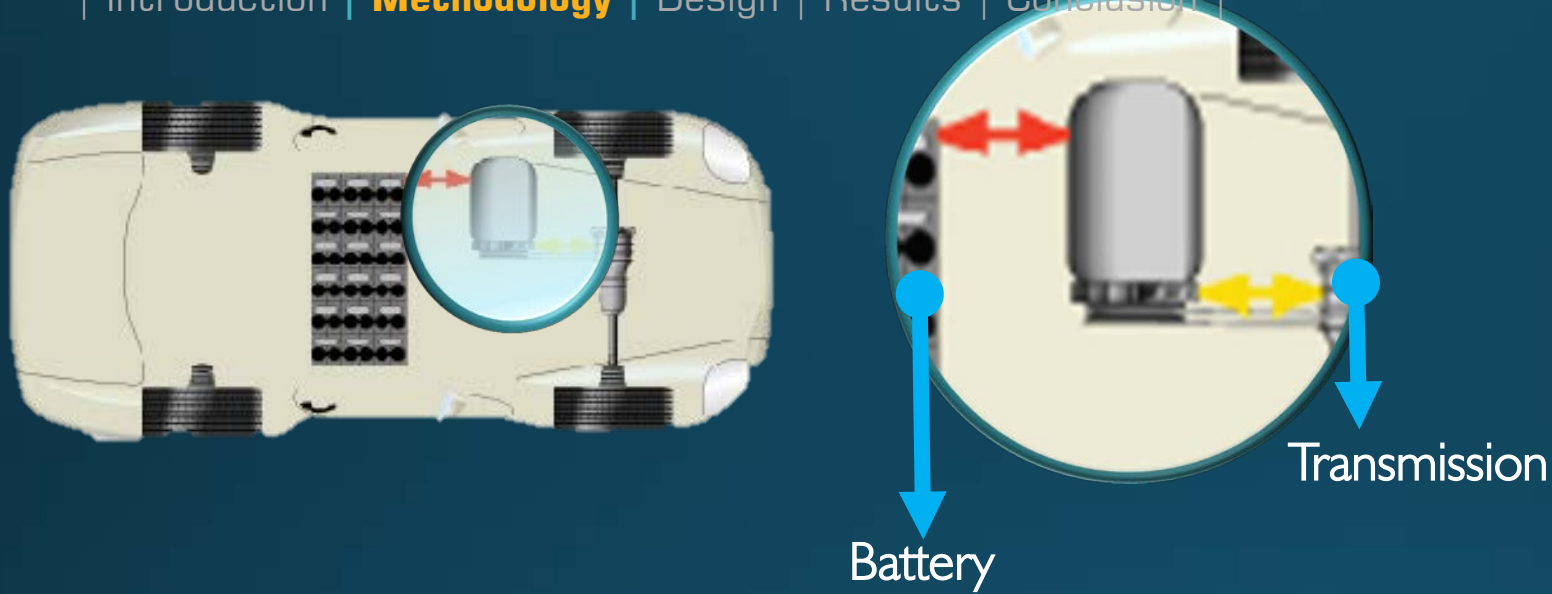
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Methodology

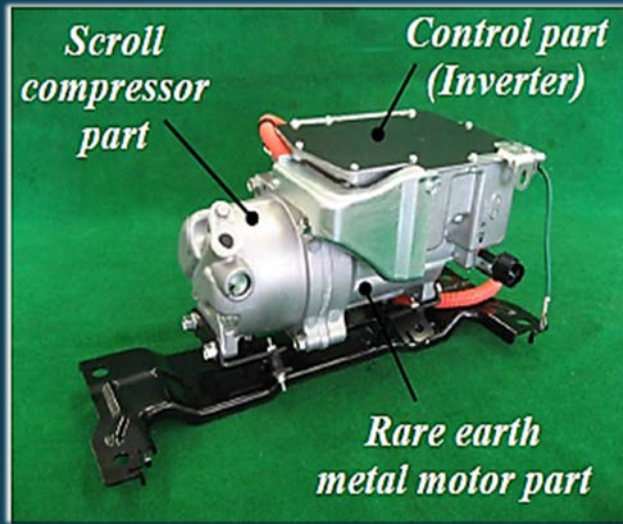
Integrated Traction and A/C Compressor drive

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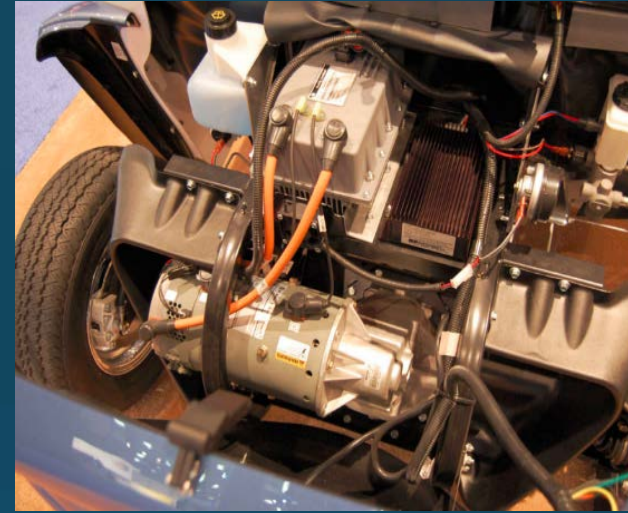
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A/C Compressor

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Drive Motor

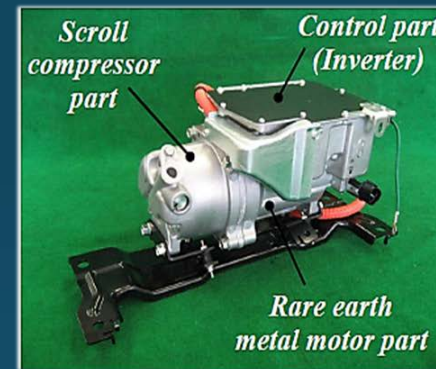
The setup allows the compressor motor to be deactivated during deceleration and the A/C to be driven by recovered **Kinetic Energy**

Integrated Traction and A/C Compressor drive

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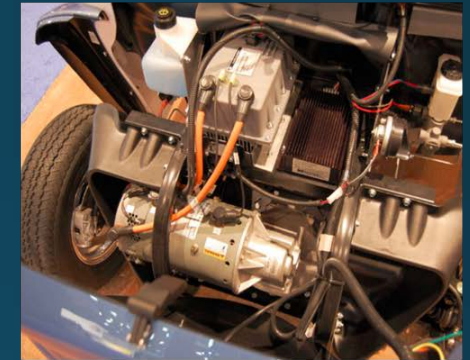
Other advantages of integration

- Elimination of separate cooling system for electronic control unit
- Shared speed control unit
- Elimination of external cables
- Single housing for compressor, drive unit and electronic unit
- Weight and space savings
- Reduced parts count and increased reliability



A/C Compressor

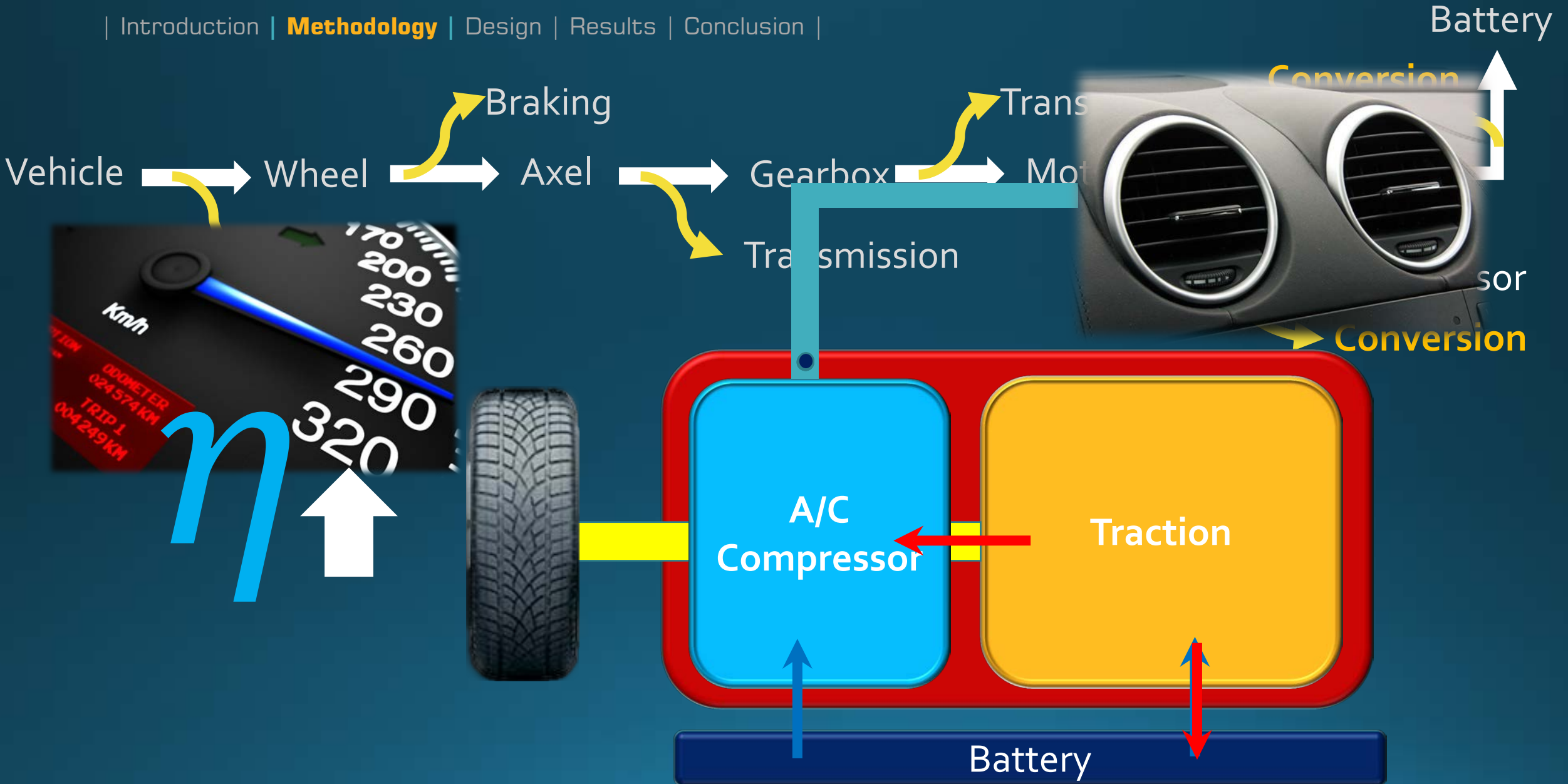
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Drive Motor

Integrated Traction and A/C Compressor drive

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Integrated Traction and A/C Compressor drive

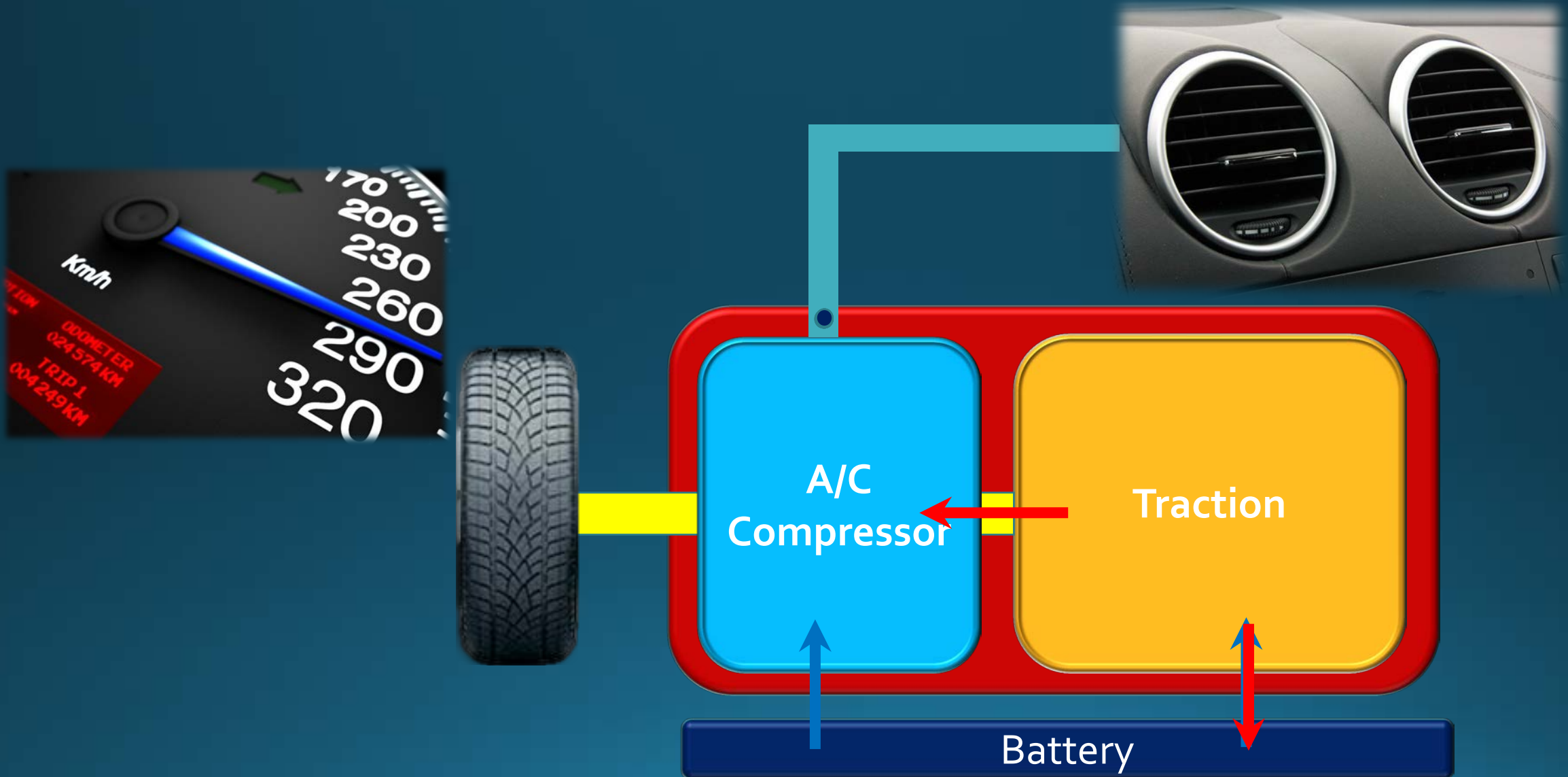
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| Drive cycle | Distance travelled (km) | Total time (sec) | Braking time (sec) | % braking time | Average P _{gen} (kW) |
|-----------------|-------------------------|------------------|--------------------|----------------|-------------------------------|
| ECE 15 | 1.0 | 195 | 39.4 | 20.5% | 1.5 |
| EUDC | 7.0 | 400 | 45.0 | 11.3% | 2.9 |
| EUDC, low power | 10.6 | 1224 | 101.0 | 8.3% | 3.8 |
| ECE 15 + EUDC | 10.9 | 1225 | 202.1 | 16.5% | 1.9 |
| NEDC | 10.9 | 1184 | 201.3 | 17.0% | 1.8 |

Design

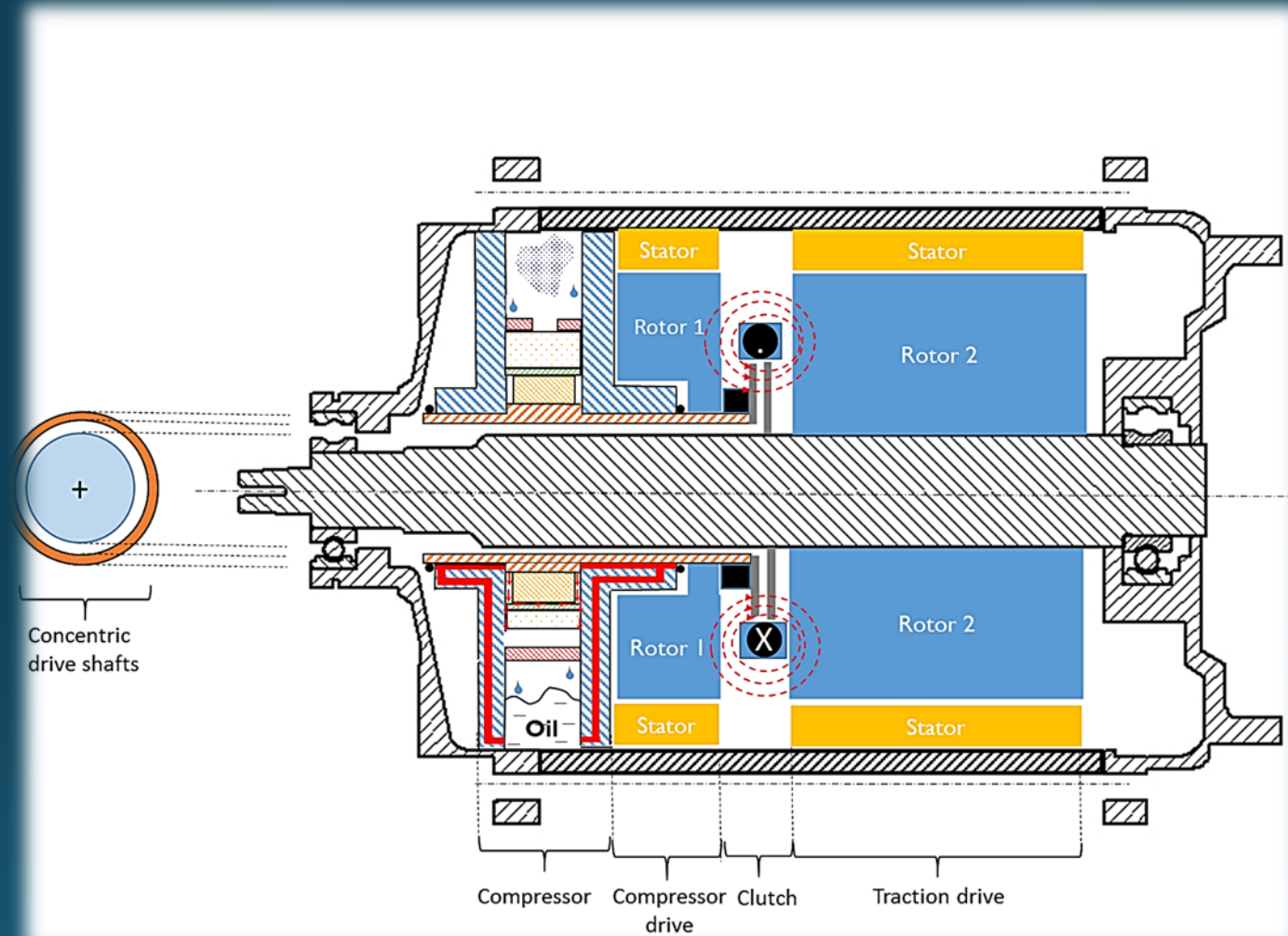
Integrated Traction and A/C Compressor drive

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Integrated Traction and A/C Compressor drive

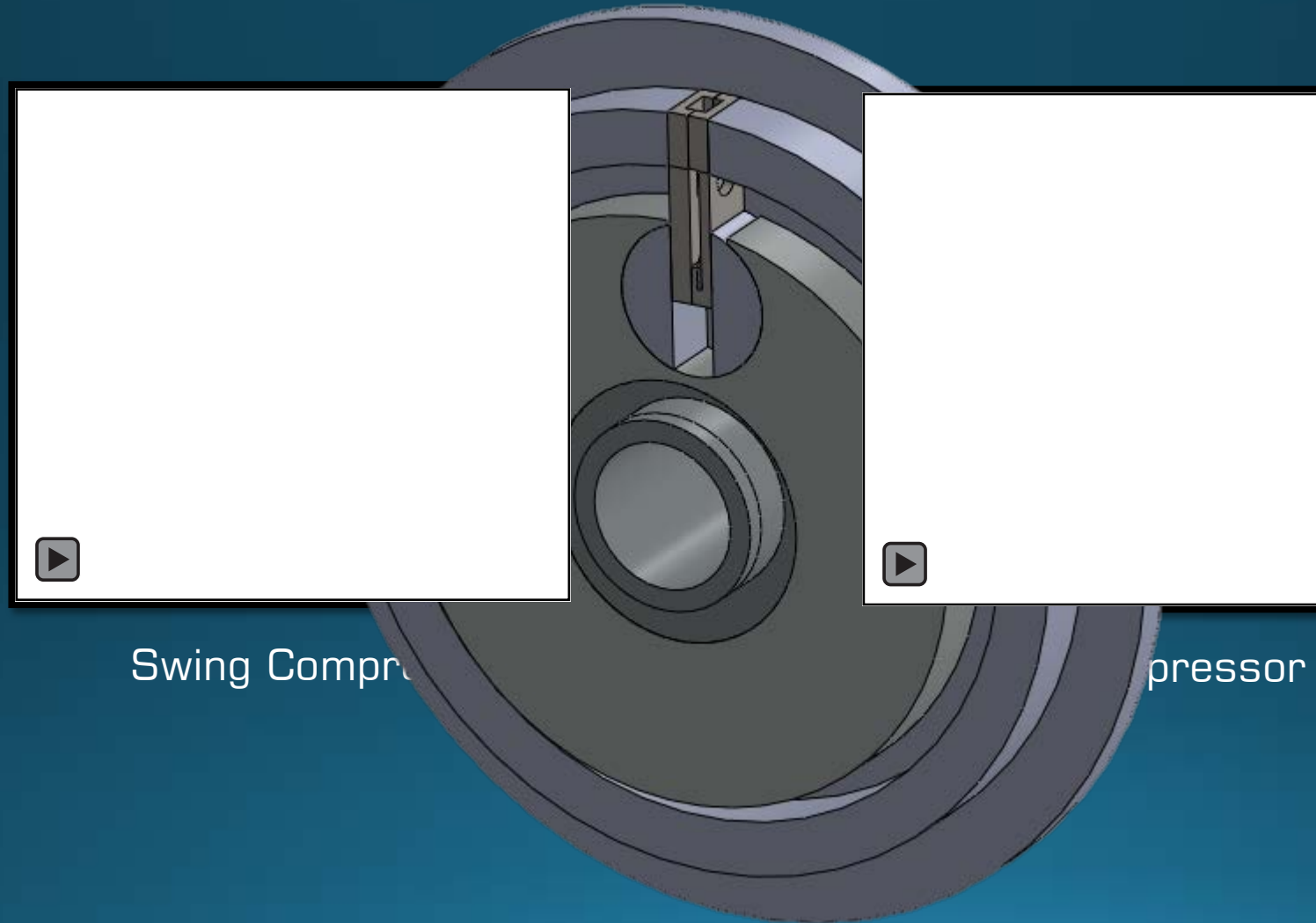
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Schematic Representation

Integrated Traction and A/C Compressor drive

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Swing Compressor

Compressor

Integrated Traction and A/C Compressor drive

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Patent: Antriebsmotor für Elektrofahrzeuge mit integriertem Klimakompressor.

Patent No.: Europe A 63 630 j

FIG.3

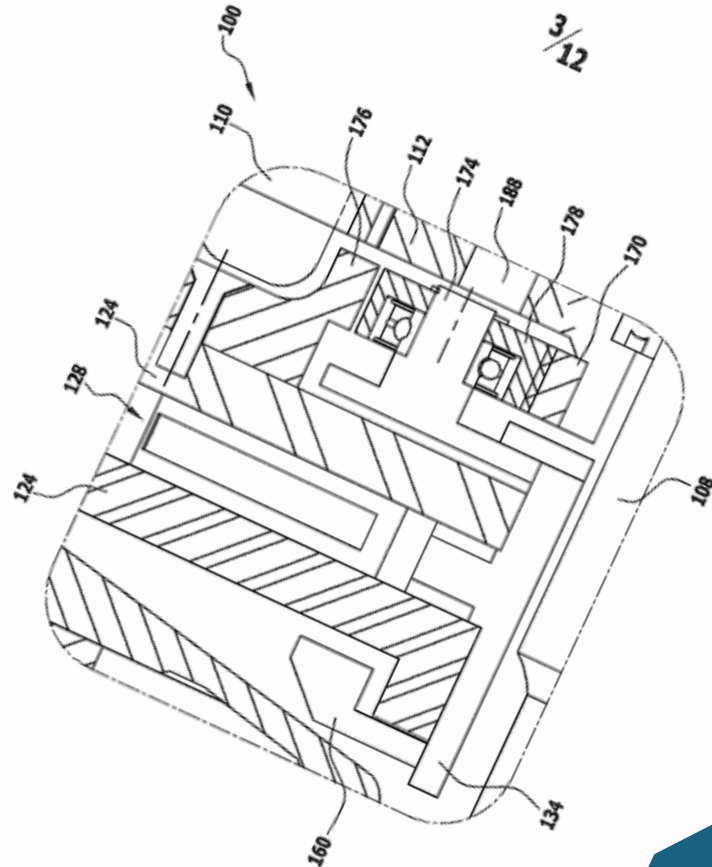
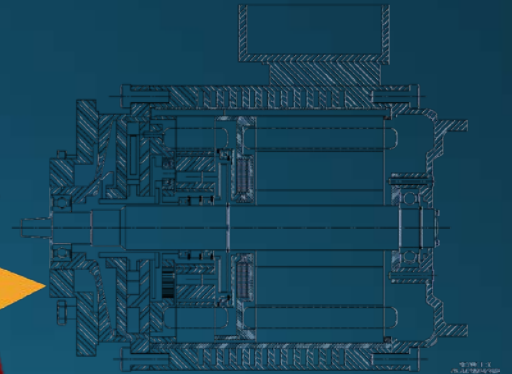


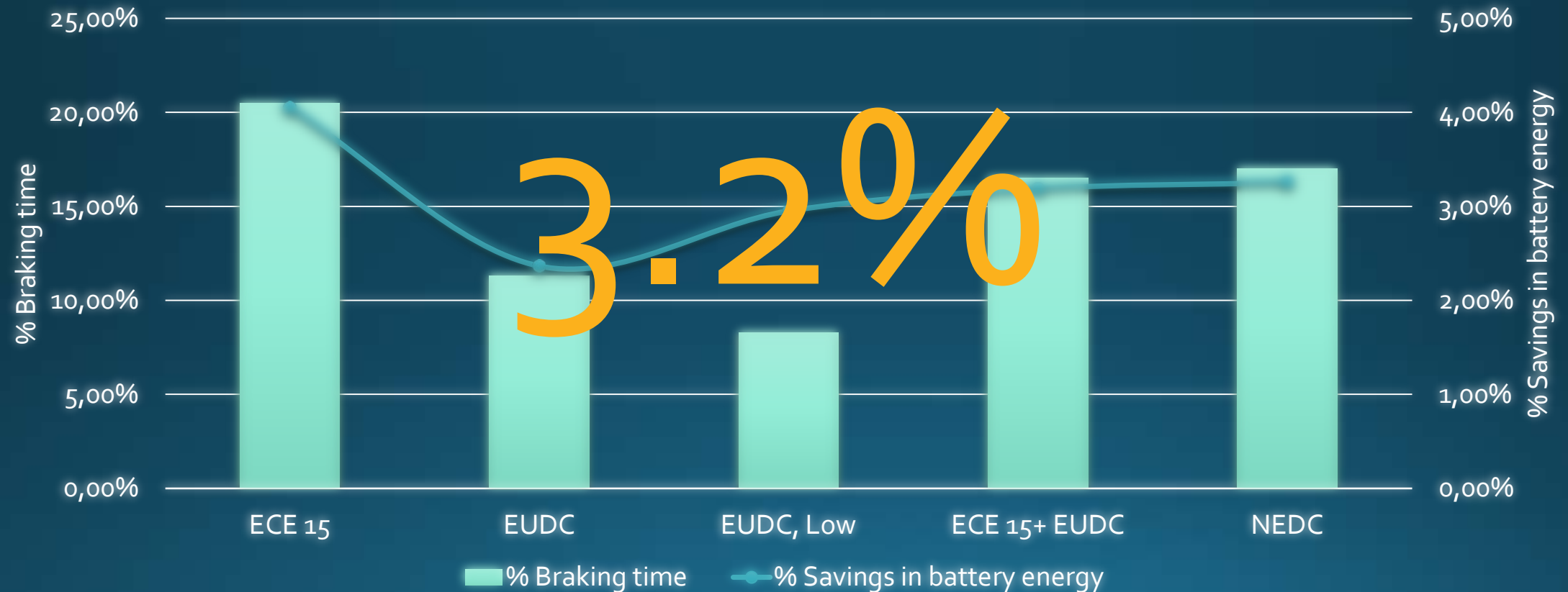
FIG.2



Results

Integrated Traction and A/C Compressor drive

| Introduction | Methodology | Design | **Results** | Conclusion |



Conclusion

Integrated Traction and A/C Compressor drive

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Poor cruise performance of the Electric Vehicles continues to be the primary reason for its low market penetration among general public.

Introduction

Energy conversions are eliminated to improve the efficiency.

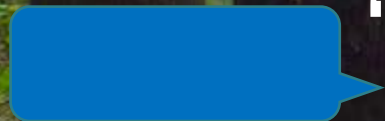
Methodology

The design leverages on concentric placement of compressor and traction drives. Further, the existing SVC is redesigned to enhance efficiency.

Design

The energy drawn from the battery is reduced by 3.2%.

Results



“

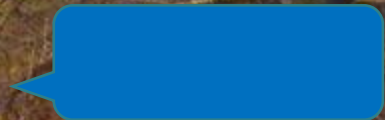
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Thank you