

Sistemas de Tração/Propulsão elétrica a Hidrogênio

Professores: Dr. Renato M. Machado e Dr. Maurício B. de C. Salles

E-mail: mausalles@usp.br e manoro@usp.br



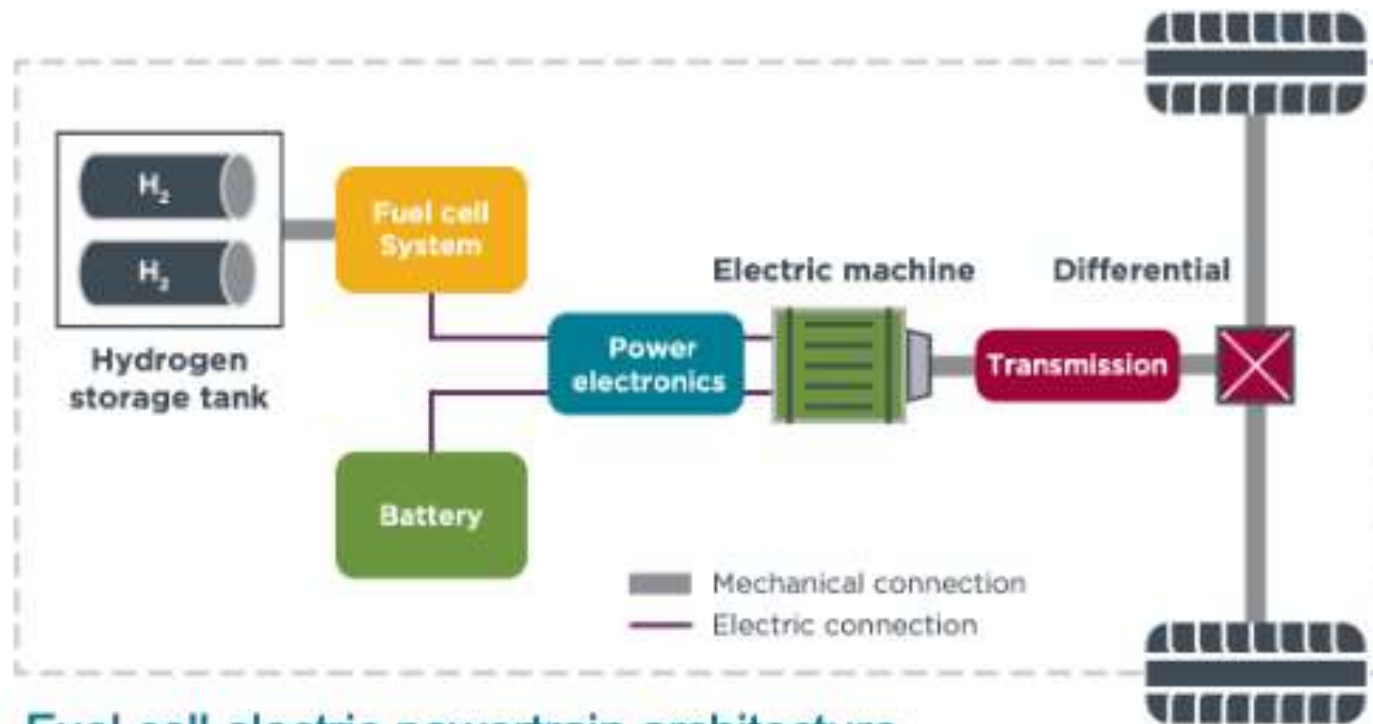
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Principais componentes do sistema:

- Célula a combustível;
- Bateria;
- Supercapacitor,
- Motores elétricos
- Conversores de potência/frequência
- Tanque de hidrogênio
- Gerenciamento de energia
- Previsão de percurso

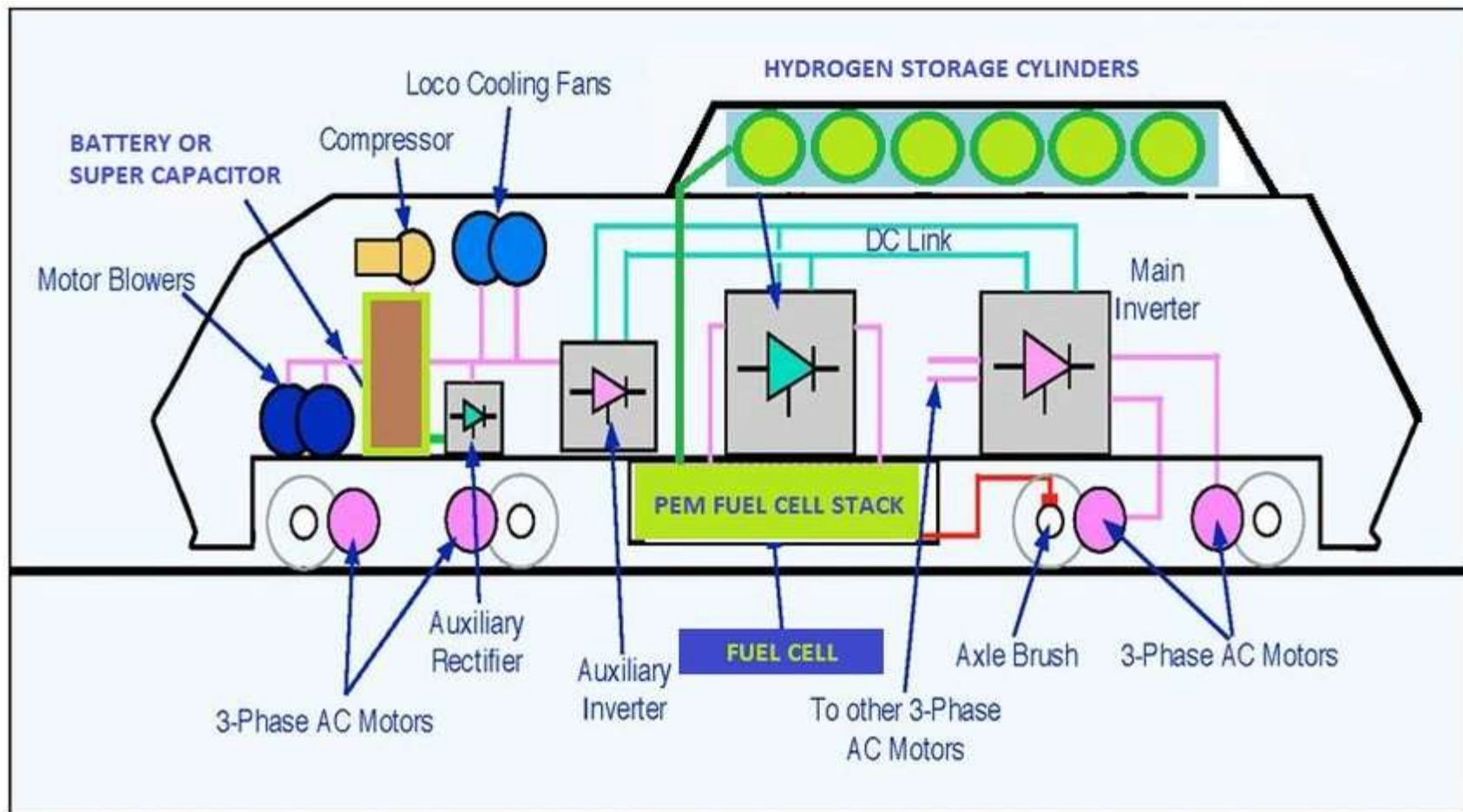


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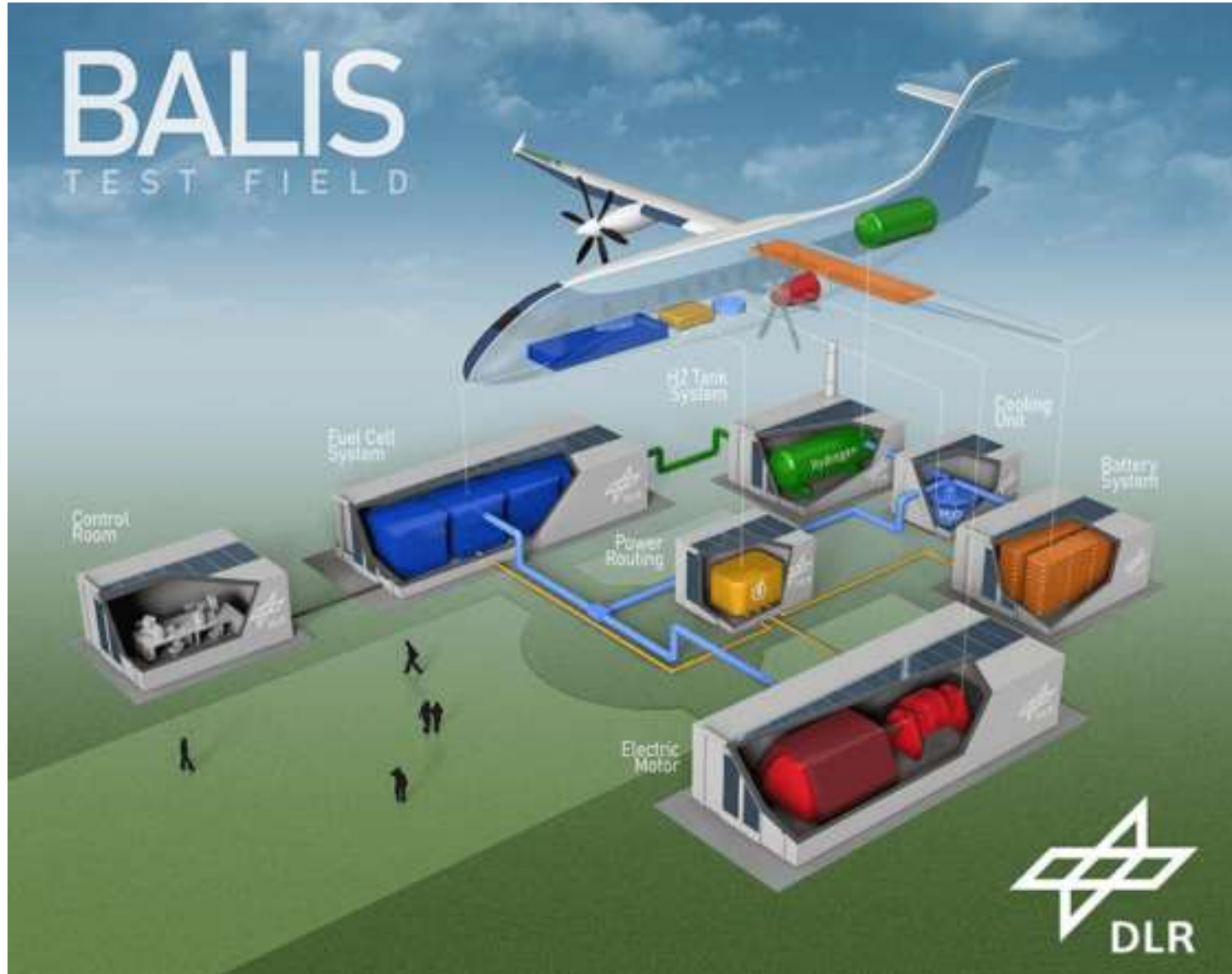


Fuel cell electric powertrain architecture

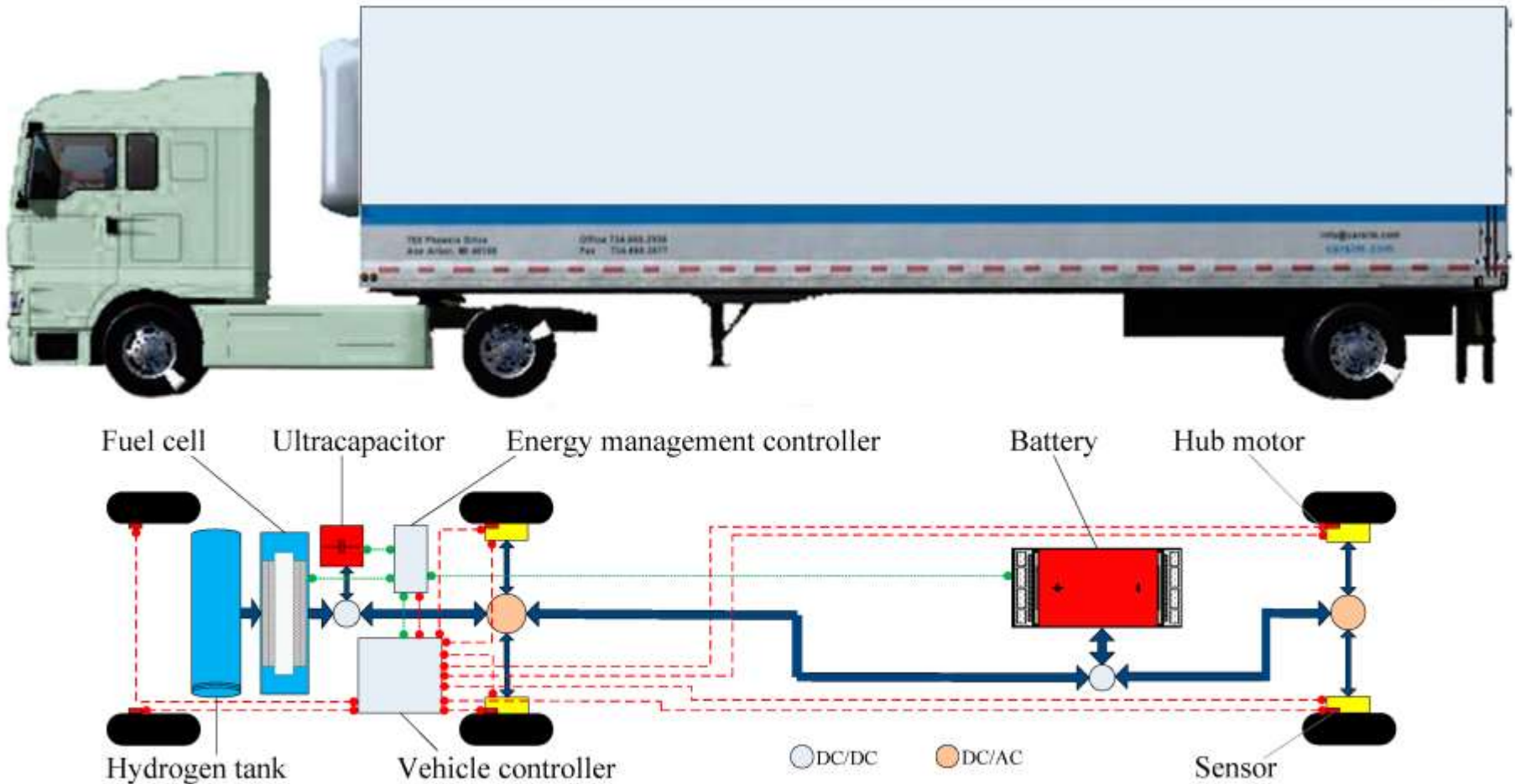
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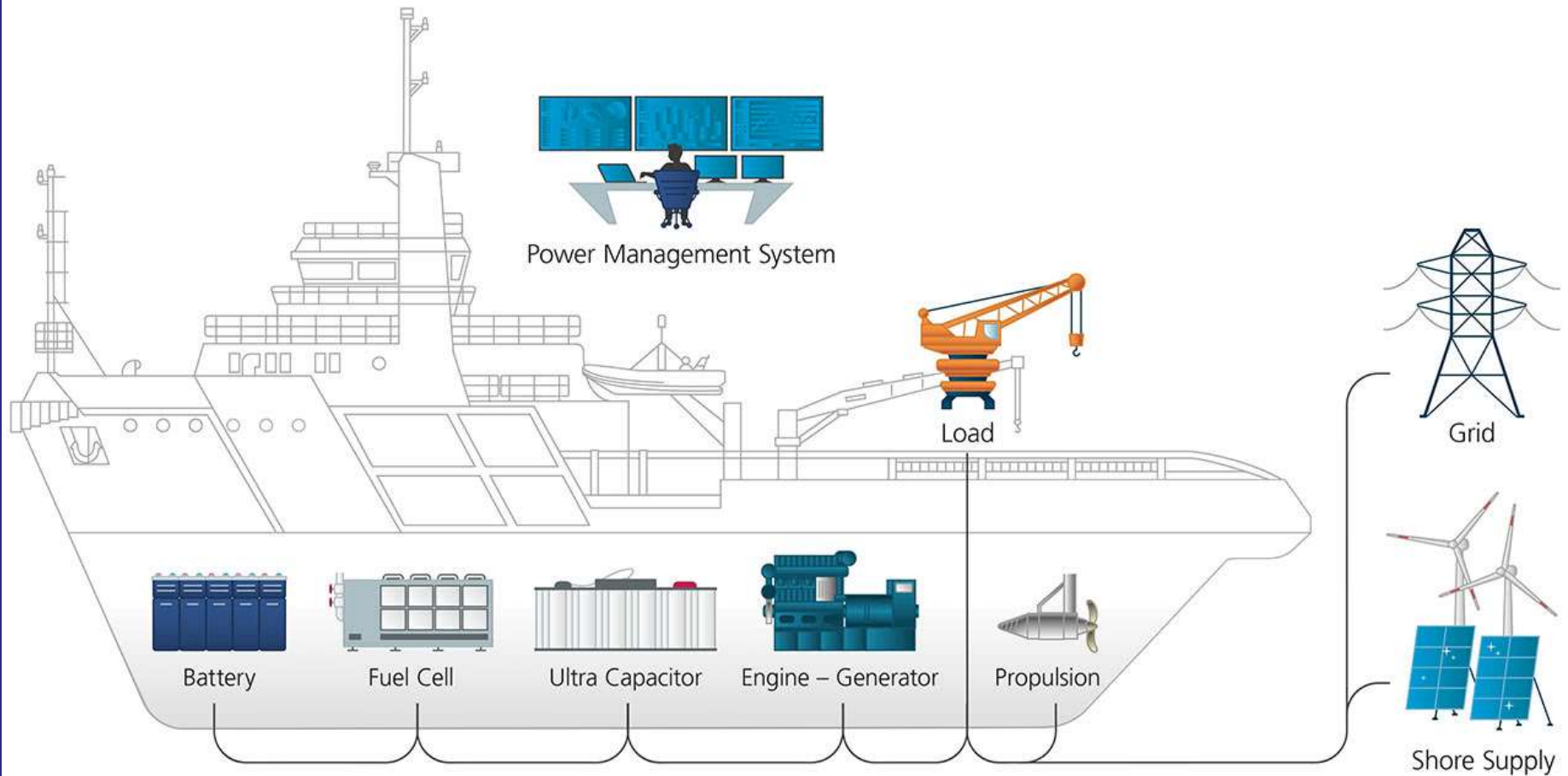
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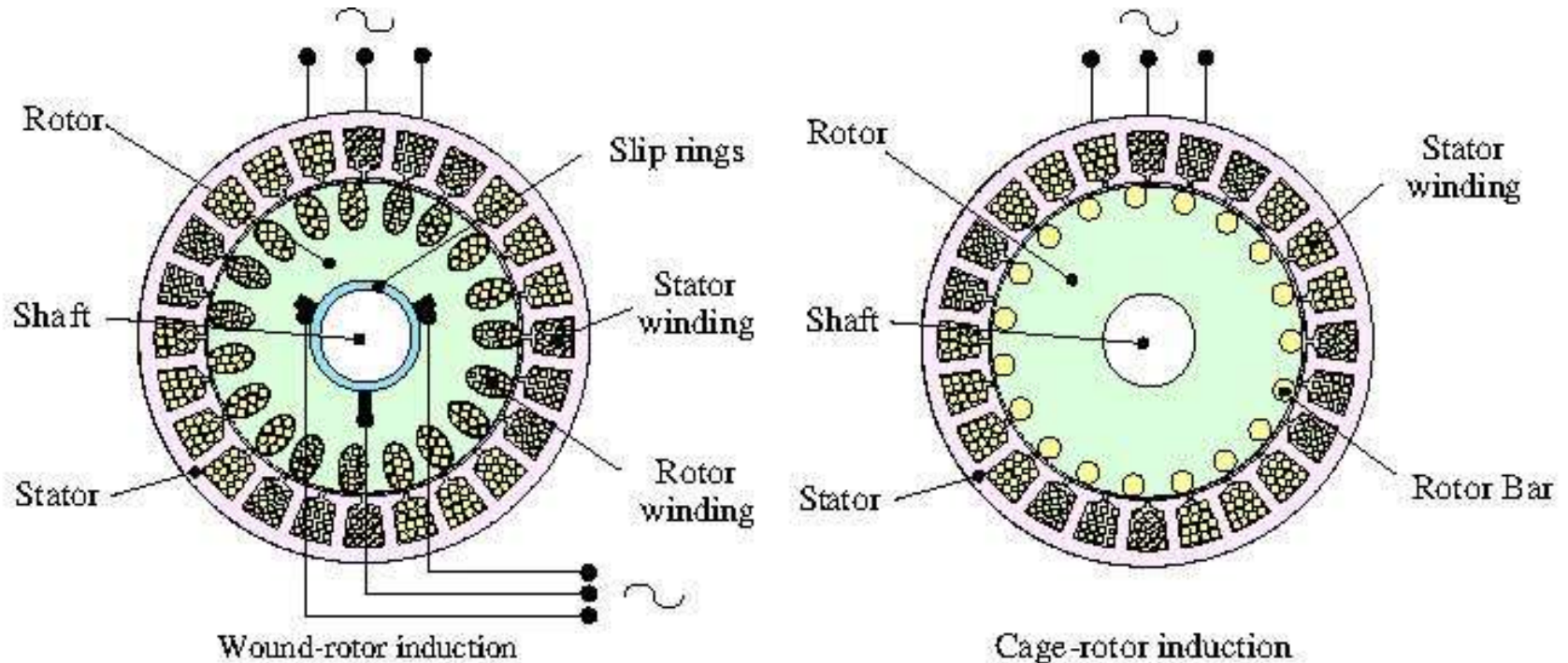


Máquinas Elétricas



Tipos de Máquinas Elétricas

Operação como gerador (máquina de indução - CA):



Tipos de Máquinas Elétricas

Operação como gerador (máquina síncrona - CA):

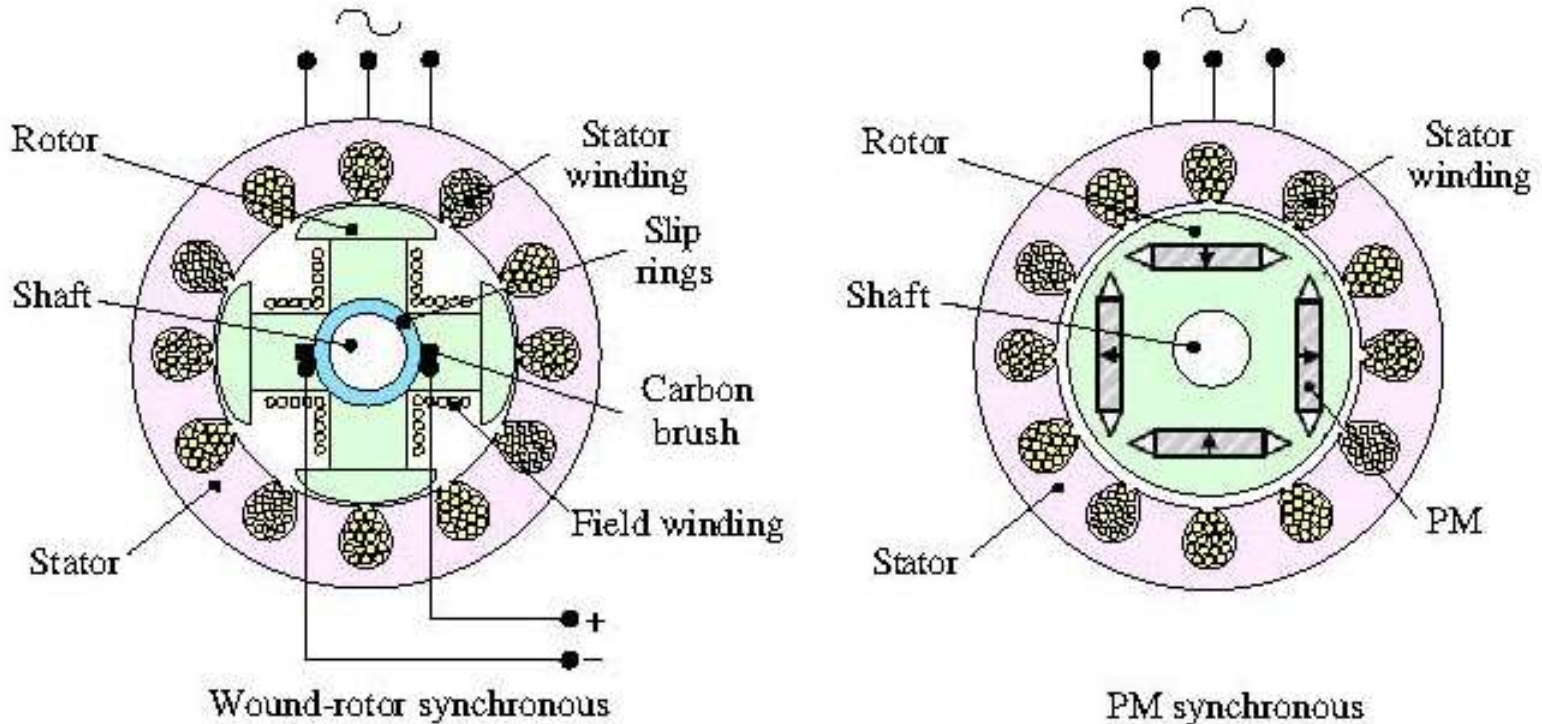


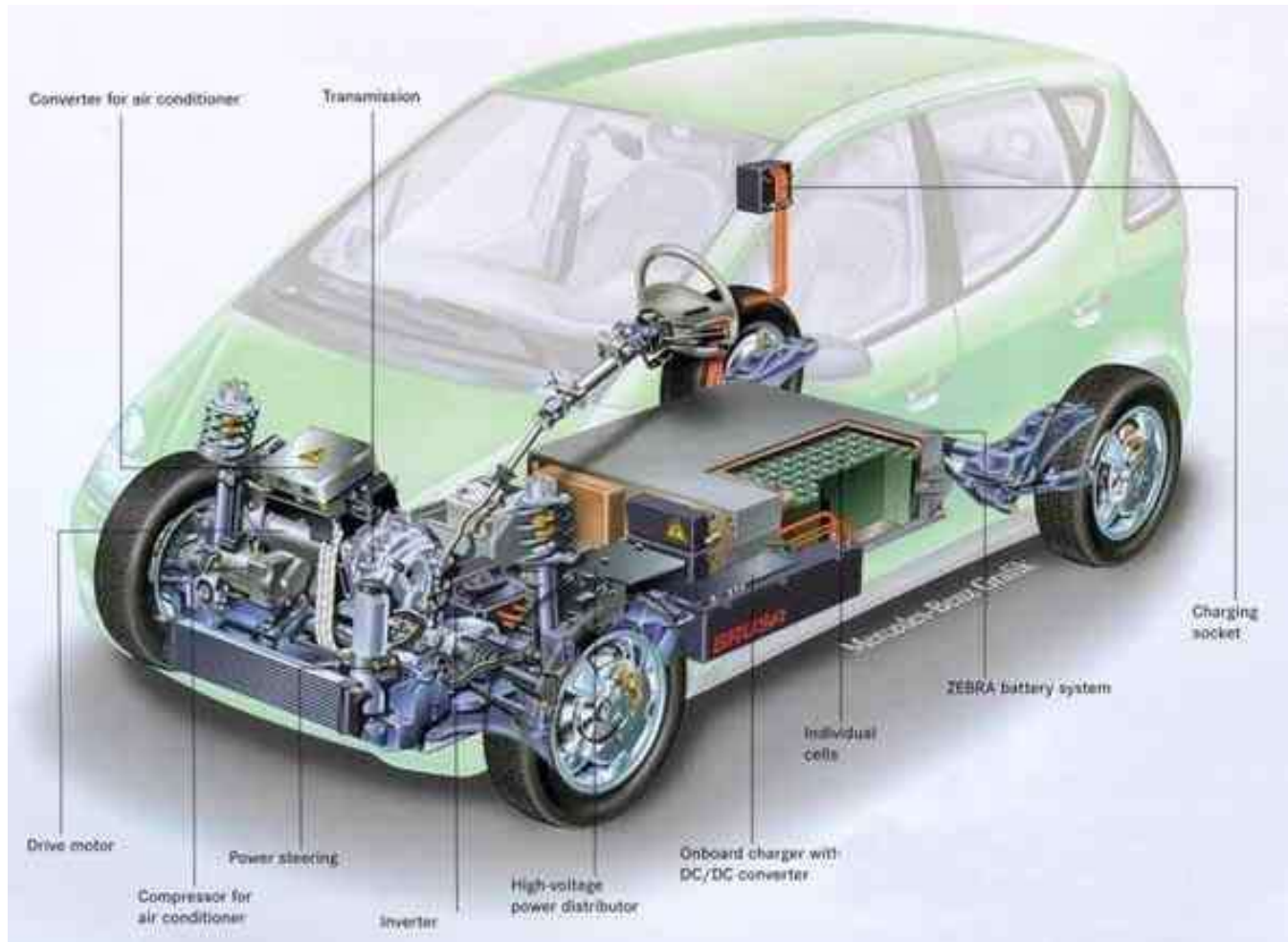
Figure 4. Existing machine types for renewable energy.

Gerenciamento de energia



Máquinas Elétricas na Tração

Veículos Elétricos e Híbridos:



Máquinas Elétricas na Tração

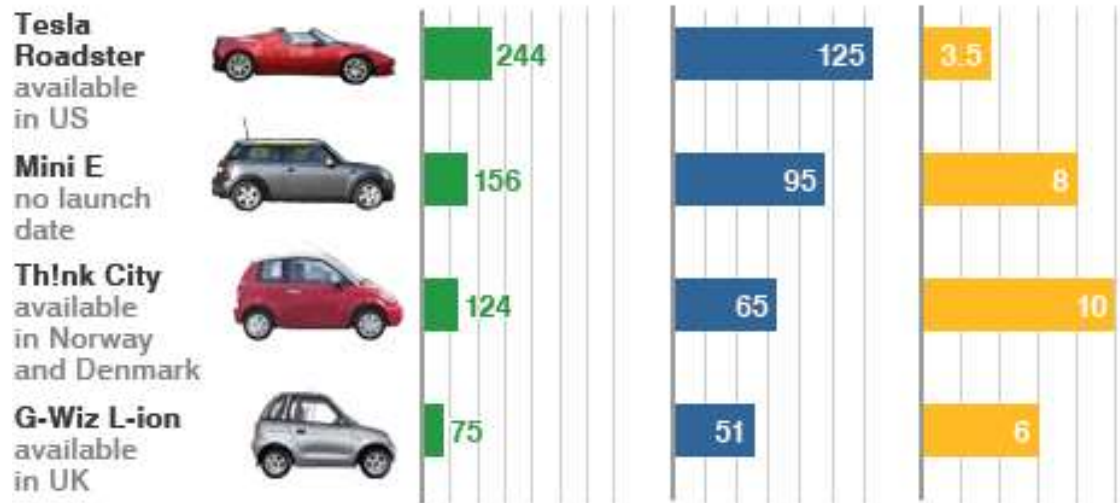
Veículos Elétricos e Híbridos:

PLUG-IN ELECTRIC VEHICLES



*new hybrid cars run on an electric battery for short journeys, then switch to a hybrid petrol mode for longer distances

ELECTRIC CARS



Máquinas Elétricas na Tração

Veículos Elétricos (novas configurações):



School of Electrical and Electronic Engineering

Research Project Electric vehicles

Description
We are at the forefront of the research of electric and hybrid vehicles, with our work ranging from the traction drive electronics and motor, through to energy storage and power steering. The motor shown here is an in-wheel traction motor developed by Protean Electric. With motors in all four wheels, it provides true four-wheel drive for the first time. Protean sponsor a PhD student and several of their technical advisory board.

Researchers
Dr Glyn Atkinson, Dr Nick Baker,
Prof Diane Mervin, Mr Chris Morton,
Dr Václav Pokorý, Mr James Whitmer.



Máquinas Elétricas na Propulsão



Máquinas Elétricas na Propulsão

Na água:

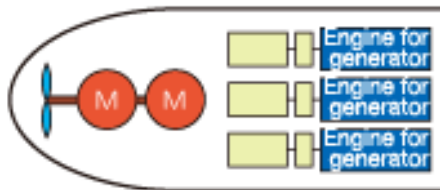


Máquinas Elétricas na Propulsão

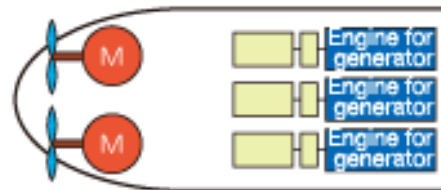
Na água:

Example of application

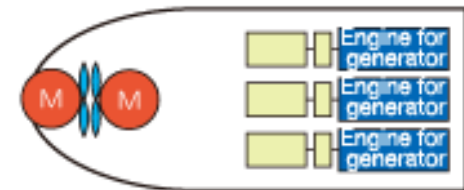
Applicable to whole shaft systems and whole types of ships.



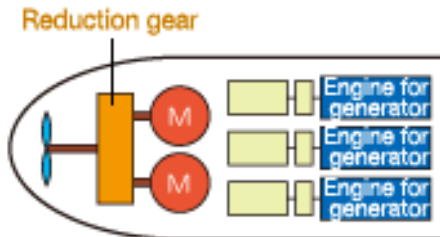
Single shaft, FPP & CPP without reduction gear



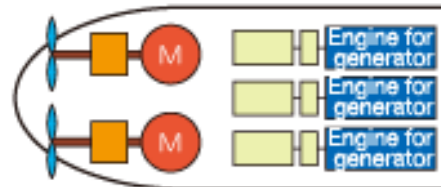
Two-shaft, FPP & CPP without reduction gear



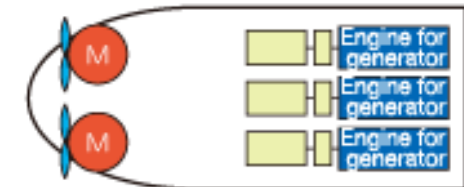
Two-shaft, Pod type FPP & CPP



Single shaft, CPP with reduction gear



Two-shaft, FPP & CPP with reduction gear

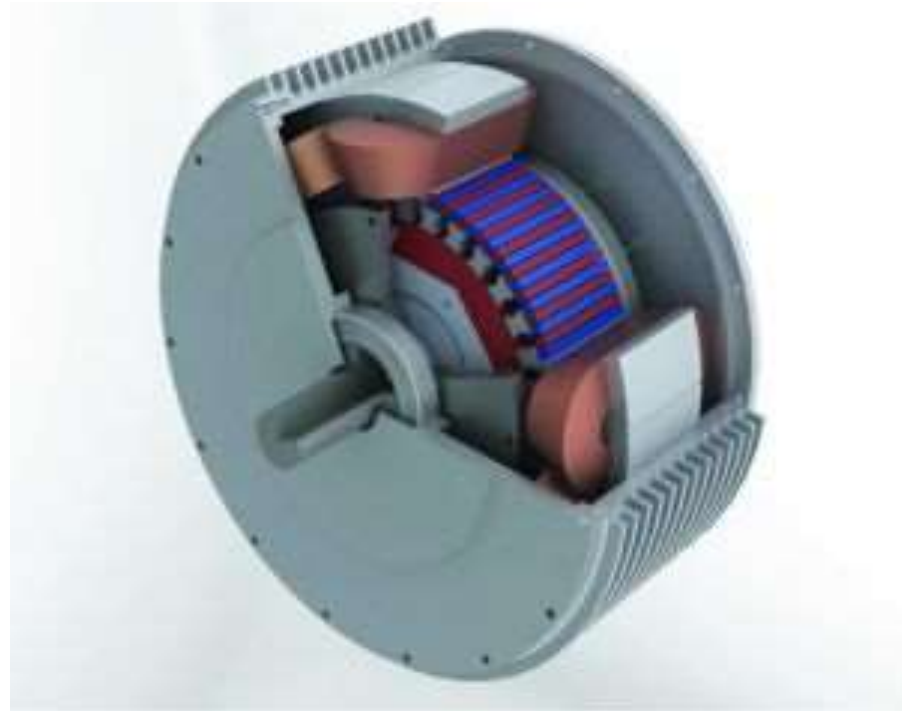


Single shaft, reverse type FPP & CPP



Máquinas Elétricas na Propulsão

Na água:

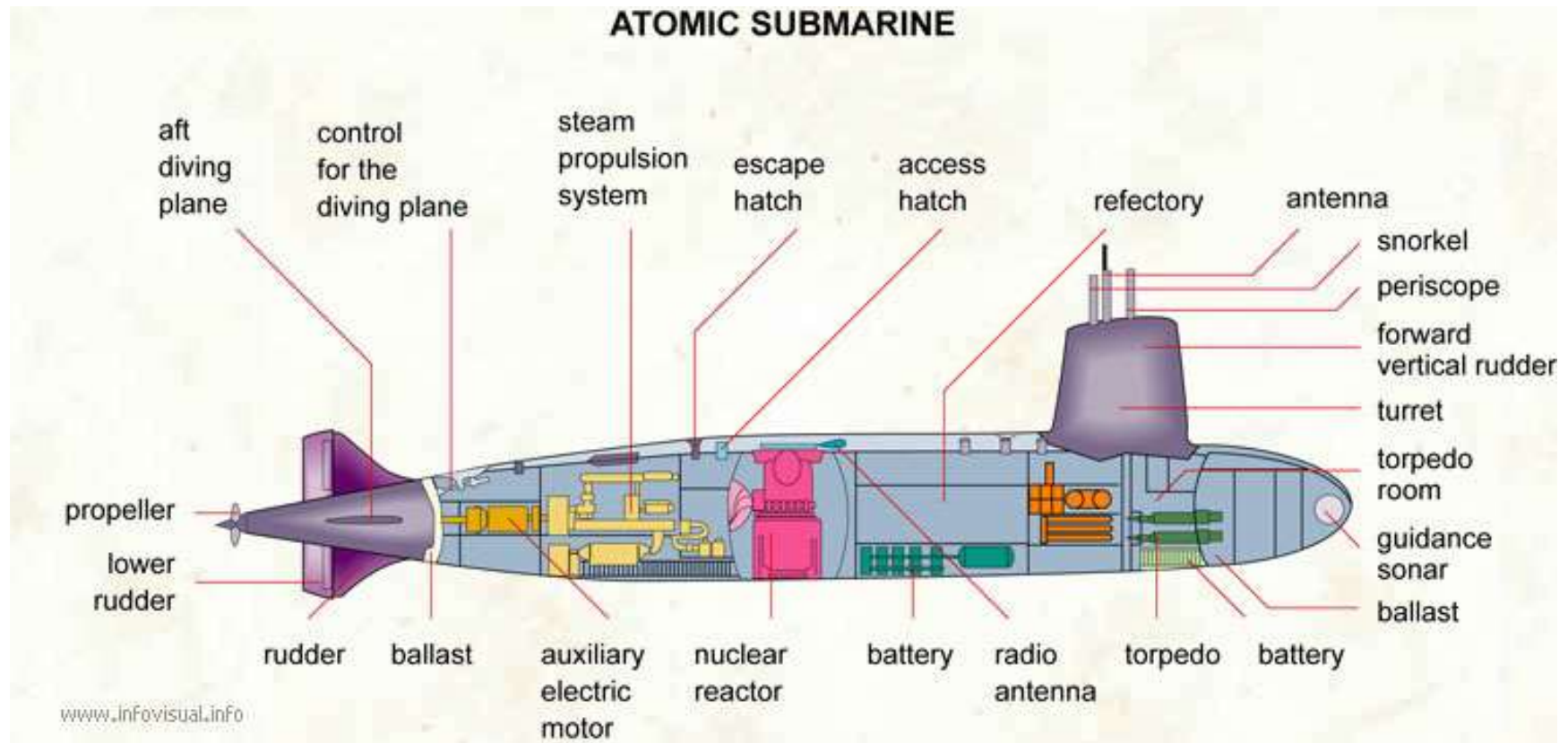


Magnomatics' PDD motor drastically reduces the size of direct drive electric motors.



Máquinas Elétricas na Propulsão

Na água:



Máquinas Elétricas na Propulsão

Na água:



Máquinas Elétricas na Propulsão

No ar:



Máquinas Elétricas na Propulsão

No ar:



Obrigado pela atenção

Perguntas?

E-mail: mausalles@usp.br e manoro@usp.br

