



AIR

Compressed Air Technology

NATURE TAKES US...

MDI

A compressed air engine, simple, economical and ecological.
The MDI production concept opens a new industrial era respectful of the environment.



PHILOSOPHY

Philosophy

Making ecology accessible to everyone,
for a real impact on our planet.

Method

An **innovative concept of production** with
micro plants around the world, allowing the

integration of functions and finding a **necessary balance.**

High technology based on compressed air, covering all types of applications,
including vehicles which utilize lightweight composite materials. They are customized
at the right price and sold at their place of construction, developing a local
economy where the well-being of **humanity** is a priority.

MDI Patents

MDI filed **60** worldwide **patents** and **licensed**
them to manufacturing partners, for manufacturing.

Development Strategy

Unlike traditional car manufacturers which centralize
their large manufacturing plants, MDI develops **multiple small production**
facilities on five continents.

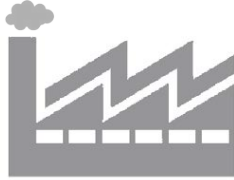
COMPRESSED AIR
 ECOLOGICAL
 SIMPLE PRATICAL & LIGHT
 FAIR PRICE TECHNOLOGICAL
 FUNCTIONS INTEGRATION
 JUST NEEDED CUSTOMIZABLE 
 SILENT SAFE LINEN FIBER ACCESSIBLE NATURAL

PRODUCTION CONCEPT

Other Car Manufacturers

A gigantic factory

Assembly plant



Vehicles breakdown among international distributors



Distribution models using dealerships



- Many sub-components from subcontractors
- Lots of transportation to the importers and further transportation to the dealers
- Lots of transportation to importers and distributors in each country, managing intermediate stocks and transport to the final dealers
- Such business models generate a lot of CO₂ and other pollutants.

MDI

Many small factories

Production and dealership under the same roof



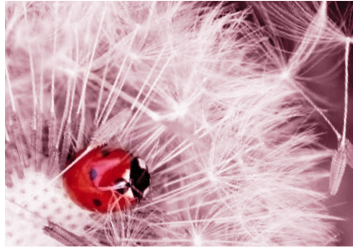
Development and production facilities and dealer networks worldwide



- 80% of the vehicles manufactured locally
- MDI central purchasing for the 20% remaining suppliers
 - Less logistics and management costs
 - More local workforce
- The wealth created remains in the town, state and country with knowledge-sharing and income
 - Fewer duties and no exchange charges
- Less land area and construction that equal to 1/5 of investment cost
- Less CO₂ and pollution from transport of finished cars and raw materials

This production concept can be applied to all plants producing MDI products.

AIRPOD UNIQUE



2 seats



280 kg



80 km/h or
45 km/h unlicensed



500 l



120-150 km
450 km dual energy



AIRPOD CARGO & PICK-UP

PRACTICAL



2 seats



310 kg



80 km/h or
45 km/h unlicensed



2 m³



110-140 km
420 km dual energy

AIRPOD CARGO



AIRPOD PICK-UP



AIRONE ESSENTIAL



3 à 5 seats



450 kg



100 km/h



1 m³ max

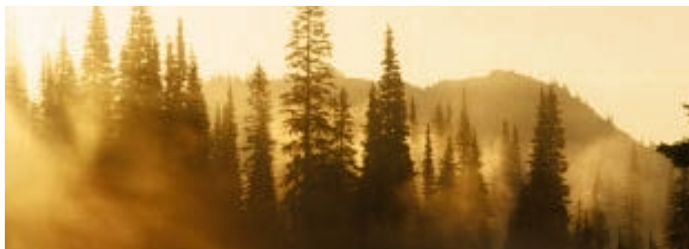


170-200 km
600 km dual energy



AIRCROSS ONE

ADVENTURER



3 à 5 seats



465 kg



110 km/h



1 m³ max



170-200 km
600 km dual energy



AIRCITY CHIC & SHOCK



5 seats



600 kg



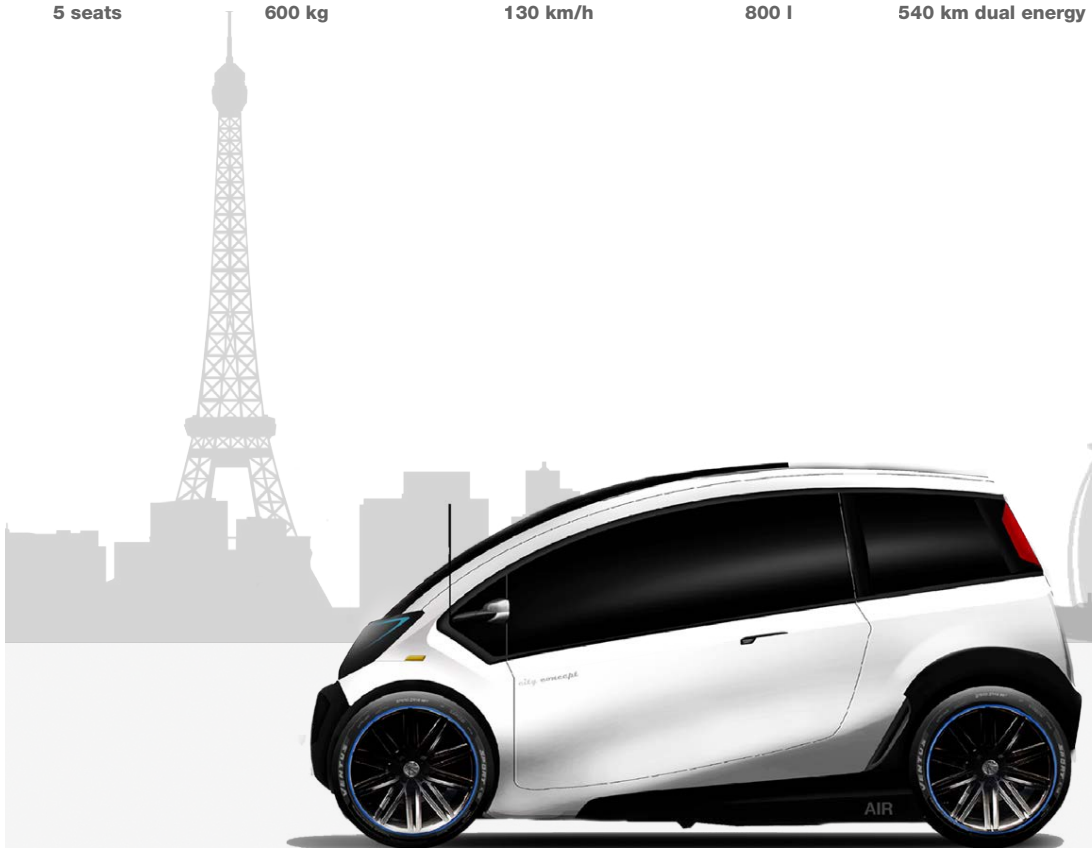
130 km/h



800 l



150-200 km
540 km dual energy



AIRCITY COUPE DREAMER



3 seats



600 kg



150 km/h



800 l



180-200 km
600 km dual energy



Gt Cerise .

Discover the French Grand Tourism soon...





AIRSTREET AGILE



3 à 6 seats



250 kg



80 km/h



130-160 km
480 km dual energy



AIRMULTIBUS MANAGEABLE



101 seats (3 modules)



3350 kg (3 modules)



90 km/h



170 km
510 km dual energy



TECHNOLOGICAL APPLICATIONS

VEOLIA



3 seats



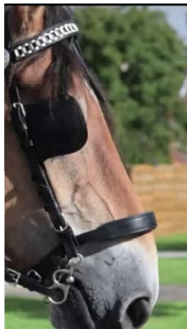
800 kg



25 km/h

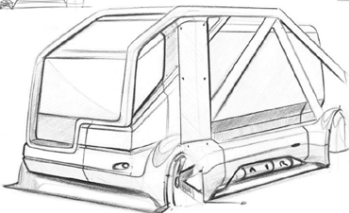
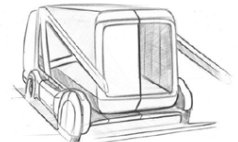
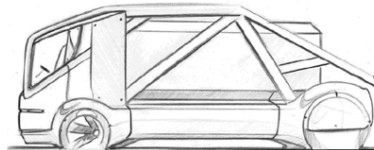
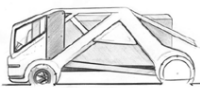


50 km



Replacing existing mode of waste collection, MDI waste collector truck for Veolia runs on compressed air. The Veolia compressed air truck will serve the people with respect and preservation of our environment.

Stylistic **researchs**

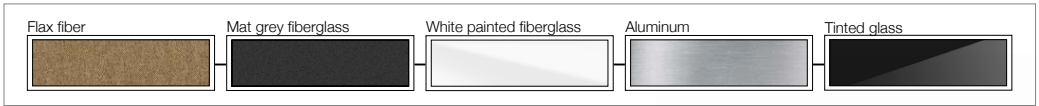




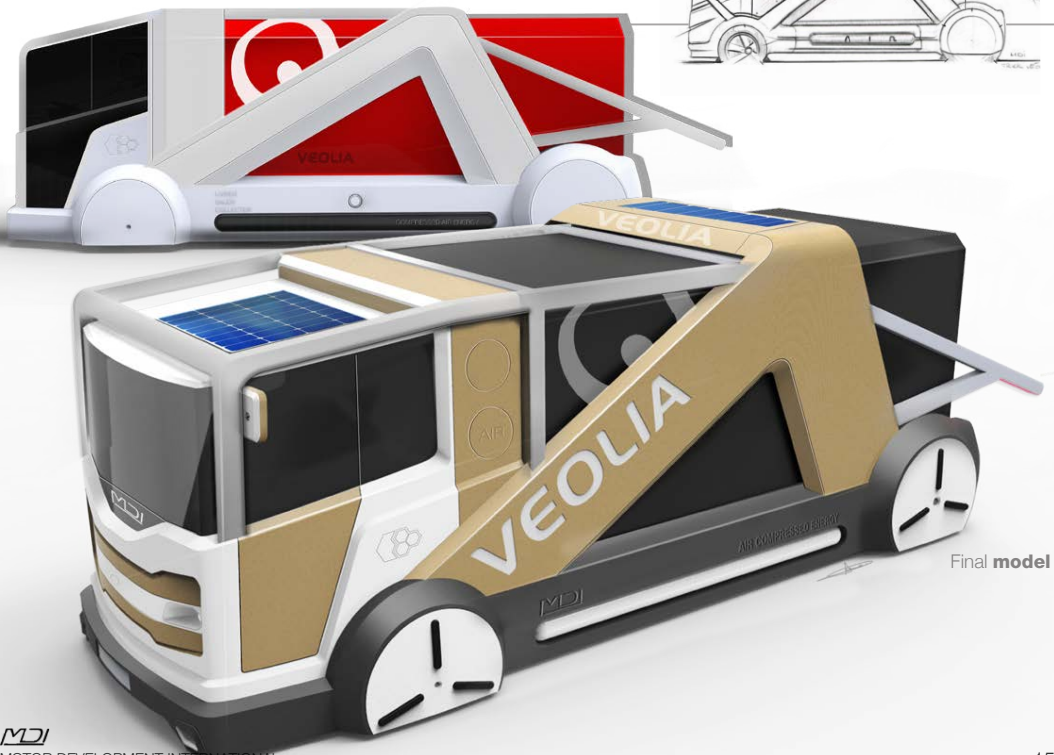
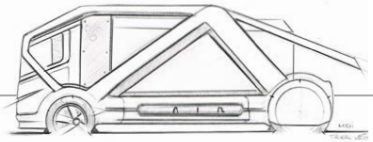
WASTE COLLECTION



Materiaux

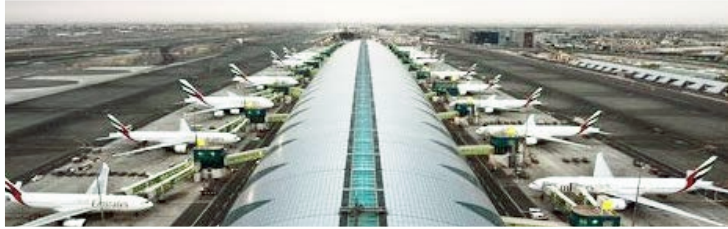


Key Sketch



Final model

AIRTOW-AIR WORKER



1 seat



600 kg



15 km/h



10 t



2 h



AIRLIFT CLEVER



1 seat



600 kg



15 km/h



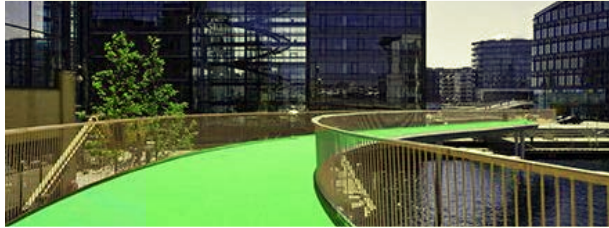
2.5 t



2 h



AIRURBAN DYNAMIC



1 seat



20 kg



25 km/h



40 km



AIRSTREAM ORIGINAL



boat



practical & comfortable

+

catamaran



light & spacious

+

pedalo



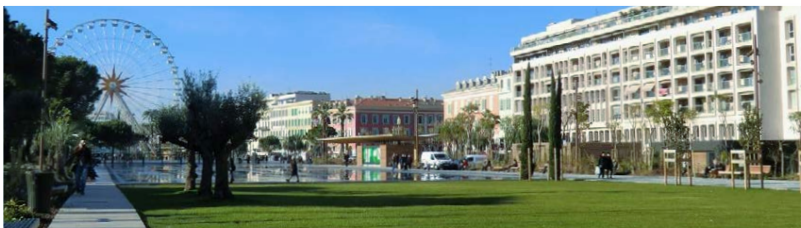
simple & friendly

8 seats



AIRLIGHT

AUTONOMOUS STREET LAMP



Vertical wind turbine



Leds



Solar panels

DAY

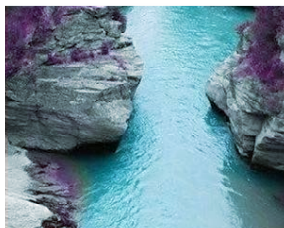
Wind and solar energies run the motor compressor. The energy is stored as compressed air in the lamppost column.

NIGHT

An integrated light sensor starts the engine and alternator to release the stored compressed air and produce the electricity that lights up the LEDs of the lamppost.



AIRPOWER GENERATOR



1 h à 2.5 kW/h
15' à 10 kW/h



Autonomy x3
with burner



Electricity

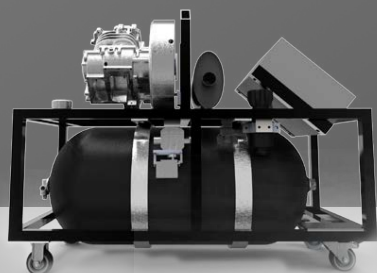


84 l



OPERATION

The generator stores energy in the form of compressed air, and releases it in the amount of electricity needed. These generators can provide backup or production as dual energy or renewable energy.



ENGINE COMPRESSED AIR

Engine technology

The global economic organization is based on the supply of energy to meet the vital functions of all countries: defense, health care, transportation, etc... Many low-emission energy sources are operational (wind, solar, hydroelectric, geothermal, marine and underwater) and others are being developed. But the major challenge of this third millennium remains energy storage. MDI technology is based on this energy storage and provides a very good return on its performance, through compressed air engines.

These high-tech engines will power reversible compressed ambient air in approved tanks (CNG standards - Natural Gas Vehicles now used in transport) of different capacities, at a pressure of 3597 psi, and also uses compressed air which, when releasing, will push the pistons and therefore provide a «work.» (Definition of “work”: Production of an effect by exertion of a force. Energy is needed to do work and work is measured in joules).

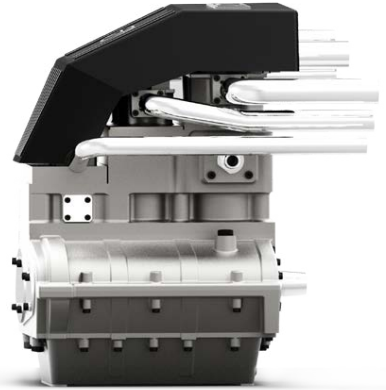
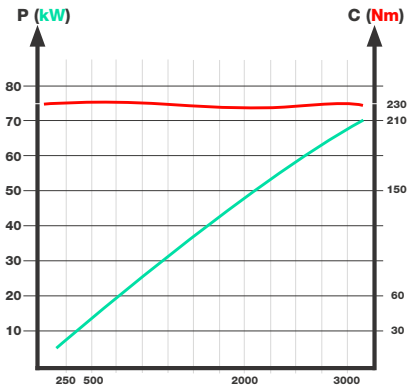
The air motor of today can replace all existing engines and cover any application. The work produced will be used to move the vehicle, provide light or recreate electricity for other uses: thermal generators, redistribution in conventional electrical grids, etc ... For his or her vehicle, an MDI client may either fill the tank at a high pressure air station to directly fill the reservoir in less than two minutes; or recharge itself using a single power outlet, at home or in town on electric charging networks of 16 or 32 amps in 7 hours or 3 ½ hours respectively.

The AirPod vehicle is designed on this principle with a range of 120 km to 150 km. This mono-energy technology, using only compressed air, is totally clean. To triple the autonomy of the AirPod 450 km on a tank of compressed air, we will use a dual energy system by adding about 2.25 liters of fuel, bioethanol or any other type of fuel; in a separate burner to heat the air outside the engine along the pipes of the tank outlet, and multiply by three the volume of compressed air available. (This system is referred to as a dual-energy engine)

5 seat vehicles such as the AirOne, have a 600 km autonomy with the dual energy system using only 3 liters of fuel and a full air tank. This system warms the air at 600 ° with almost zero amount of hazardous emissions of nitrogen oxides (NoX) and unburned hydrocarbons (HC). The MDI technology is developed to release the air and enables MDI engines to obtain real returns of over 68% between the tank and the engine output.

This high efficiency also allows for many applications using different motor sizes and can occur from just a few kilowatts, to megawatts...

Engine power curve example.

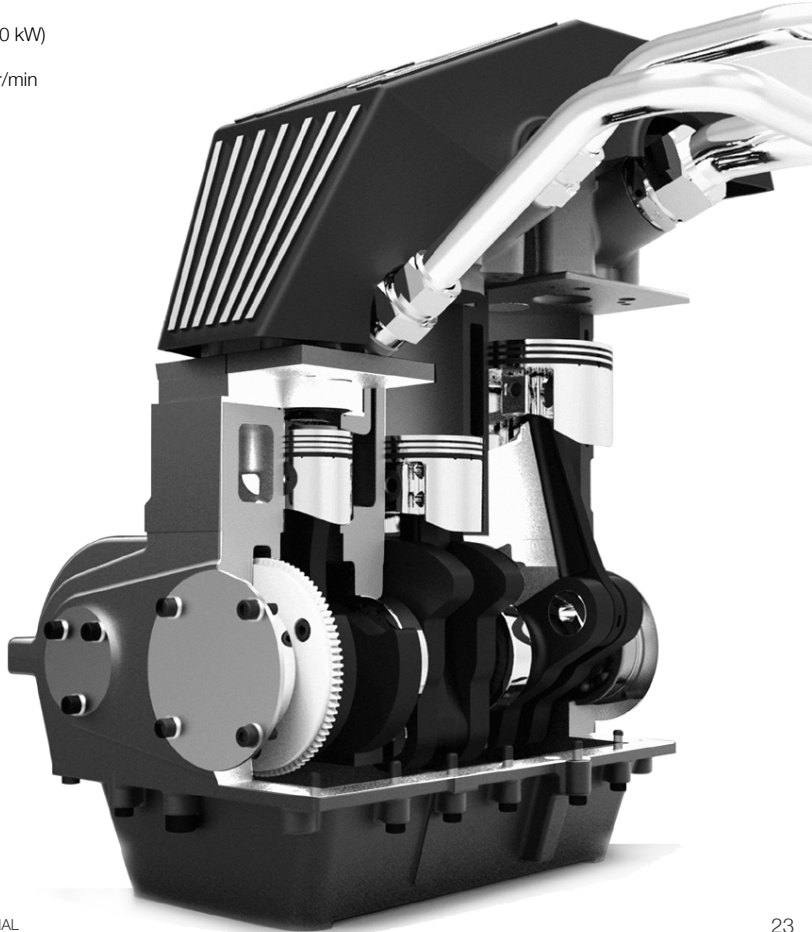


Torque: 230 Nm (boost 285 Nm)

Power: 72 kW (boost 90 kW)

Engine speed: 3000 tr/min

Weight: 35 kg



COMPOSITE MATERIALS

LIGHT & RESISTANT

Composite technology

For purposes of manufacturing and volume efficiency, the automotive industry is based on the use of heavy materials, such as steel or aluminum; as well as the assembly of many components which add up to eventually produce very heavy vehicles.

MDI's strategy is different from that of the current major car manufacturers: It is based on an innovative production concept that permits the use of high-tech materials. MDI has chosen to build light vehicles, at least two times lighter with identical capacity, with so-called «composite» materials previously reserved for high-end vehicles produced in small numbers; such as Ferrari, Lamborghini or McLaren. This composite material is a blend of several components that are not heterogenous (fiberglass, resin plant, polyurethane foam, immiscible, with a high binding capacity); and whose combined properties will be optimized. The new material thus constituted, heterogeneous, has properties that the individual components do not have. This improves the quality of the material facing some use (lightness, stiffness, stress resistance to breakage and temperature ranges, resistance to tension and compression, shock absorption and vibration isolation sound, etc...) can be further optimized with the use of vegetable fibers such as flax fiber. These are additional advantages in the choice of these composite materials with integration of functions.

Once the 3D conception is designed by engineers, the frame is made into one piece. We use this material for it has many uses in and out of the vehicle. For example, in the frame of the AirPod, the pedal block will be inserted into the already pre-molded housing for this purpose. Other forms in the molding seats will serve as a conduit for electrical wiring. Another small recess cut into the structural form will accommodate the locking latch of the door.

This integration concept is applied to all components of the vehicle. The result is a much lighter, single structure with fewer materials used; resulting in amazing space saving, and a much more rigid and strong structure than the traditional assembly of several different parts and fasteners. The lighter body increases the energy efficiency of the vehicle and reduces its energy consumption.

The MDI vehicles manufactured are exceptional achievements using disruptive technology based on compressed air and composite materials.

AIRPOD LINEN SERIES



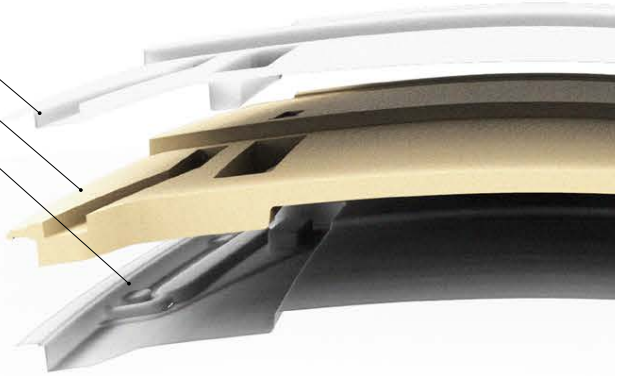
Characteristics of the material

Fiberglass or natural (linen type) : **3 mm**

Polyuréthane foam : **20 mm**

Fiberglass : **3 mm**

RESISTANT & LIGHT



Model shown : **AIRPOD**
Function integration in composite parts.



Pedal system housing

Housing electrical cables

Door lock closure

COMPRESSED AIR TANKS

LIGHT & RESISTANT

Safe

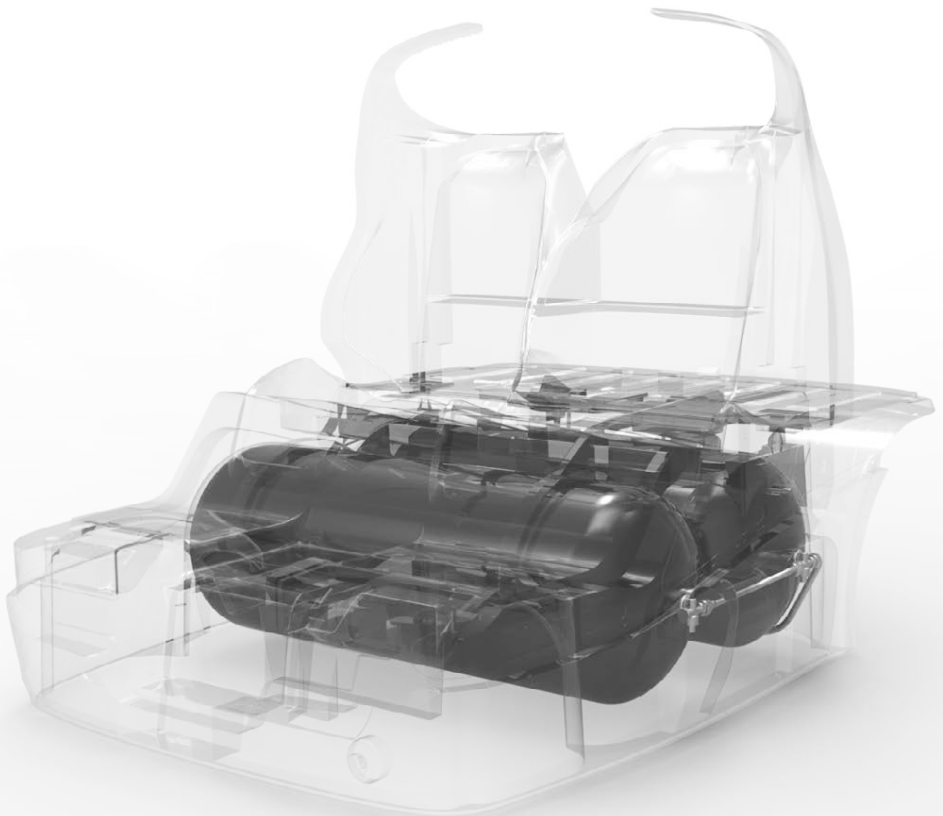
The tank meets the existing standards UN ECE R110 for CNG (Compressed Natural Gas), which has been used for several years in public transit, including buses. The new tanks are composites of carbon fiber and resin, which are very resistant and without fragmentation accidents.

Lightweight and reliable

Designed for more than 20,000 cycles, which amounts to more than 50 years! A filling test is to be carried out every 5 years.

Modular

Different sizes according to specific requirements, from a few liters to several hundred liters of compressed air at 248 bars.



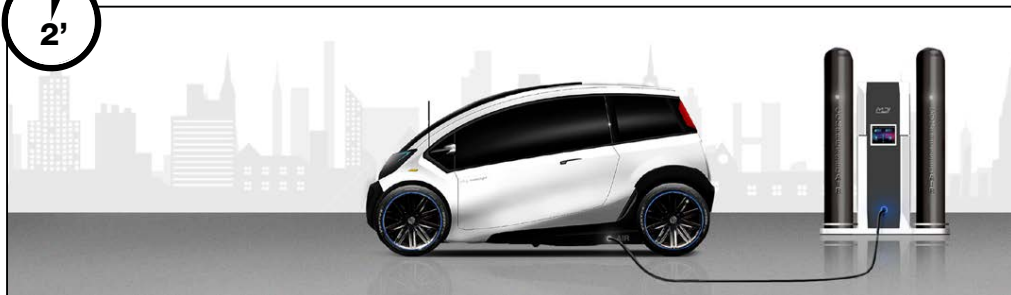
RECHARGING OPTIONS

QUICK & EASY

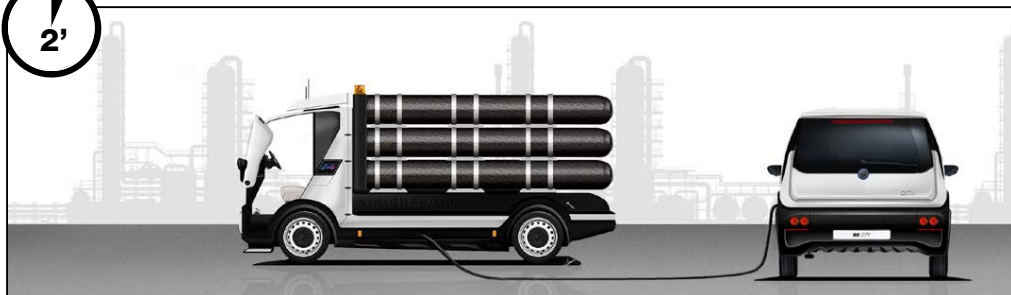
All air stations can be recharged with renewable energy.



Air station



Air mobile station



Terminal electric vehicle



Home socket

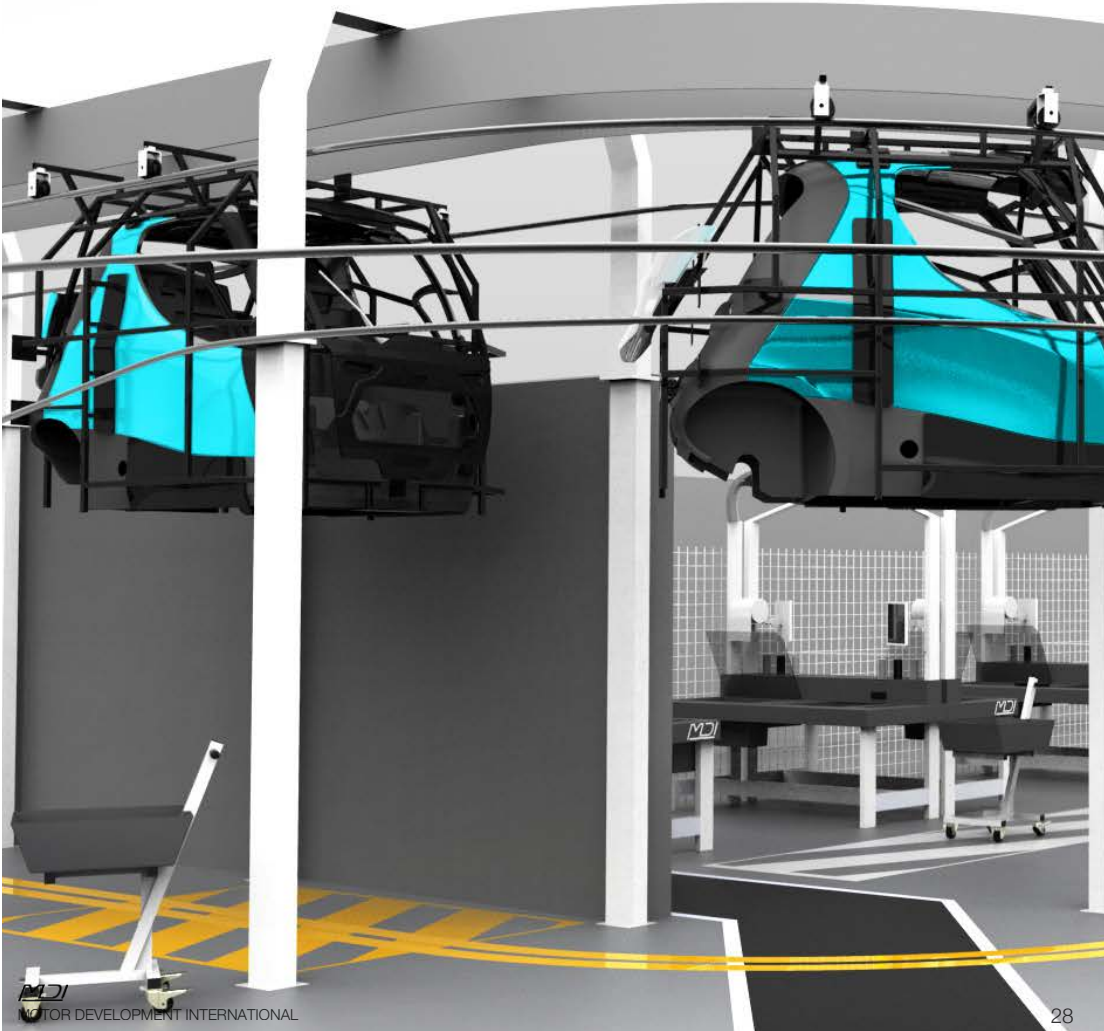


CONCEPT PRODUCTION & STRATEGY

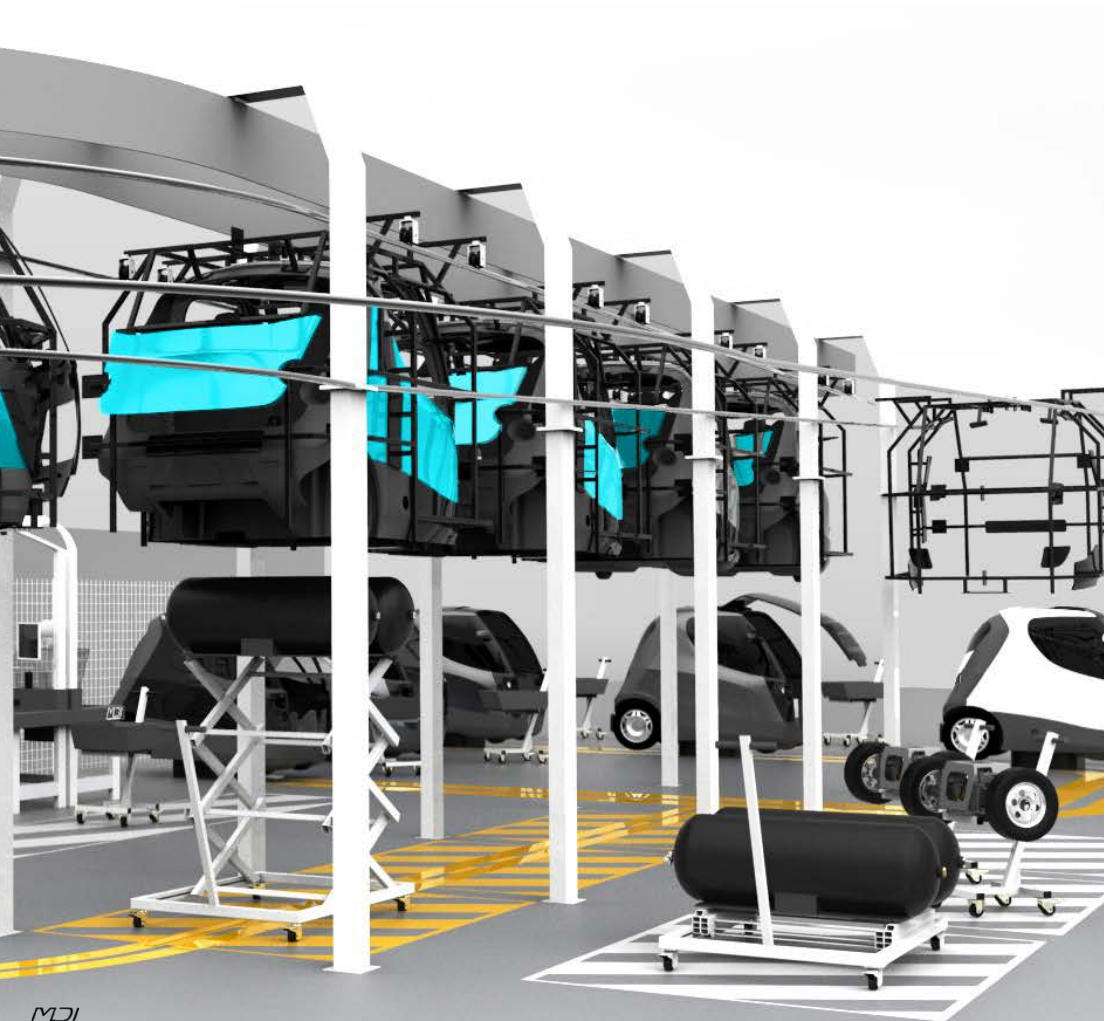
PRODUCTION AND SALES COMBINED ON MANUFACTURING SITE

A new industrial era

The use of composite materials, and our business development strategy, are profitable only because MDI has developed an innovative production concept. We could call it the «disruptive economy of scale», where the compressed air vehicles are produced in smaller units, in an approximately 50,000 ft² building for 5200 vehicles manufactured per year on an 8 hour shift.



This concept greatly reduces the environmental impact associated with transport, storage and distribution. The vehicles will be manufactured at their place of sale employing a local workforce. 80% of the vehicles will be manufactured locally and the vehicle will be sold at the factor showroom. Customer orders can be processed and «customized» with a string of very short and quick decisions, with possible adaptations to the countries (climate-temperatures...), cultures and populations (colors, patterns...).



CONCEPT PRODUCTION & STRATEGY

SALE ON PRODUCTION SITE

A turnkey plant

Our licensees can best manage their resources and customer deliveries according to sales. This new concept reduces manufacturing and distribution costs by avoiding expenses from high production, inventory and transport to distributors and dealers which is particularly expensive and causes much pollution. Our development strategy is to license our technology of compressed air engines and specific tools, and our plans for turnkey factories for manufacturers who wish to produce and sell small quantities of high-quality vehicles.



Contact us

For more information about the different licenses and booking areas, please contact us :
info@mdi.lu





MDI

NATURE TAKES US

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