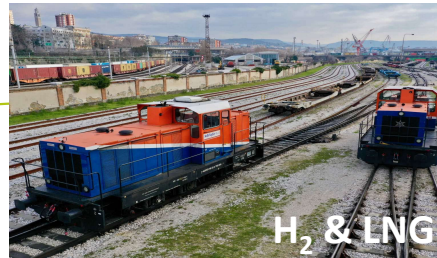




Idrogeno & LNG, il retrofit per la transizione della movimentazione portuale

“Hydrogen & LNG based vehicle retrofit for fast green transition”

Relatore: Roberto Roasio



BioLNG, H₂, Hybrid

H₂ & LNG



H₂ & LNG

Hybrid

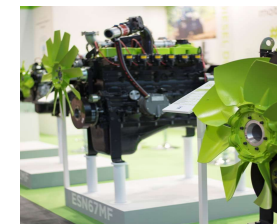


H₂ - E2CH



H₂ & LNG

ICE



H₂

Fuel Cell



LNG Diesel Dual Fuel



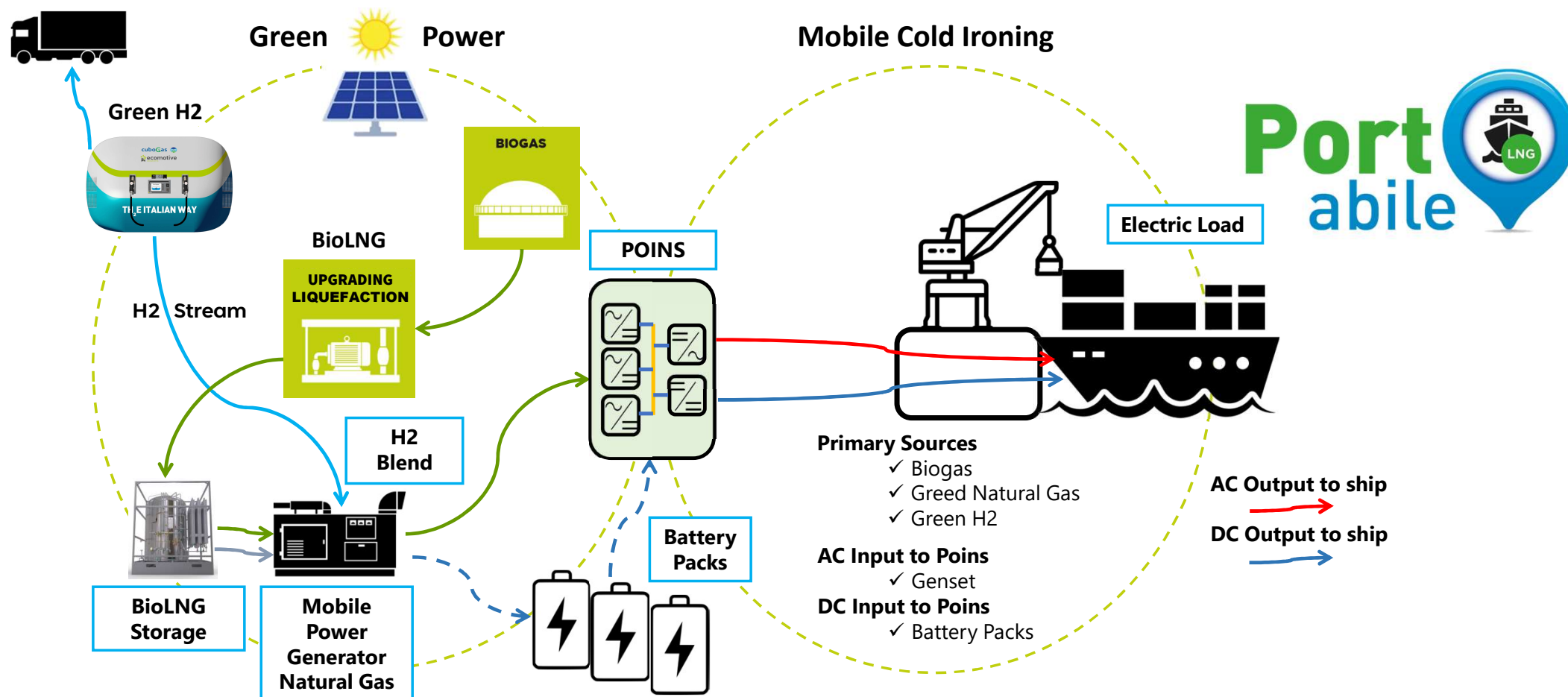
LNG Diesel Dual Fuel



LNG 100% Gas

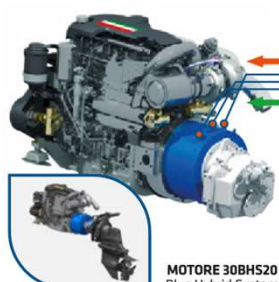


Some Relevant
ECOMOTIVE SOLUTIONS's
Case Histories

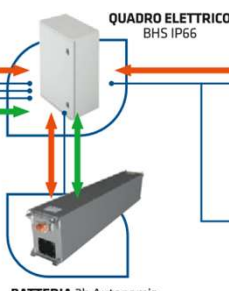




BioLNG, H2, Hybrid



MOTORE 300BHS20
Blue Hybrid System



BATTERIA 2h Autonomia

QUADRO ELETTRICO
BHS IP66

MANETTA ORIGINALE
MOTORE



DISPLAY NAVIOP

SEGNAL E CAN BUS
SEGNAL E DI RICARICA

Green H2 - E2CH



H2/Biomethane
ICE ICE



Green H2
Fuel Cell



Technologies
to support ecology



H₂ Technologies

“Hydrogen based vehicle retrofit for fast market transition”

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H2F-TRA “Hydrogen based vehicle retrofit for fast market transition”

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UNIVERSITÀ DI PISA



“Hydrogen Based Vehicle Retrofit for Fast Market Transition”

H2F-TRA Project Contents

- ✓ Four **Steps** project capable of:
 - Support a fast H₂ market startup by using the innovative transition technologies of Ecomotive Solutions,
 - Bring H₂ to the masses with bottom-up approach,
 - Implement effective H₂ applications for the widest range of vehicles,
 - Bring some original H₂ Ecomotive Solutions design to a pre-commercial level,

H2F-TRA Project Steps

- **Step 1** Design a simple retrofit system able to feed any vehicles (Diesel or Gasoline) with small percentages of H₂ (from 10 up to 50% in volume) without significant effect on vehicle performance,
- **Step 2** Design a retrofit system to use H₂ mixed with Natural Gas (H₂ up to 50% in volume) on vehicles that are already using Natural Gas as a fuel, both in Dedicated “full gas” or Dual Fuel engines,
- **Step 3** Development of a direct injection ICE engine fueled by H₂ as the only fuel,
- **Step 4** Integration of [fuel cell technology](#) to offer hybrid retrofit solutions on professional vehicles, fueled with H₂,

Green H₂ Micro Fueling Station

Electricity

Compressed

E2CH

To

Hydrogen

H₂ On demand
Electrolyzer



H₂ On demand
Compressor



= **E2CH**

Green Power



+



=

H₂+O₂
on demand
Electrolyzer

Max H₂ - 1,3 kg/h
1 kg H₂ - 57 kWh

H₂
350 bar
Compressor

1 kg/h at 300 bar
1 kg H₂ - 6 kWh

E2CH

Storage-less
On Demand
Green Hydrogen
Fueling
Micro-Station

E2CH

**Green
Hydrogen
Micro
Fueling
Station**

Ultra safe
storage less on
demand
technology

TH₂E ITALIAN WAY

