



# Hydrogen Project

**HYDROGEN SUMMIT SOFIA, BULGARIA 28 May 2018**

**FCH JU 10 th anniversary**



- INA Group – Company profile**
- Infrastructure for alternative fuels - hydrogen**
- Hydrogen market potential in Croatia**
- Hydrogen production**
- So far done and planned activities on the development of INA's hydrogen project**

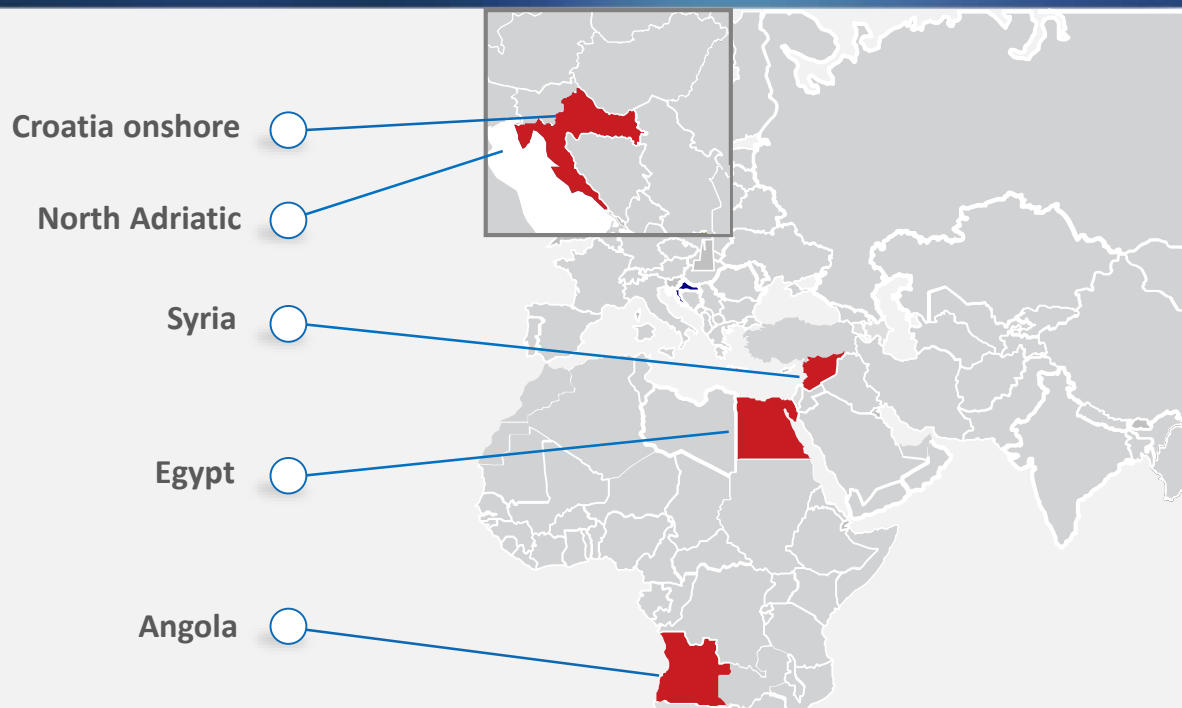
## PRODUCTION AND RESERVES

Production:

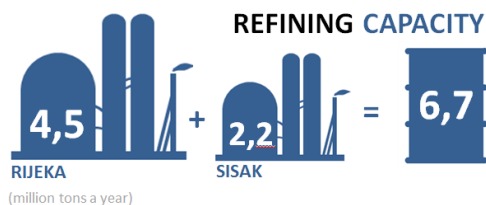
**39** Mboe/d

Reserves:

**198** MMboe



### 6.7 MILLION TONS OF REFINING CAPACITY



### ANNUAL REVENUES

**\$2,3 billion**

**495**



**10.861**

INA GROUP



## ROAD TRANSPORT

- Public transport operators with FCH buses in bigger cities – Zagreb; Rijeka; Split (as a role model), (ZET Zagreb, Autotrolej Rijeka and Promet Split)
- Other public transport bus operators in smaller cities (GPR Osijek, Polet Vinkovci, Liburnija Zadar, Libertas Dubrovnik, Pulapromet Pula,...)
- Public transport operators with FCH garbage trucks
- Private individuals - as end customers with FCH applications
- Private individuals and private companies – coming to Croatia as tourists with FCH applications - part of the Mediterranean TEN-T network corridor

## NON – ELECTRIFIED RAIL TRANSPORT

- Public transport rail operator – Hrvatske željeznice

## MARITIME TRAFFIC

- State fast shipping lines – Sea Carriers; Jadrolinija, Alpex,...

EXISTING MARKET SIZE: cca 15 t / year (for industrial needs)

EXPECTED MARKET SIZE: cca 1000 t / year

## GENERAL INFO

- Hydrogen Generation Unit at the Rijeka oil refinery was built in 2010 for the purpose of production of petroleum products
- The spare production capacity available for other needs on the market is up to **10,000 tons of hydrogen per year**

## FEED

- Natural gas
- Source: Adriatic sea by INA Agip off shore platform or from other sources through Croatia's gas transport system

## HYDROGEN PRODUCT

- Pressure: 22.6 bar, Temperature: 38 degrees Celsius
- **Quality: Hydrogen 99.99 vol % (min);**

CO + CO<sub>2</sub> 50 ppmv (max); CH<sub>4</sub> 50 ppmv (max); Nitrogen 900 ppmv (max)

- No adequate logistic infrastructure in Rijeka refinery for hydrogen storage and refueling station

So far done:

- INA has set up a hydrogen project team for project development (Team)
- The Team presented to Ministry of Energy and Ministry of Transport the potential of hydrogen project
- The Team developed a technical specification for technological solution and cost estimation, within Rijeka refinery, for:
  - Hydrogen manipulation and transportation
  - Hydrogen storage
  - Hydrogen loading
  - Hydrogen refueling station
- In June, the Team is expected informational offers from several bidders

The Team activities in the upcoming period:

- Communicate with the representatives of the cities of Zagreb, Rijeka and Split, about INA's hydrogen project
- Communicate with the representatives of business entities, potential buyers of the hydrogen, about the development of INA's hydrogen project
- Identify individual and common business interests for all business entities interested in developing hydrogen project in Croatia
- Establish a partnership with all business entities interested in developing a hydrogen project – **this is the first step of the hydrogen project**



**Thank you for your attention!**

**Tomo Galić**

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