Workshop on Modernisation of Danube Vessels Fleet
RAG L-CNG Infrastructure

Vienna, April 18th 2018
Company profil RAG

- **Revenue** 2017 ~ € 390 Mio.

- **Formation** 1935 – since 1955 Oil/Gasproduction in Austria

- **Shareholder:** 50,025 % EVN AG; 29,975 % Uniper Exploration & Production GmbH; 10,0 % Energie Steiermark Kunden GmbH; 10,0 % Salzburg AG

- **Storage capacity** total: ~ 6,0 Mrd. m³ (~ 67 TWh) = Tenfold increase since 2004; 50% of the reservoirs used as storage

- Investment of **€ 1 Billion** in 10 years in storage development

- RAG is **4th largest** Underground Gas Storage operator in Europe

![Graph showing storage capacity comparison among companies](image-url)
Location of RAG storage facilities

Withdrawal Capacity (30 GW) - corresponds to ~ 30 Nuclear Power Plants
GAS for MOBILITY – from production to customer solution

**Production:**
- RAG E&P
- RAG „Green Gas“ „Sun Storage“
- RAG Biogas
- Public Grid

**Storage:**
- „Energystorage“ (Methan) 67 TWh (RAG operated storage)

**Fuel:**
- CNG Methan Compression
- LNG Methan Liquefaction

**Facility:**
- Fueling_station_(CNG) cars, mid-size trucks
- Fueling_station_(LNG, C-LNG) trucks, buses
- LNG fuelled Vessels
RAG LNG and CNG Infrastructure

Transport & Distribution

• Start with CNG CARS 2013
  • RAG operates ~ 50 CNG fueled cars
  • Total number of CNG fueled cars in Austria ~ 7,000

• LNG/CNG TRACTOR TRUCK
  • First CNG/LNG tractor truck in Austria (IVECO) in 02/2017
  • On-Road test for freight forwarders since 03/2017
  • + 4 CNG/LNG tractor trucks are in operation (~ 130,000 km)
  • RAG will invest in additional LNG tractor trucks according to future developments / demand
  • Fleet operators to be convinced for converting

• LNG ROAD TANKER
  • One road tanker in operation
  • Extension by road tanker and ISO-Containers planned

• LNG TRANSPORT by RAIL and SHIP
  • Currently there is no LNG transport by rail or ship operated in Austria, but ongoing developments – especially on the Danube waterway
LNG Production (Micro Scale)

ULTC – Ultra Low Temperature Conditioning

- Technology established 2013-2015 (cooperation)
  - Modular, self-sufficient moveable design
  - Cooling by liquid nitrogen (LIN)

- Pilot plant in Puchkirchen (Upper Austria)
  - Installation completed 2015
  - Test runs 02/2016 to 03/2017
  - Rebuilt & Extension of the plant in 2017
  - Commissioning ongoing
  - Production capacity 2 t/d ≈ 650 t/a

- Scale-Up design available for 8,000 t/a

Regional Natural Gas Production
200 Mio m³/a (~ 146,000 to to/a LNG)
LNG Filling Station RAG

Ennshafen (Upper Austria)

• Start of operation: Aug 2017
• Public Filling Station (24/7)
• Access by RAG card
• Prevent Boil-Off by N2 cooling

Station Network Development

• Additional filling stations planned
• Support by politics is necessary
RAG LNG Production/Fueling Stations
Projected Development

RAG LNG Production actual
RAG LNG Production planned
RAG LNG Filling Station actual
Planned Filling Stations
Planned LNG Bunker/Hub

Gampern since: 2016
Ennshafen since: 22.08.2017

LNG-Hub Austria – River/Rail/Road
Project „LNG HUB AUSTRIA“

Application for EU-Funding for the installation of a LNG infrastructure in Austria:

- **Plants:**
  - 9 LNG filling stations
  - 2 Small Scale LNG Production plant (+ 1 Micro)
  - 1 Bio LNG-Liquefaction plant
  - 1 LNG Logistic-und Storage Center

- **Time Frame:**
  - Implementation until 2023

- **Target area:**
  - Austria and close range of the neighboring countries, e.g. (South-) Germany, Italy, Slovenia, Slovakia, Hungary
Thanks for your attention!