LIETUVOS GELEŽINKELIAI

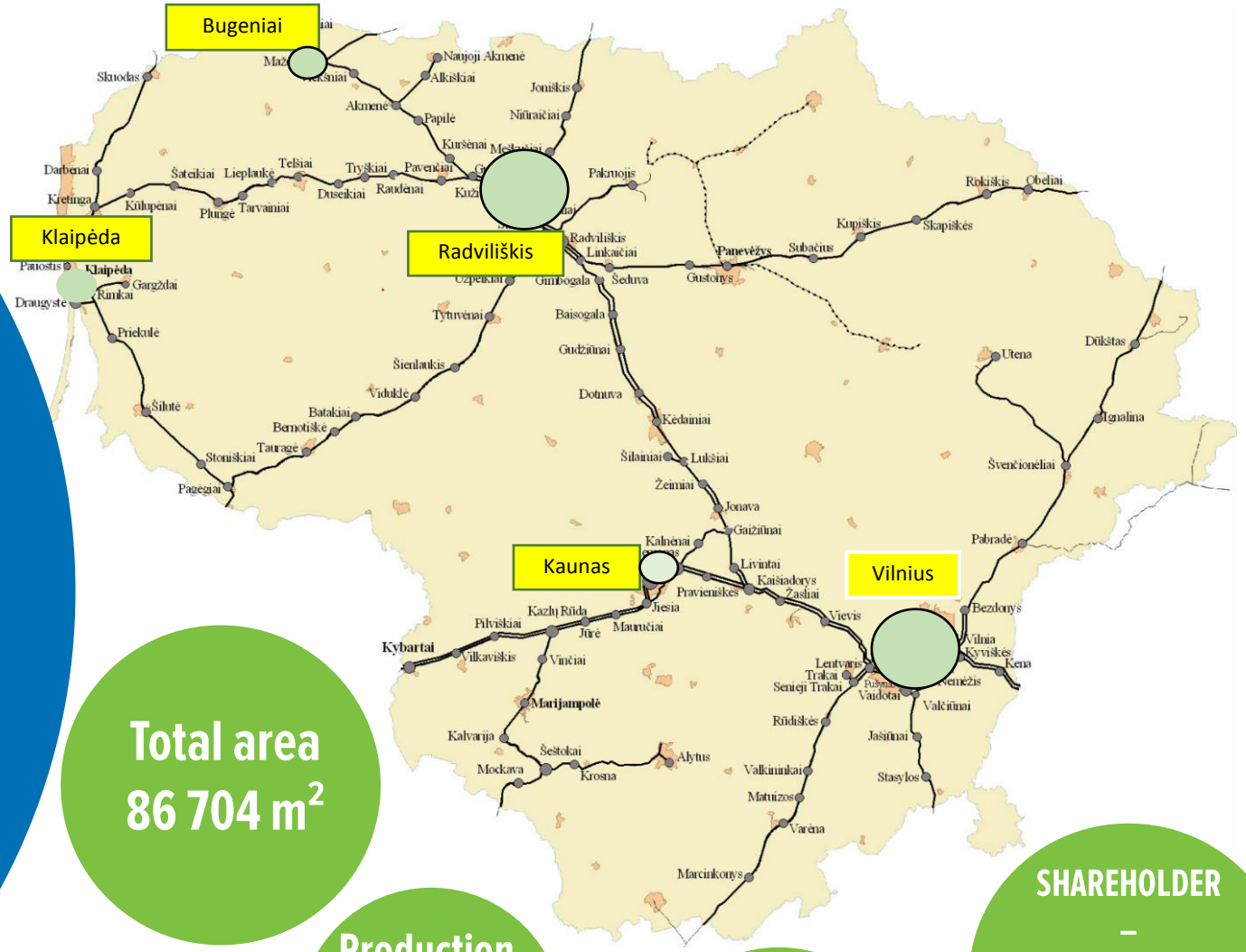
UAB
VILNIAUS LOKOMOTYVŲ REMONTO
depas

LNG FOR RAIL-
LNG HYBRID SHUNTING LOCO

Klaipėda, 2019

COMPANY PROFILE:

- MAINLINES LOCOS
- SHUNTING LOCOS
- RAILCARS FOR MAINTENANCE
- FREIGHT AND PASSENGER WAGONS
- COMPONENTS FOR ROLLING STOCK



Total area
86 704 m²

Production area
51 255 m²

EMPLOYERS
958

SHAREHOLDER – LITHUANIAN RAILWAYS 100%

THE PROBLEM

Nowadays the major part of industrial locomotives are diesel powered, business still cannot propose alternative solutions to fulfill strict requirements for exhaust emission.
The modern and perspective solution is demanded.

WORLD TRENDS IN TRANSPORT SYSTEM

LNG powered vessels number going up:

- 2017 – 118 units;
- 2018 – 143 units in operations + 135 on order *

*Source: https://www.maritime-executive.com

- VW group plans 22 million electric vehicles in ten years.
- Almost 70 new electric model by 2028 („Just electric“ campaign started 8th May 2019 to introduce ID.3).

- Paris, Madrid, Athens and Mexico City said they would remove diesel cars and vans by 2025.
- Norway plans to ban diesel and petrol engines in light transport by 2025, France – by 2040, UK – by 2050.

TOPIC RELEVANCE

EU requirements to reduce air pollution

Gothenburg protocol obligate EU members till 2020 reduce:

Nox – 42 %, SO_2 – 42%, solid particles– 22%

Innovation design in Railways using „green“ technology

EU harbors, terminals Operates about 9.000 shunting locos

Most part of them is diesel powered

Most of harbors located in city areas

Performance enhancement for Lithuanian and other EU companies

INITIATIVE

LITHUANIAN LNG CLUSTER

VILNIUS GEDIMINAS TECHNICAL UNIVERSITY

LIETUVOS GELEŽINKELIAI

BEGA STEVEDORING COMPANY

KLAIPĖDOS UNIVERSITETAS

KN

The Lithuanian LNG cluster has combined the engineering and technological resources of the members and partners:

AB Lietuvos geležinkeliai (Lithuanian Railways),
Klaipėda Stevedoring Company BEGA,
AB Klaipėdos nafta,
Vilnius Gediminas Technical University and
Klaipėda University

the LNG hybrid locomotive project was launched.

OUR TASK:

VLRD as leading project partner should create and integrate a high-efficient and ecological hybrid power traction system in locomotive

1. WITH LNG ENGINE
2. WITH ENERGY STORAGE SYSTEM
3. SYSTEM CONTROL & MONITORING

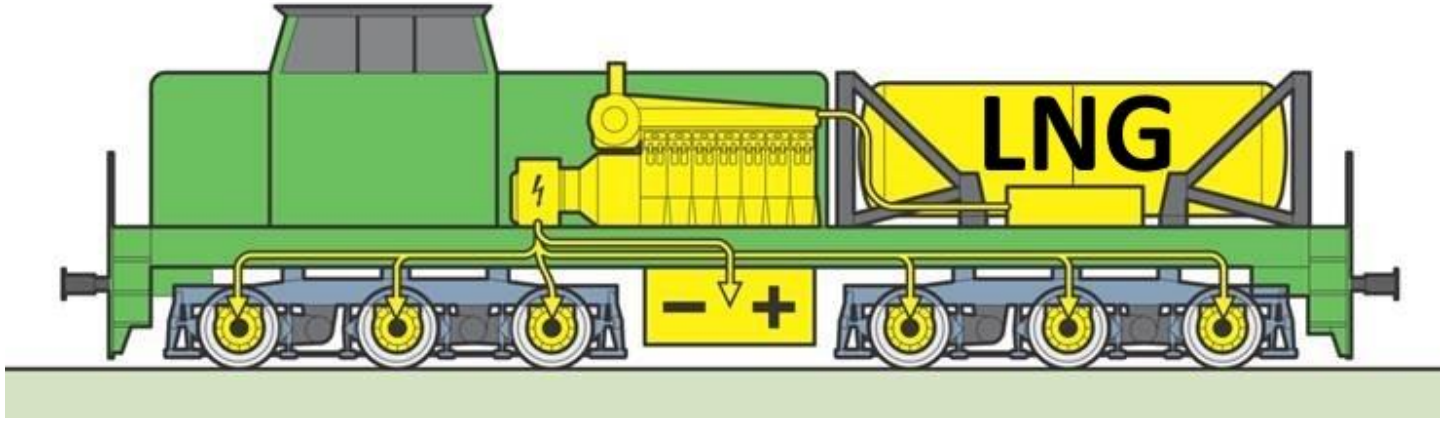
SHUNTING LOCO OF THE FUTURE

LOCOMOTIVE WITH HYBRID TRACTION SYSTEM, THAT CONSIST OF LNG ENGNE AND ENERGY STORAGE SYSTEM

WHY LNG?

1. Not possible to construct catenary in harbors and cargo terminals
2. Expenses for fuel less **20** %
3. Emission of solid particles– **0**
4. NOx reduction– **85** %
5. CO2 reduction– **25** %
6. LNG engine – less noise

PROJECT PERSPECTIVES



THERE ARE NO CASES OF IMPLEMENTATION OF SUCH A PROJECT IN EUROPE → PRECEDENCE IN LNG RAILWAY TECHNOLOGIES

GROWING LNG FUEL PROSPECTS → WE BELIEVE IN POTENTIAL TO APPLY THE LNG ENGINE FOR RAILWAY INDUSTRY IN THE NEAR FUTURE

TODAY:

We make new steps every day

1. PREFINAL TECHNICAL DESCRIPTION
2. PREPARATION OF LOCO FOR MODERNIZATION IN PROCESS
3. BASE DRAWINGS & LIST OF MAJOR COMPONENTS
4. DESIGN OF THE TRACTION CONTROL SYSTEM & LAYOUT OF THE COMPONENTS

OPEN POINTS:

1. NO VALIDATED TECHNICAL REQUIREMENTS FOR LNG DRIVEN ROLLING STOCK
2. PROJECT AUDIT FOR SAFETY ASPECTS
3. THE QUESTION OF OPTIMAL LNG REFUELING STILL OPEN
4. ONGOING RESEARCH OF ECONOMIC EFFICIENCY IN COMPARISON WITH THE USE OF DIESEL LOCOS


Thank You
for Your attention!
www.vlrd.lt