



Pipelines and plants in Venice and the lagoon

Investor Day Site Visit

November 6, 2018



— Speaker



PAOLO BACCHETTA

— Agenda



**Isola
delle Tresse**



Meters



**New leak
detection
technology**



**Network
digitization**



**Gas pipelines
in Venice's
historical centre**



**Pipelines in
the Lagoon**

— Agenda



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Gas pipelines
in Venice's
historical centre



Pipelines in
the Lagoon

Insular withdrawal system: TRESSE

- Withdrawal, Reduction and Metering Plant (IPRM)
- Smart Meters



Isola delle Tresse
AERIAL VIEW

Isola delle
Tresse

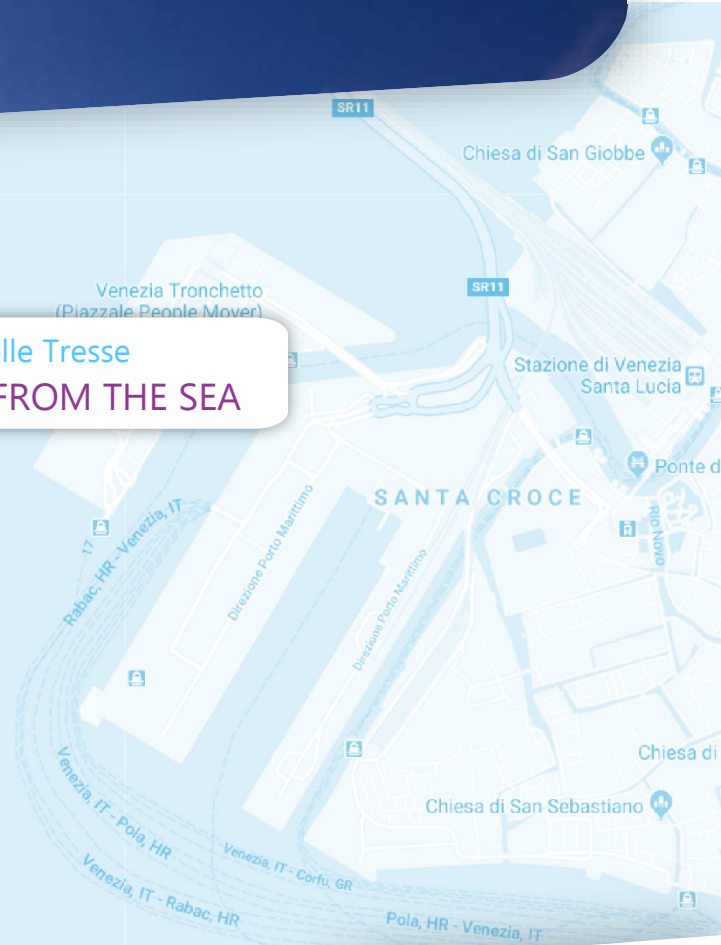


— Insular withdrawal system: TRESSE



Isola delle
Tresse

Isola delle Tresse
VIEW FROM THE SEA

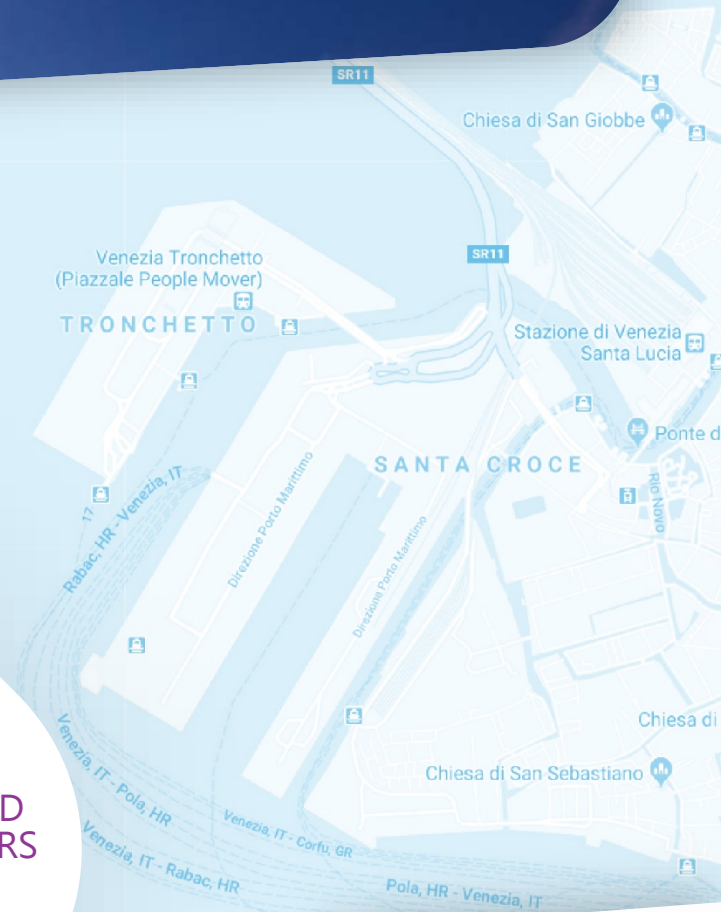


— Insular withdrawal system: TRESSE



Isola delle
Tresse

FILTERS AND
EXCHANGERS
SECTION



— Insular withdrawal system: TRESSE



SAFETY
VALVES
SECTION



Isola delle
Tresse

GAS
PRESSURE
REDUCTION
SECTION



— Insular withdrawal system: TRESSE



Isola delle
Tresse

GAS METERING
AND ODORISING
SECTION

— Agenda



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Pipelines in
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Smart meters

CUSTOMER TYPE

METER CLASS

Large Users
(industrial customers)

\geq G40

CUSTOMER TYPE

METER CLASS

Large Users
(industrial customers)

G10, G16,
G25

Mass Market
(residential customers)

\leq G6

LEGACY METERS



CONVERSION DEVICES

Only classes \geq G65



SAC

CENTRAL ACQUISITION SYSTEM

INTEGRATED SMART METERS



Smart meters

DYNAMIC METERS

Diaphragm Type



LARGE USERS

STATIC METERS

Thermomassic



Diaphragm Type



MASS MARKET

Ultrasonic



Thermomassic



— Agenda



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Pipelines in
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— Innovative Laser Technology

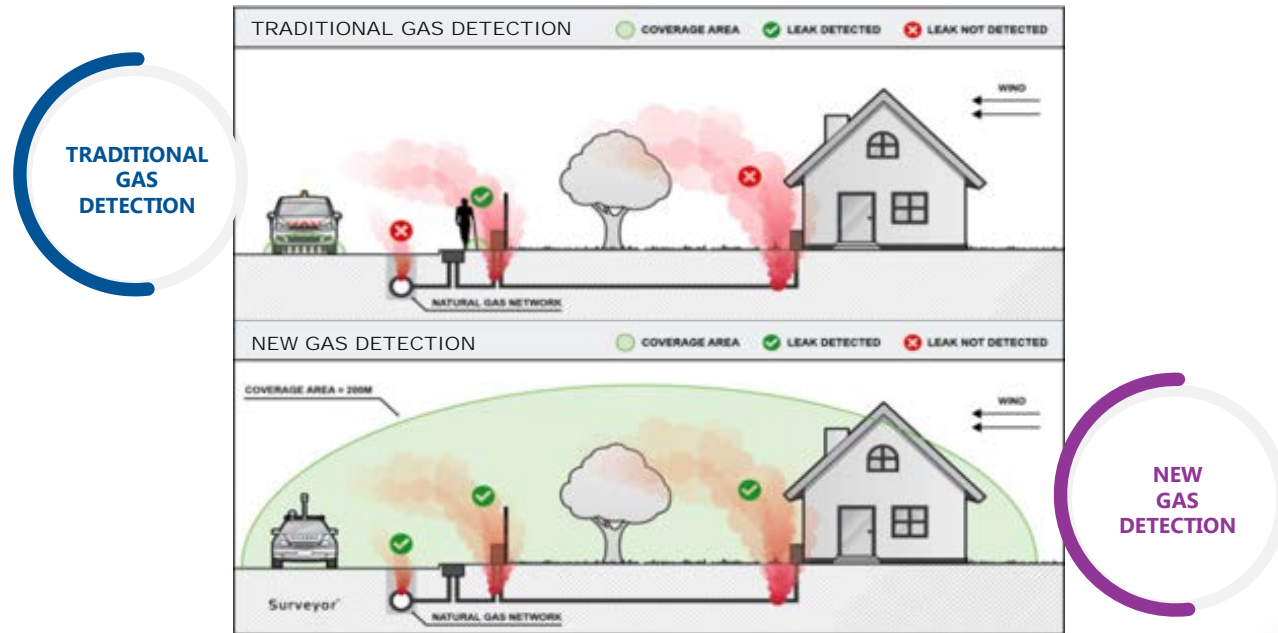
Main advantages:

- Laser absorption spectroscopy technology
- Sensitive not only to methane (CH₄) but also to ethane (C₂H₆) (can identify biogenic natural gas for example coming from sewers or pools)
- Much higher sensitivity (parts per billion = µg/kg) 1,000 times higher than current laser systems (ppm: parts per million = mg/kg)
- Dispersion can be detected even at about 150-200 m depending on wind speed
- The vehicle can travel at the same speed as other vehicles without obstructing traffic



New leak detection technology

Comparison of traditional and innovative technology (volume investigated in green)



TRADITIONAL
GAS
DETECTION

NEW
GAS
DETECTION

— Innovative Laser Technology – Vehicle-based and pedestrian search



Innovative Laser Technology – Vehicle-based search

Vehicle equipment



ANEMOMETER

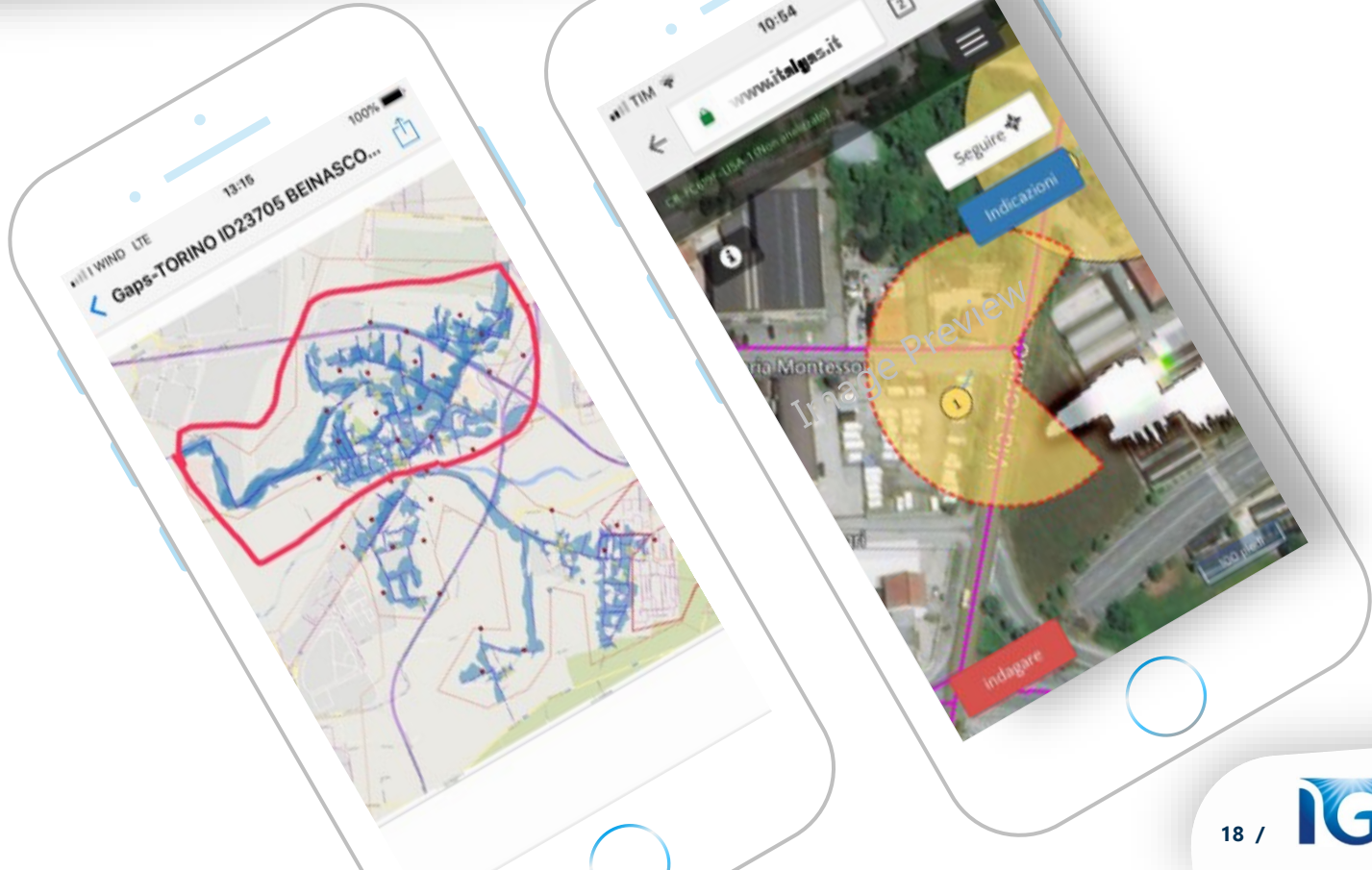
GPS
ANTENNA

INERTIAL GPS

ASPIRATION
SYSTEM



Innovative Laser Technology— Layout



— Agenda



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**Network
digitization**



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— Network digitization

CURRENT NETWORK



DIGITALISED NETWORK



FINAL REDUCTION UNIT

(Monitoring point of digital parameter such as Q, P, T, ...)



TERMINAL POINT (pressure monitoring)



100% SMART METERS



— Via Vian – Mestre System



Via Vian - MESTRE

SR14

Bosco dell'Osellino

TRIE

Via Amerigo Vespu

Forte M

SR11

21 /

— Via Vian – Mestre System



Via Vian - MESTRE

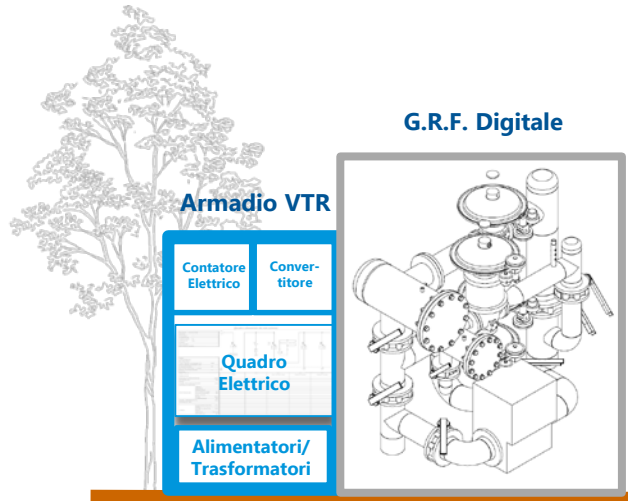
SR14

scos
sellino

TRIES

Via Amerigo Vesputi

— 2019 Digital Final Reduction Unit: outline of new single cabinet systems



— Agenda



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in Venice's
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Pipelines in
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— Gas pipelines in Venice



Ponte degli Scalzi
**REMOVAL OF
MARBLE**

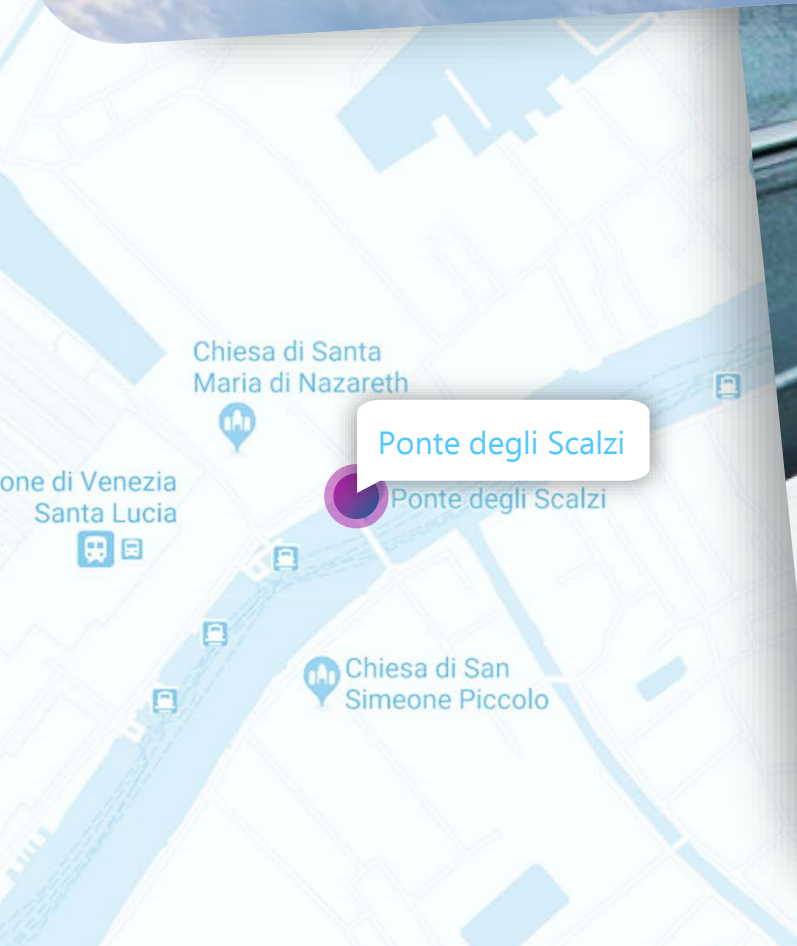
Chiesa di San
Maria di Nazareth

Stazione Venezia
Santa Lucia

Ponte degli Scalzi

Chiesa di San
Simeone Piccolo

— Gas pipelines in Venice



Gas pipelines in Venice



Gas pipelines in Venice

Riva degli Schiavoni
ANCHOR BLOCKS
(TO AVOID FLOATING)



— Agenda



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**Pipelines in
the Lagoon**

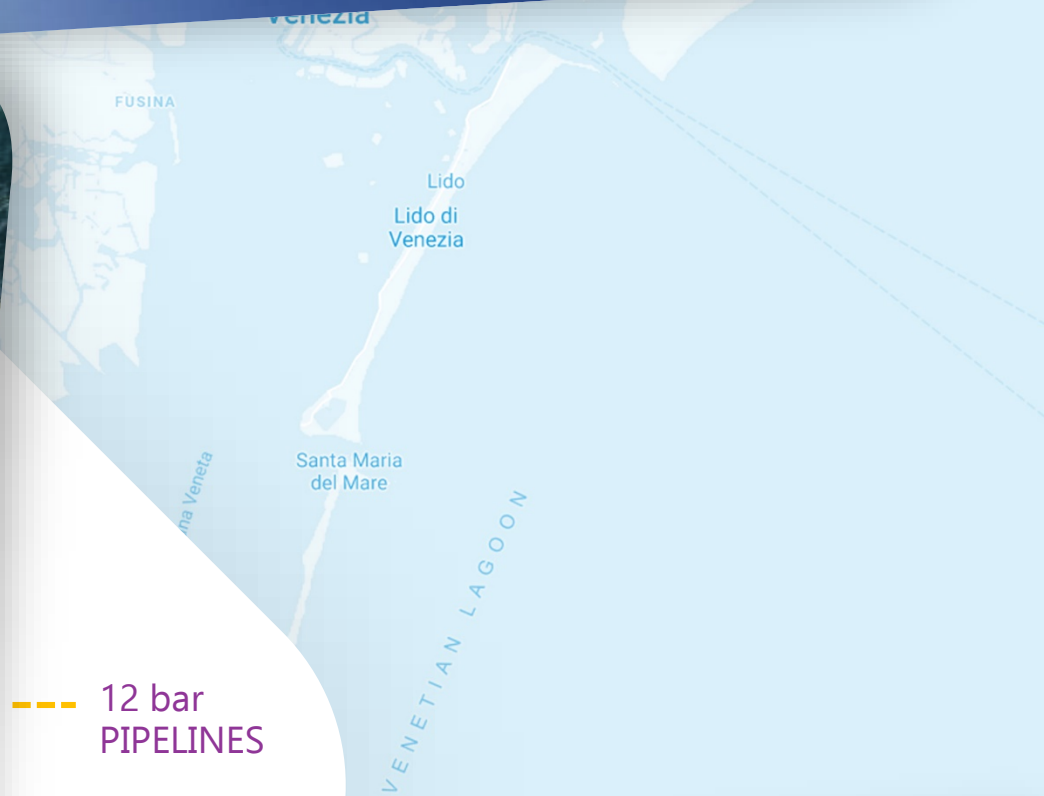
— The lagoon pipeline

A4



--- 12 bar
PIPELINES

--- 5 bar
PIPELINES



— The lagoon pipeline

Mira

FUSINA

Lido
Lido di
Venezia

Santa Maria
del Mare

Laguna Veneta

VENETIAN

Conche



SS516



LAYING
SPECIFIC
EQUIPMENT

— The lagoon pipeline



Mira

FUSINA

Lido
Lido r
Vene

LAYING
SPECIFIC
EQUIPMENT

SS516

Piove di Sacco

Arzergrande

Pontelongo



Laguna Veneta

Santa Maria
del Mare



VENET

— The lagoon pipeline



LAYING
SPECIFIC
EQUIPMENT

— Signalling valves and couplings

“Octopus”
shut-off valve



Gas piping signal
“Coupling”

VALVES
COUPLINGS



Works in the lagoon

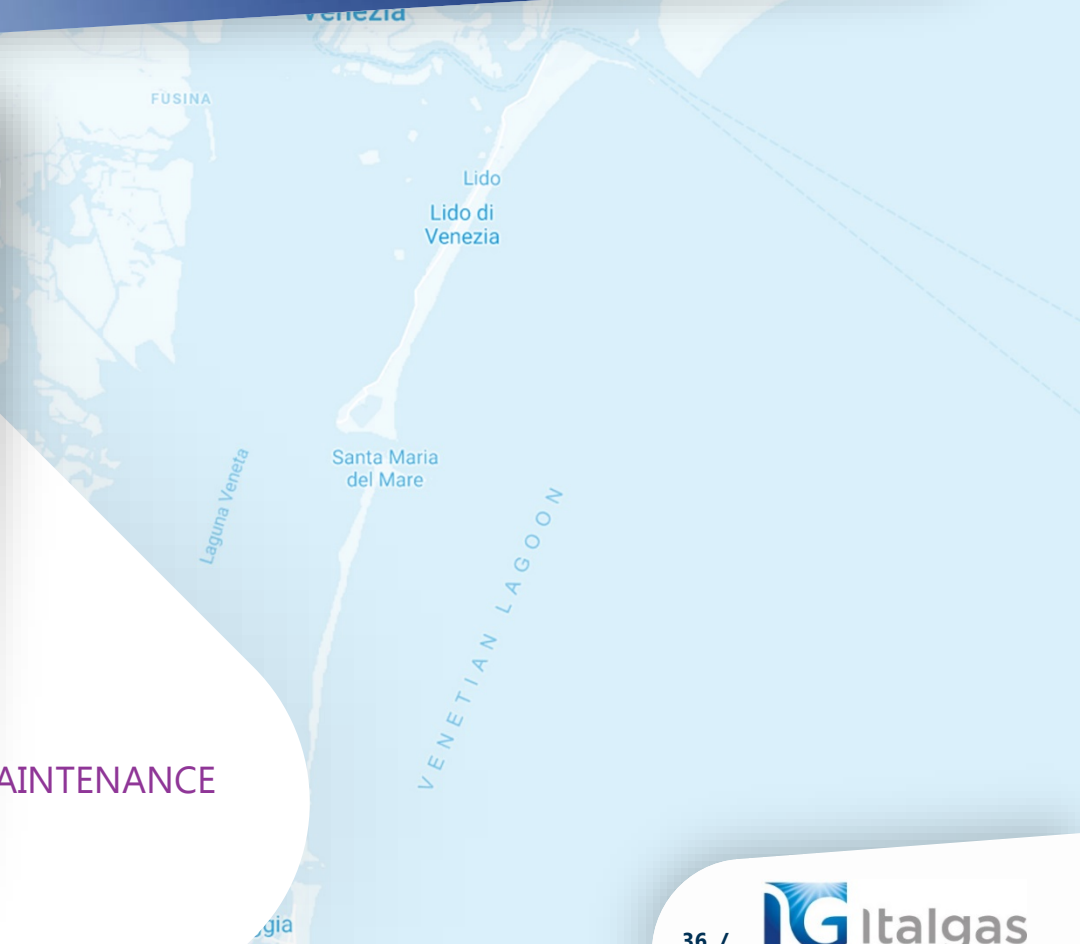
FORMWORK FOR WORK IN THE LAGOON



— Works in the lagoon



MAINTENANCE



— Tomorrow visit path



— Agenda

Q&A