KUALA LUMPUR 2012 WORLD GAS CONFERENCE

IGU

25th world gas conference

"Gas: Sustaining Future Global Growth"

THEFT MITIGATION IN THE AUTOMOTIVE MARKET

By: José Carlos Oliver

Luiz Carlos Dutra

Ricardo Fujii

Patron

IGU INTERNATIONAL GAS UNION

Host

MALAYSIAN Gas ASSOCIATION

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PETRONAS reimagining energy

Agenda

- COMGÁS view
- The Case
- Facing the Issue
- What was Found
- Mitigation
- Final Results

Comgás

Concession Area

Population	29,2 Mi
Houses	7,7 Mi
Vehicles	9 Mi
GDP	25%
Energy Demand	35%

COMGÁS

Sales	5 bi m3/year
Network	8 mm Km
Customers	1,2 million
Cities	72

The Case

- 387 NGV stations
- 50% Independent operators (“white flag”)
- NGV Fleet 200,000 vehicles (COMGÁS area)
- Volume: from 1.0 MM m3/day to 1.6 MM m3/day
- Ethanol competition

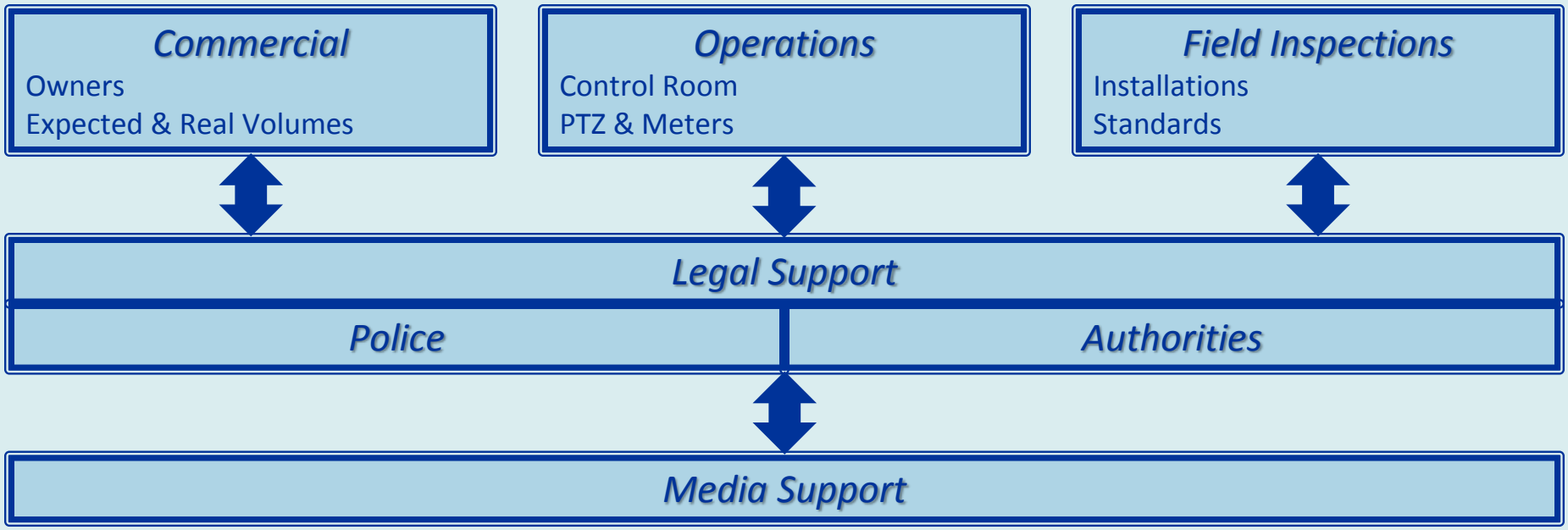
- End of 2006 UFG indicating theft
- “Gossips” about criminal gangs managing gas stations to laundry money
- Unfair competition within the market
- In 2007 the first case was confirmed – gas station using a meter by pass
- Losses estimated in 200.000 m3 / day
- U$ 80,000 / day
- Risk of market “contamination”

Facing the Issue

- Theft mitigation plan to prevent losses, explosions and HSSE risks
- “Smart” control of the process
- Customer information & Data Info
- Critical customers
- Theft methods
- Mitigation strategy
- Relevant Authorities
    - Regulator
    - Police
    - Public Prosecutor
    - Tax Authorities
- Support from São Paulo University Technological Institute (IPT)
- Zero Tolerance

Facing the Issue

Action Framework



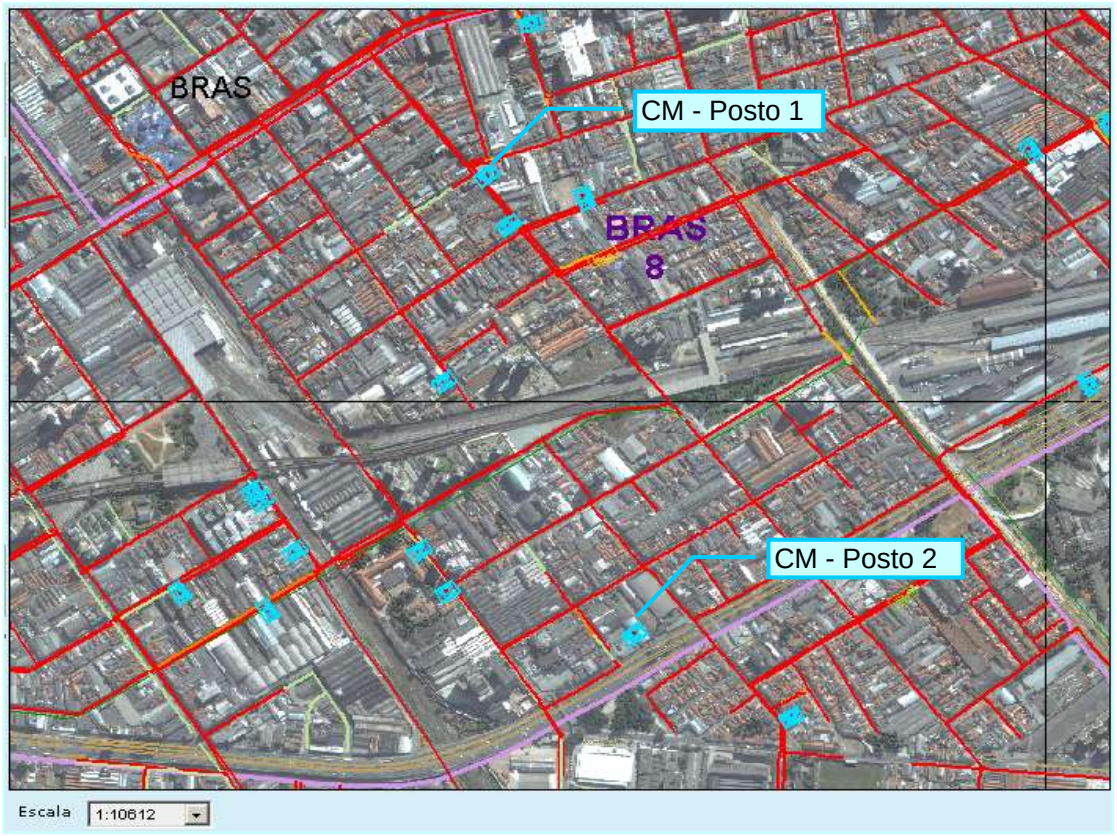
Facing the Issue

Multi Functional Structure

Facing the Issue

Comparing Competitors – GIS support

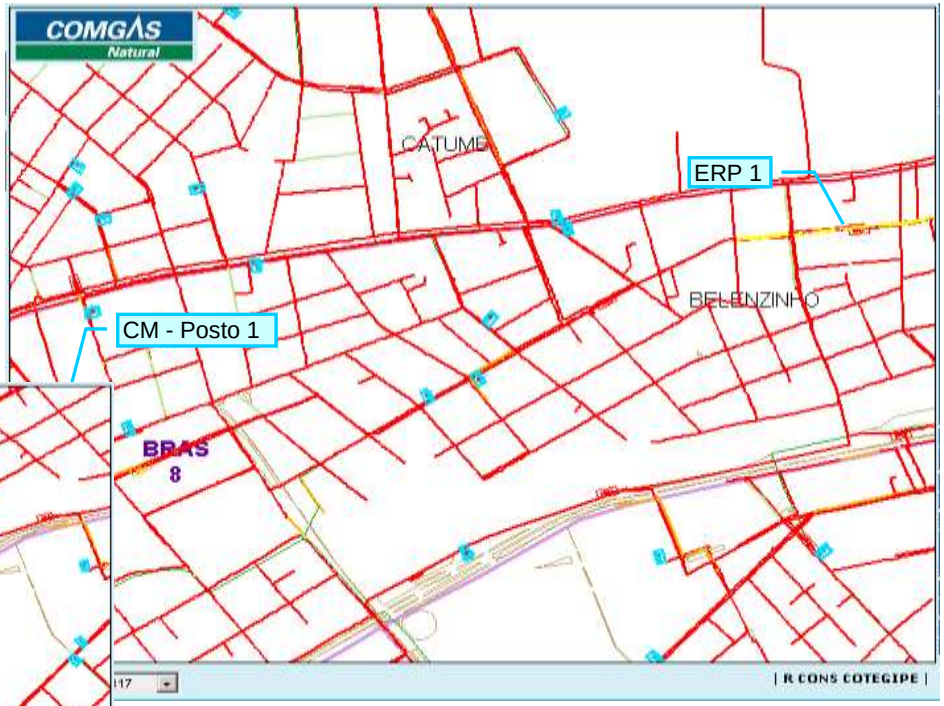
Stations	CDIE	Pressure (Bar)	Location	RPS	Meter	DN	Flag
Station 1	533065	4	R. Hipódromo, 303	26	IR400	4"	White
Station 2	552188	4	Av. Alcântara Machado, 1655	25	IR400	4"	White



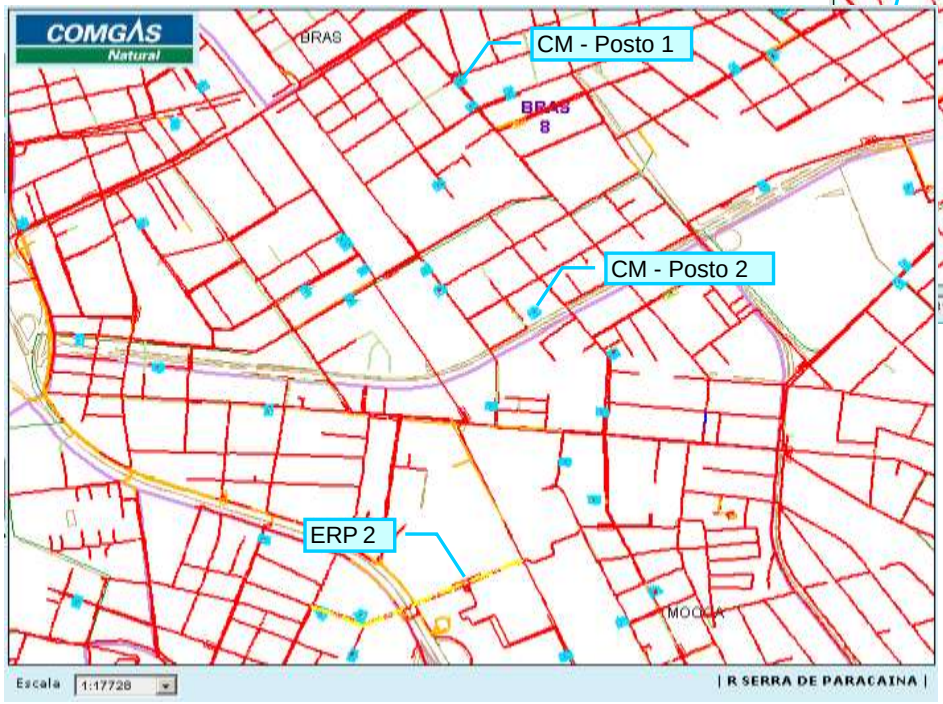
Facing the Issue

Location – GIS support

PRS 26 distance to Station 1: 2,337 m

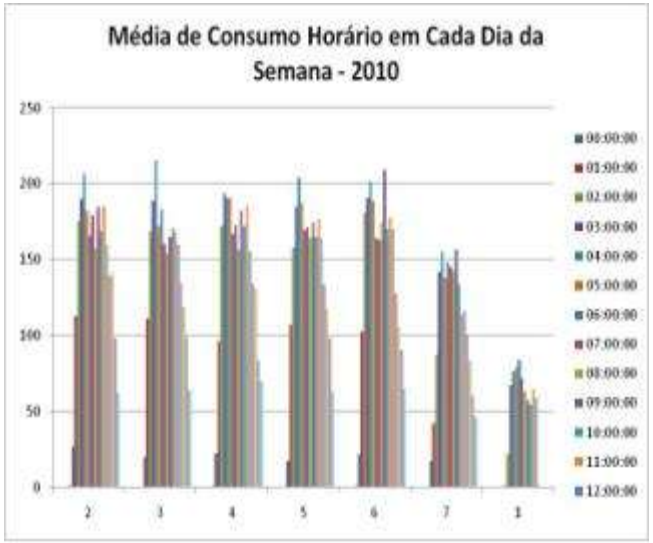


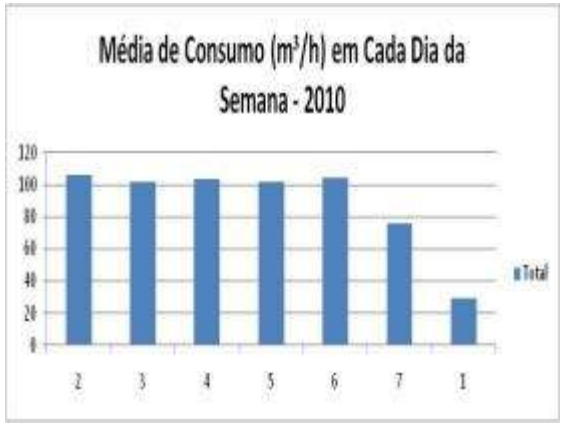
PRS 2 distance to Station 2: 1,446 m

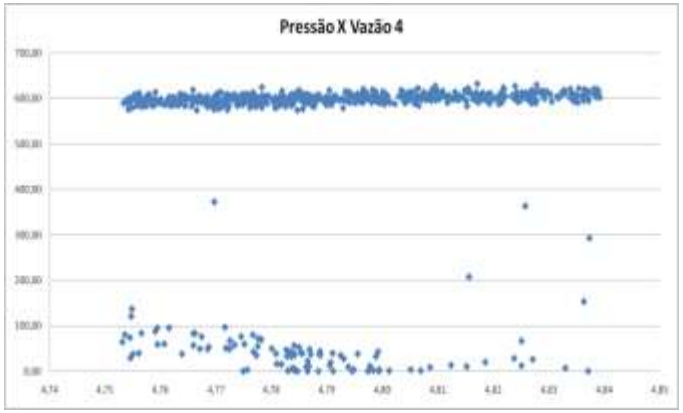


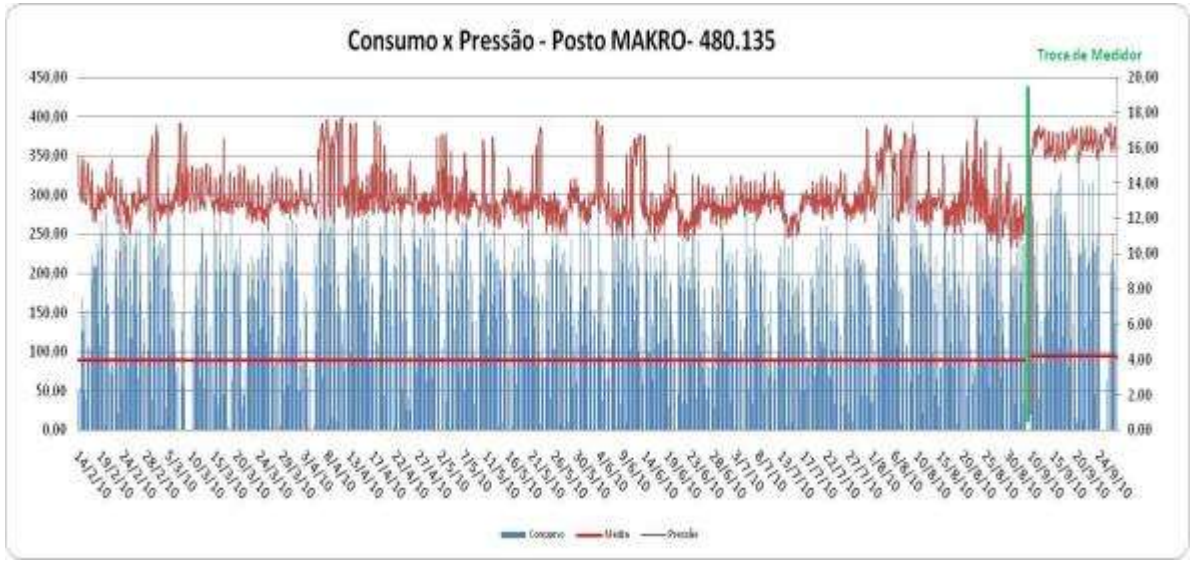
Facing the Issue

Operational Parameters Evaluation (Volumes, Flow, Pressure, Time, etc..)









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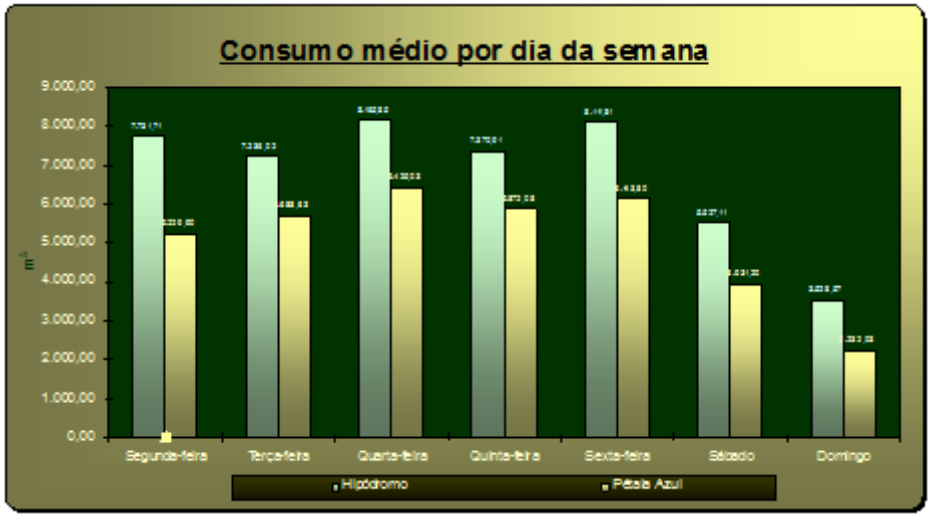
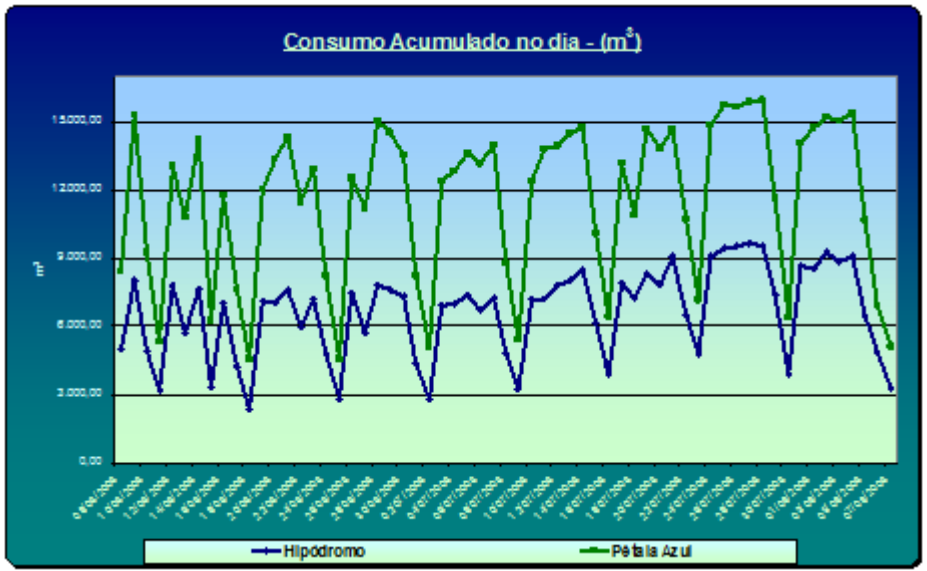
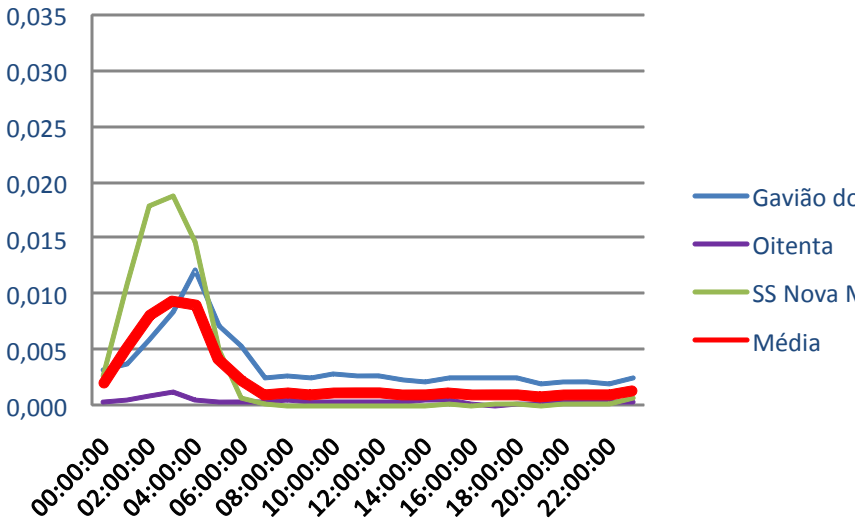




Facing the Issue

Operational Parameters Evaluation (Volumes, Flow, Pressure, Time, etc..)

Hours Without Consumption



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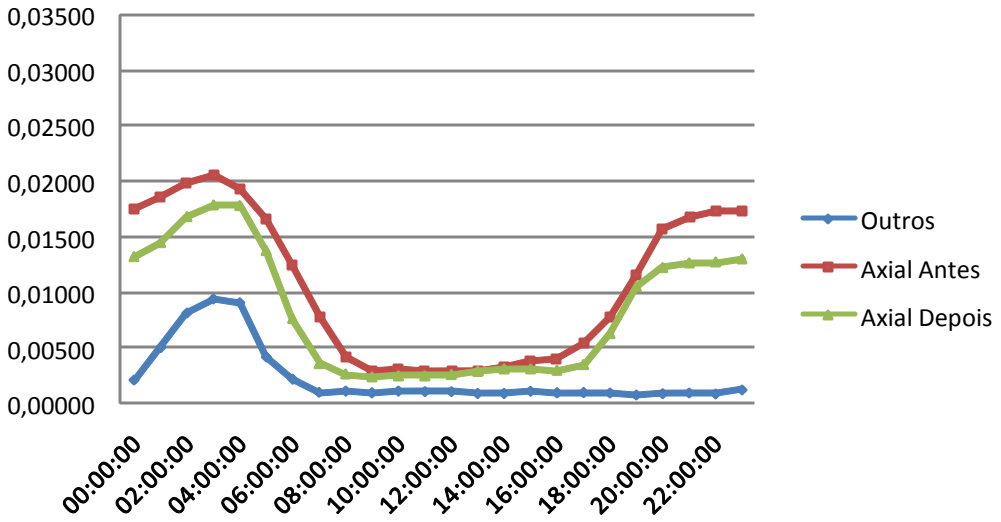

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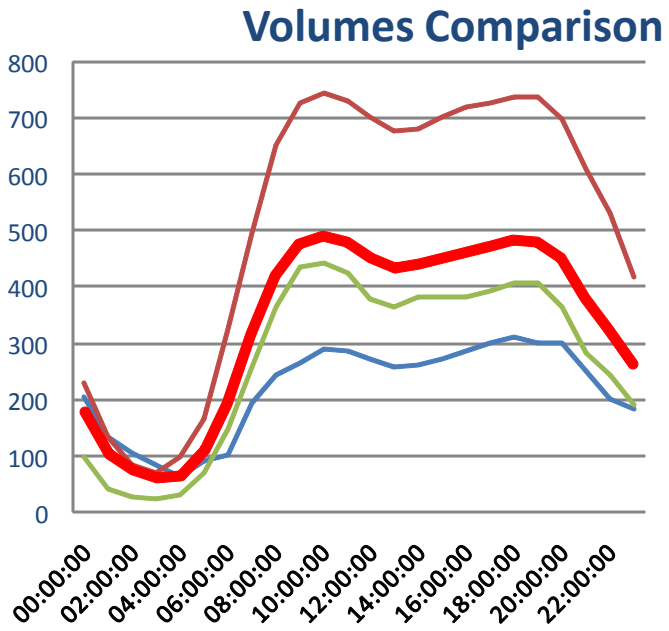
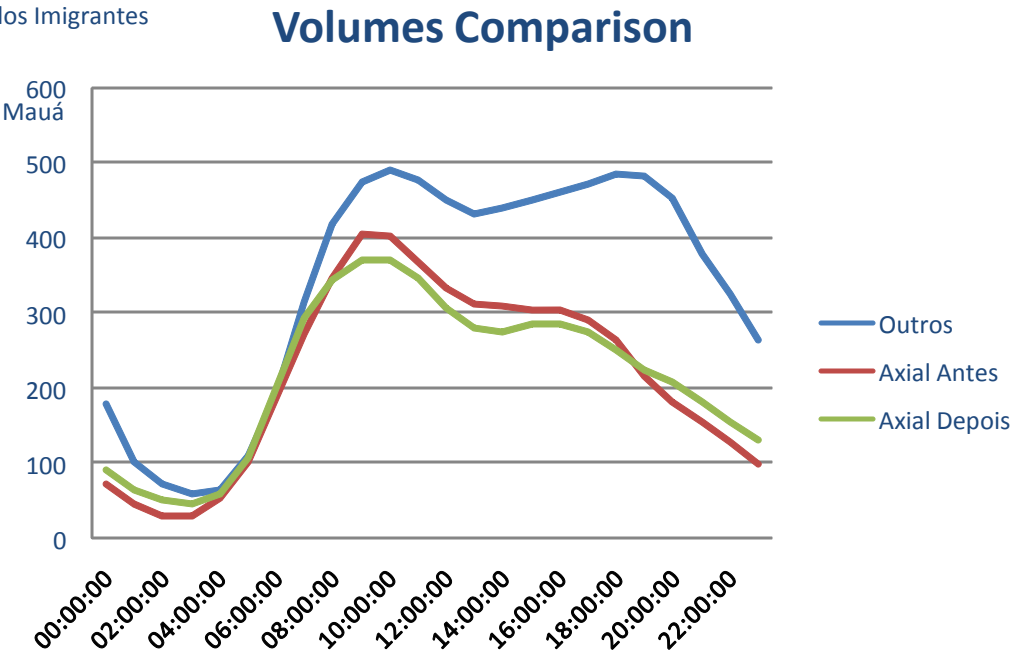
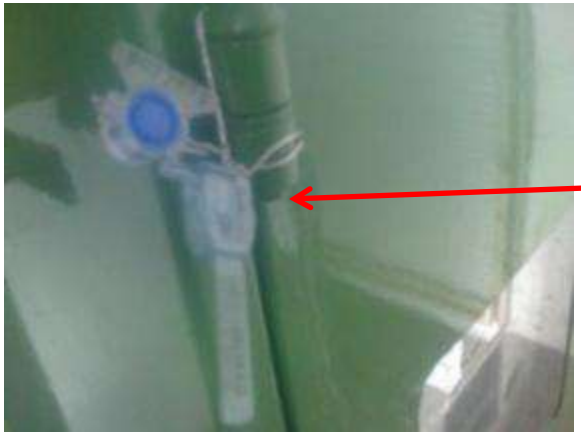


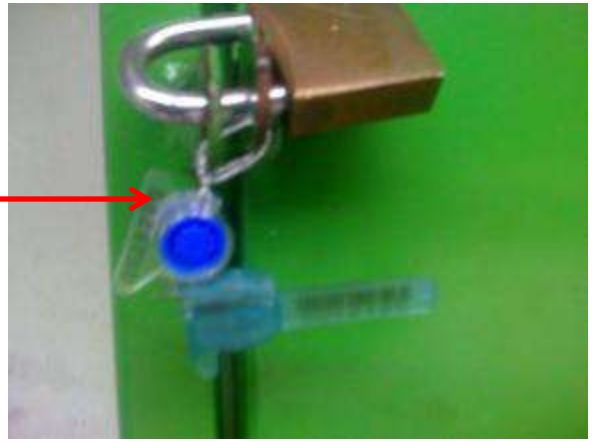


What was Found

Seals Violations



Original seals



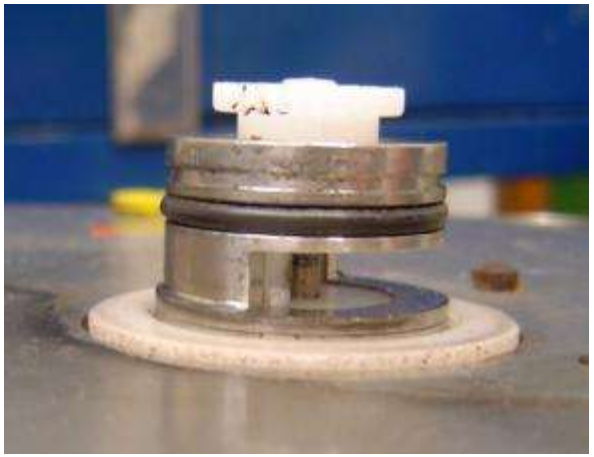
Violated seals

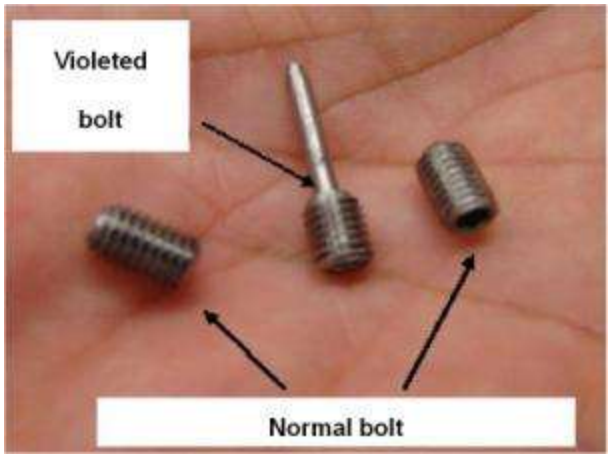
What was Found

Meters Opened

What was Found

Holes in the Axis of the Meter & Screw Violation

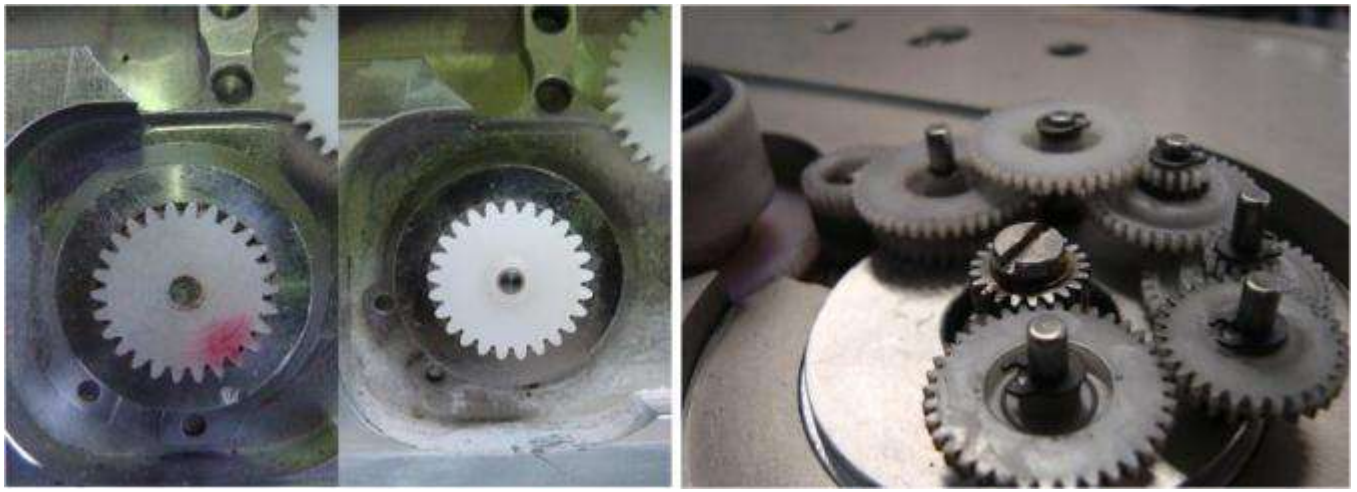




Manual de plástico do medidor inspecionado evidenciando o furo (à esquerda), o corte semicircular (ao centro) e um manual de plástico padrão para esse tipo de medidor (à direita).

What was Found

Gear Meter Violation



What was Found

Meter Dial Violated

What was Found

Meter By Pass

Meter & Filter

Compressor Entrance

What was Found

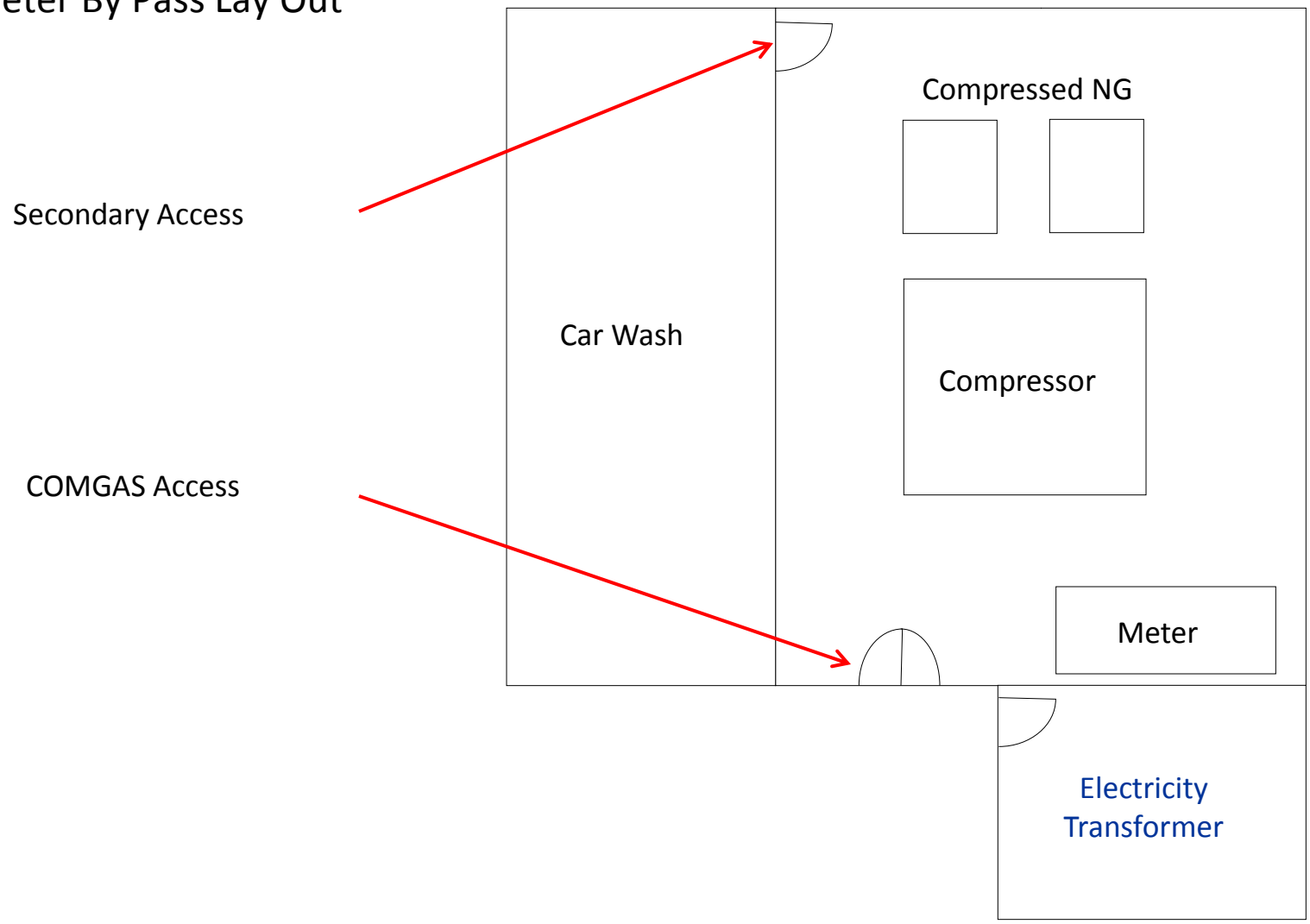
Meter By Pass

By Pass at Filter Pressure Gauges

Compressor Entrance

What was Found

Meter By Pass Lay Out



What was Found

Meter By Pass Lay Out

Secondary Access

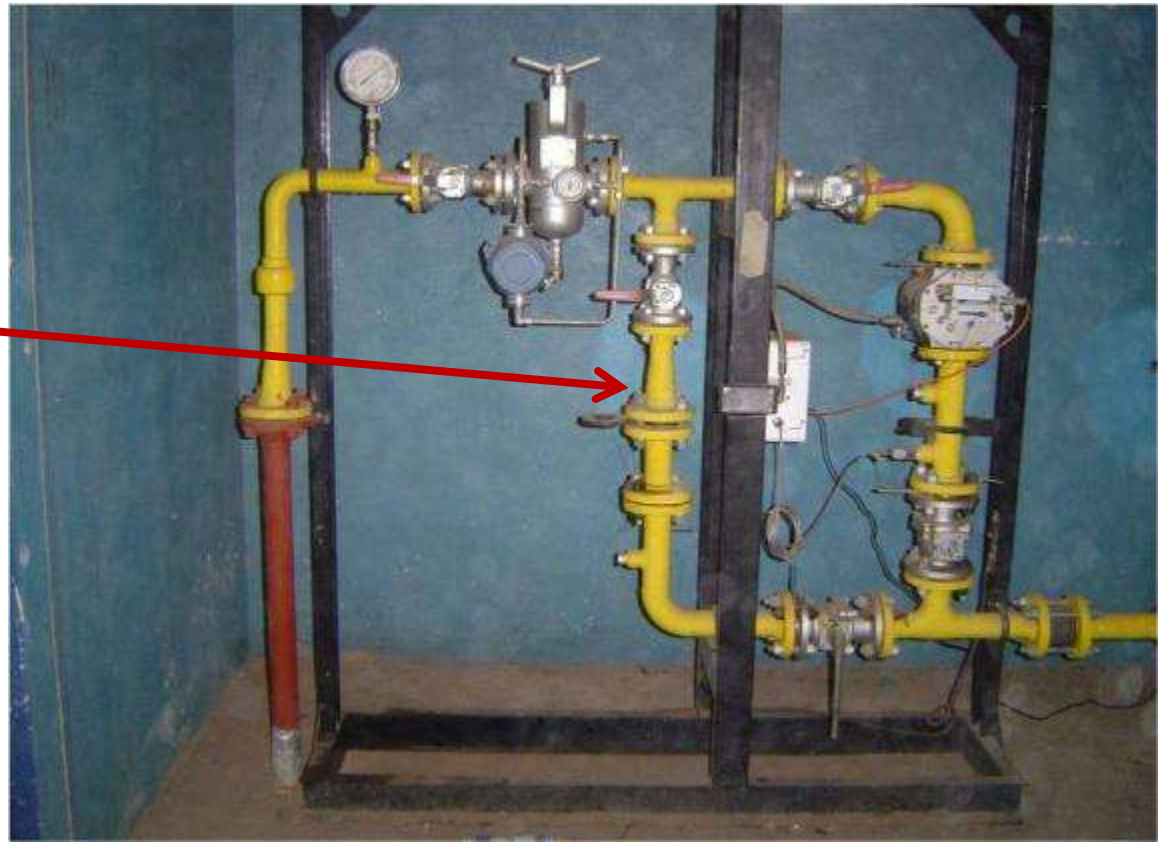
COMGAS Access

Mitigation

Reserve Stream

Eliminated

(avoid by pass)



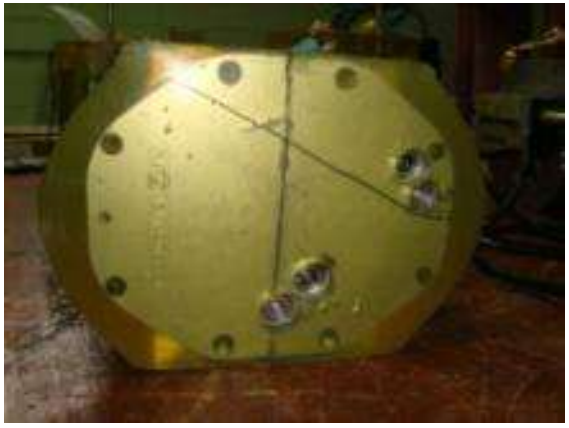
Mitigation

Meter ¨Shell¨ (Polyurethane)

Original Meter

1st Experience

Current Model



Mitigation

Metallic Meter Box

Phase 1: meter and the flow computer (PTZ) protection

Mitigation

Metallic Meter Box

Phase 2: pressure and temperature sensors protection and locker improvements

Mitigation

Metallic Meter Box

Phase 3: safe locker, alarms, remote opening, all components within the box

NGV Station A: before (meter with PU, without the box)

NGV Station A: after (meter with PU and with the box)

Mitigation

Metallic Meter Box

Phase 4: remote control block valve

Mitigation

New Seal

Resistant adhesive

Resistant to chemical solvents

Code numbers controlled by SAP

Easy to adhere to any surface

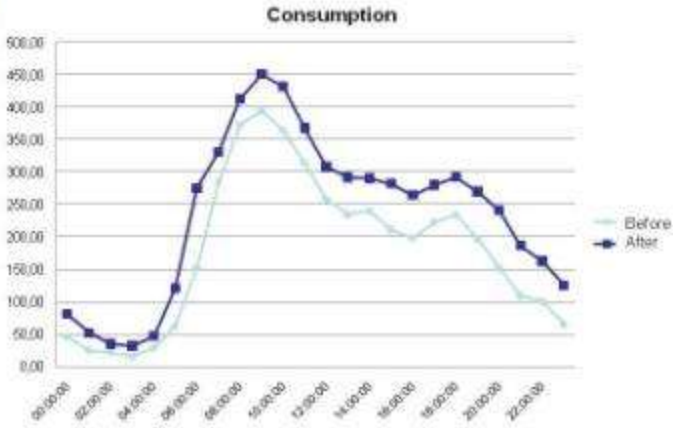
Mitigation

New Seal

Station “A” (after the new seal)

77,3% of reduction of the hours without consumption

28,6% of increase in the consumption



Results

Actions	
Metallic Box & PU Meters	171
Metallic Safe Box Installed	46
Field Inspections since 2008	2,703
Data Analysis per year	400
Points Monitored by GPRS System	60
NGV Stations Closed	27
Investment	U$ 1,5 million
UFG at the end 2011 (NGV segment)	0,2 %

Results

Key Learnings
Zero Tolerance Policy
Observe Business Principles
Structured Actions
All Company Involved – not only technical or security areas
Permanent Attention with Gas Deviation
Gas Deviation & Asset Integrity Risk
Return of Investments
UFG Powerful Indicator to Control Gas Deviation