Roma, Febbraio 2010

Allegato 10

Nota Integrativa –Allegato D. 10 “Produzione di energia” (rif. Nota prot. DSA/2009/33503 del 11 Dicembre 2009)

Richiesta DSA/2009/12643 Allegato D. 10 “Produzione di energia”

In riferimento alla pagina 1 si richiede di approfondire i seguenti punti:

- specificare quali sono le utenze critiche alimentate dal turboalternatore e la strumentazione alimentata dall’UPS.

- specificare la modalità e le tempistiche con le quali il turboalternatore entra in funzione in caso di mancata fornitura della rete esterna.

Flare Emission Monitoring

Total Raffineria di Roma

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1. Project Scope

We have the honor to receive the order of **Total Rome** to perform a complete Leak Detection and Repair program on the Flare system. At the end of the project we have prepared a full emission report of all gathered data and results.

Following project phases have been executed:

- Project preparation
- Full inventarisation
- Update of flare drawings
- Full monitoring
- Set-up FLAME database
- Preparation of 3 sets of emission reports

All these tasks have been performed during October of 2005 and have been performed conform our Standard Operating Procedures.

At **Total Rome** the following equipment types are registered in the FLAME database:

Hand valve	HV
Pressure safety valve	PSV
Control valve	CV
NO valve	NO

To indicate the accessibility of the equipment we used the following abbreviations:

Accessible source	AC
Not accessible source	NA

The total loss is calculated on a production time of 8760 hours a year.

The unique numbers for all equipment (US-numbers) are indicated on the following Flare drawings:

Snif01	Snif06
Snif02	Snif07
Snif03	Snif08
Snif04	Snif09
Snif05	Snif10

The leaking sources are indicated on the following P&ID's:

129-0-P-103
129-0-P-104
129-0-P-108
129-0-P-109
129-0-P-119
129-0-P-120

2. Specifications used equipment

ANRU Physical Acoustics.: MODEL VPAC/5131.

- The device can be used on all type of valves. It must be under the following conditions:
    - The stem, valve must be closed
    - The pressure difference must be at least 1 bar
    - The temperature must be lower then 120 degrees Celsius or 248 degrees Fahrenheit
    - The best surface is flat and unpainted
    - Try to avoid packings
- Range: Maximum 85 dB
- Safety review
    - Intrinsic safe
    - Certification:
      Cenelec Ex ia IIC , Factory Mutual C1.1 Div. 1 Groups A, B, C, D, haz, T4

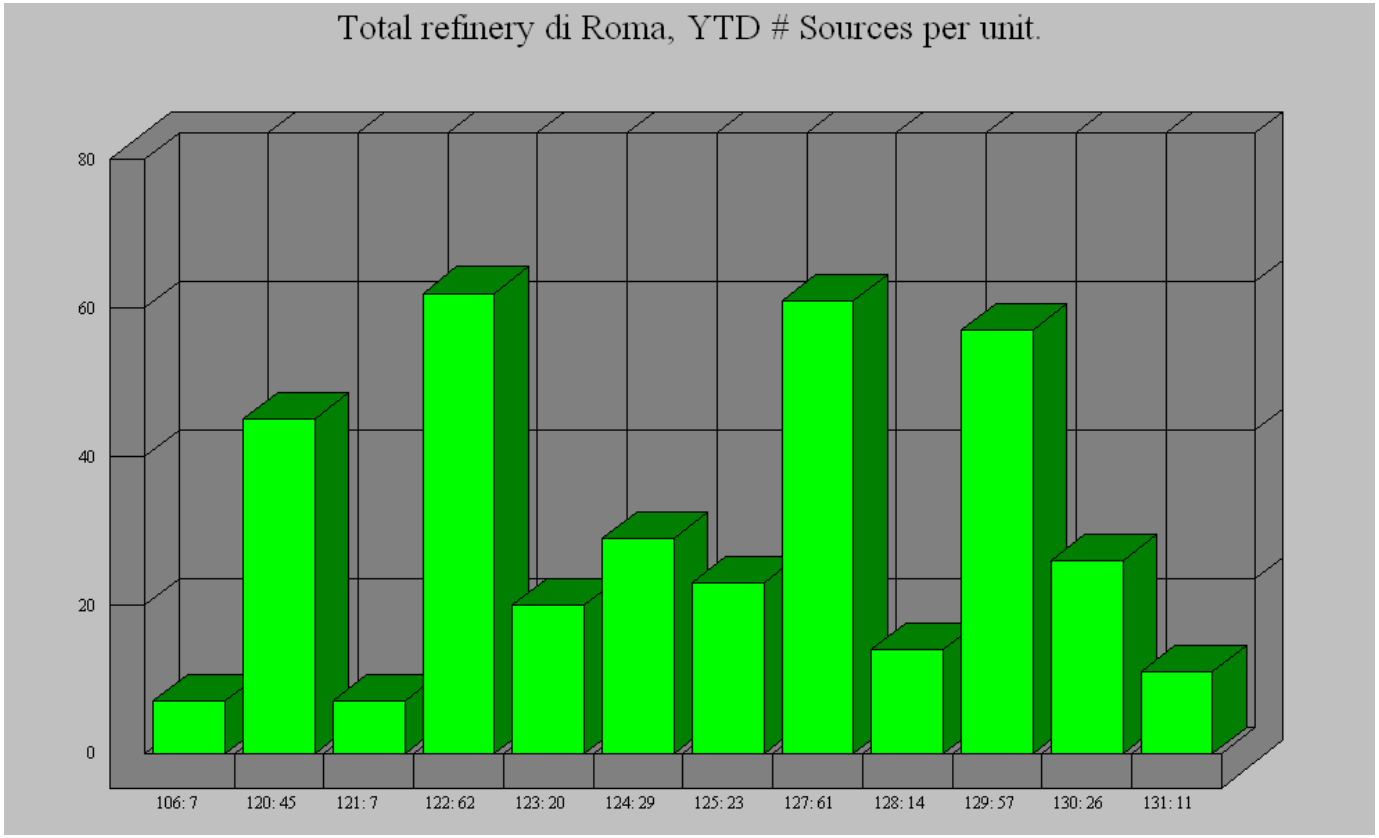
3. Overview per unit

Summery per unit from Total refinery di Roma on 12/01/2006.

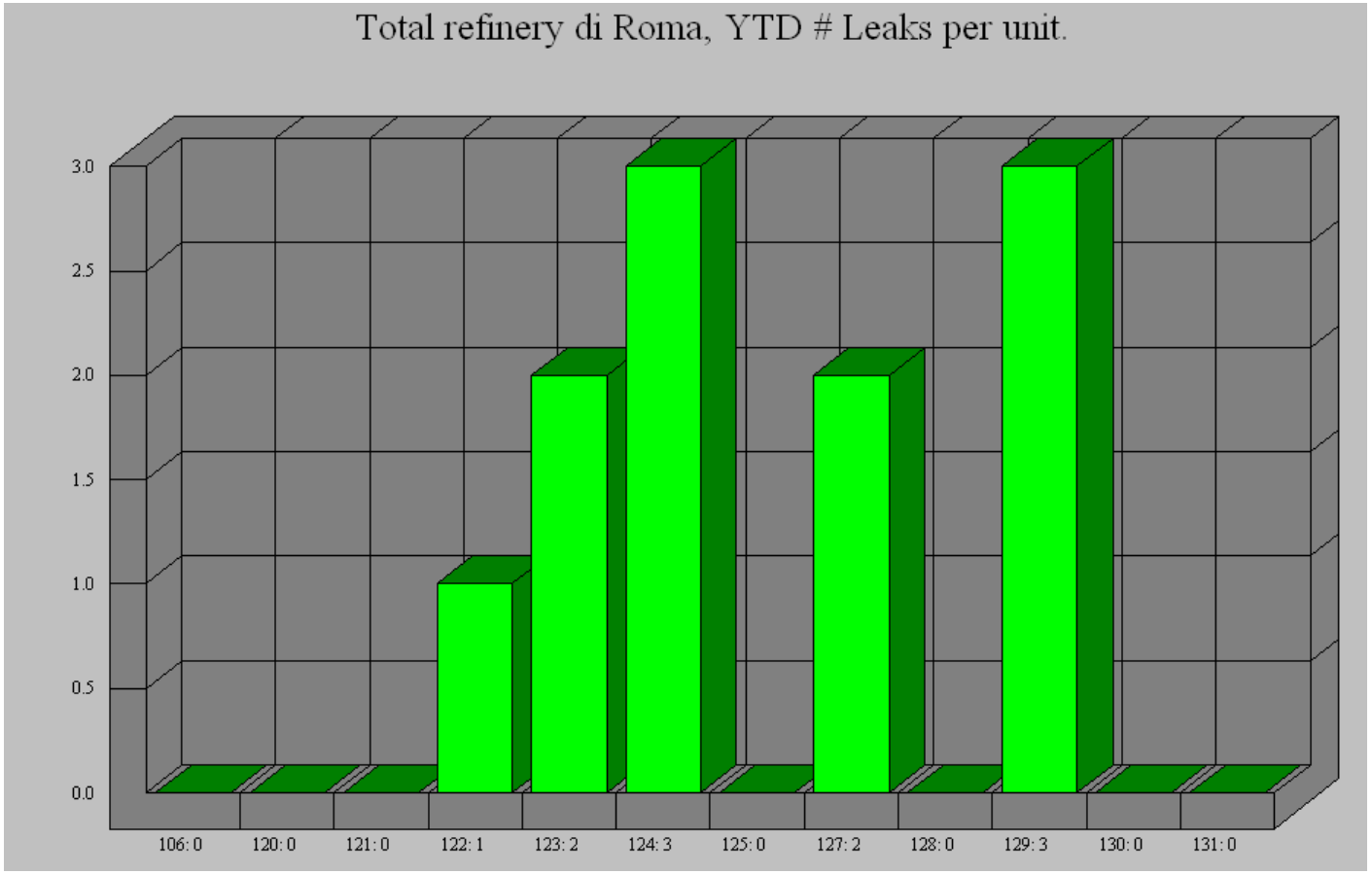
Criteria: none

Unit	# Sources	# Leaks	% Leak	Loss (kg/year)	Loss (cost/year)	Repair cost	Kg savings/year	Cost savings/year	Payback
106	7	0	0,0	0	0	0	0	0	0,0
120	45	0	0,0	0	0	0	0	0	0,0
121	7	0	0,0	0	0	0	0	0	0,0
122	62	1	1,6	3.711	0	0	-3.711	0	0,0
123	20	2	10,0	43.988	0	0	-43.988	0	0,0
124	29	3	10,3	483.404	0	0	-483.404	0	0,0
125	23	0	0,0	0	0	0	0	0	0,0
127	61	2	3,3	52.228	0	0	-52.228	0	0,0
128	14	0	0,0	0	0	0	0	0	0,0
129	57	3	5,3	3.063	0	0	-3.063	0	0,0
130	26	0	0,0	0	0	0	0	0	0,0
131	11	0	0,0	0	0	0	0	0	0,0
Total	362	11	3,0	586.395	0	0	-586.395	0	0,0

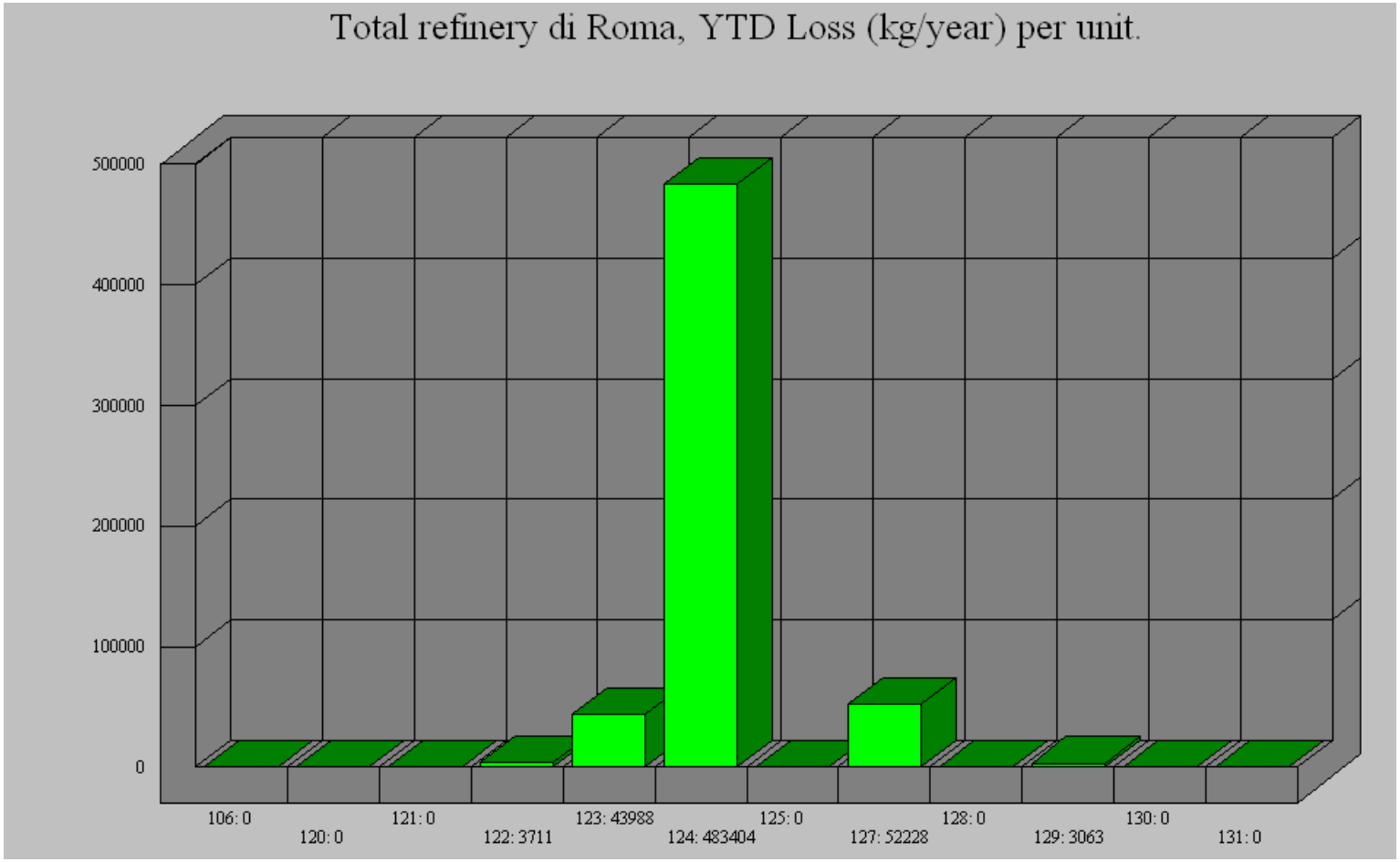
3.1. Chart: YTD # sources per unit



3.2. Chart: YTD # leaks per unit



3.3. Chart: YTD loss (kg/year) per unit



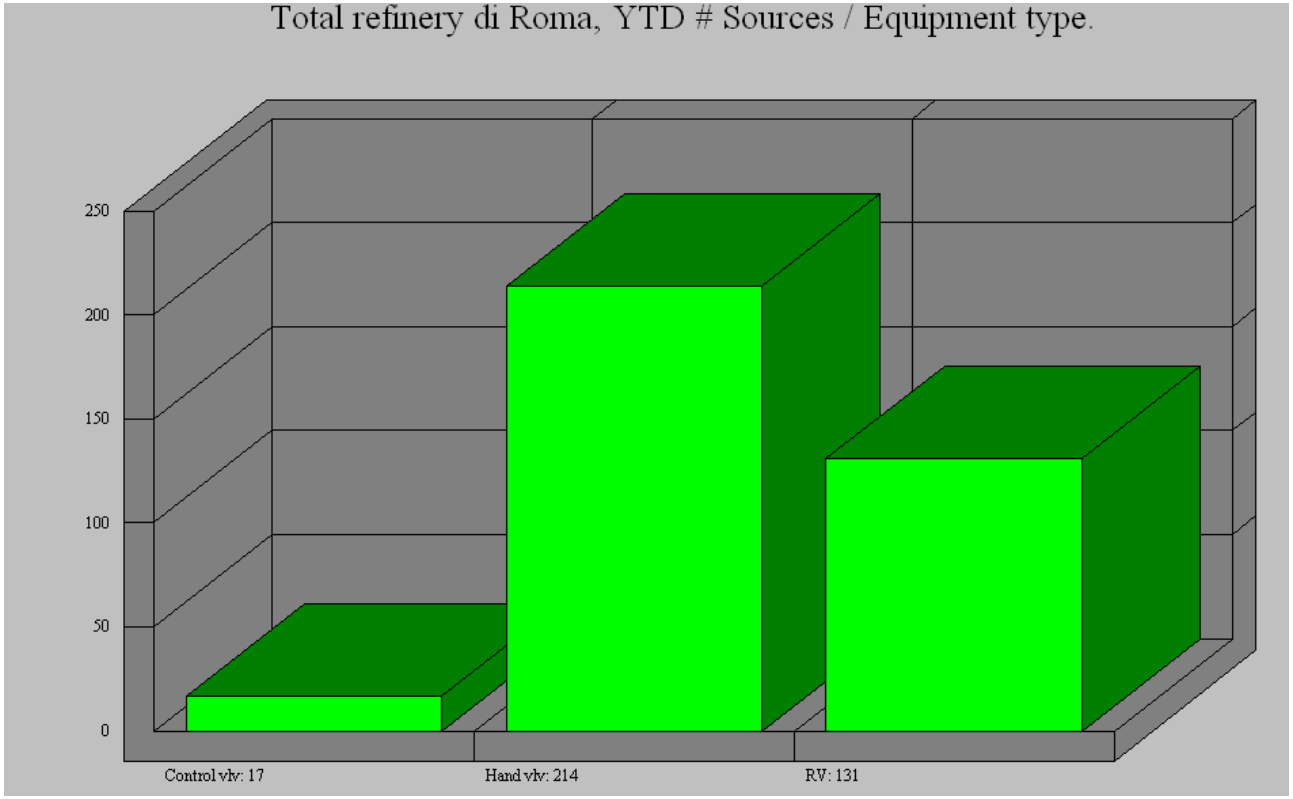
4. Overview per equipment type

Summery per equipment type from Total refinery di Roma on 12/01/2006.

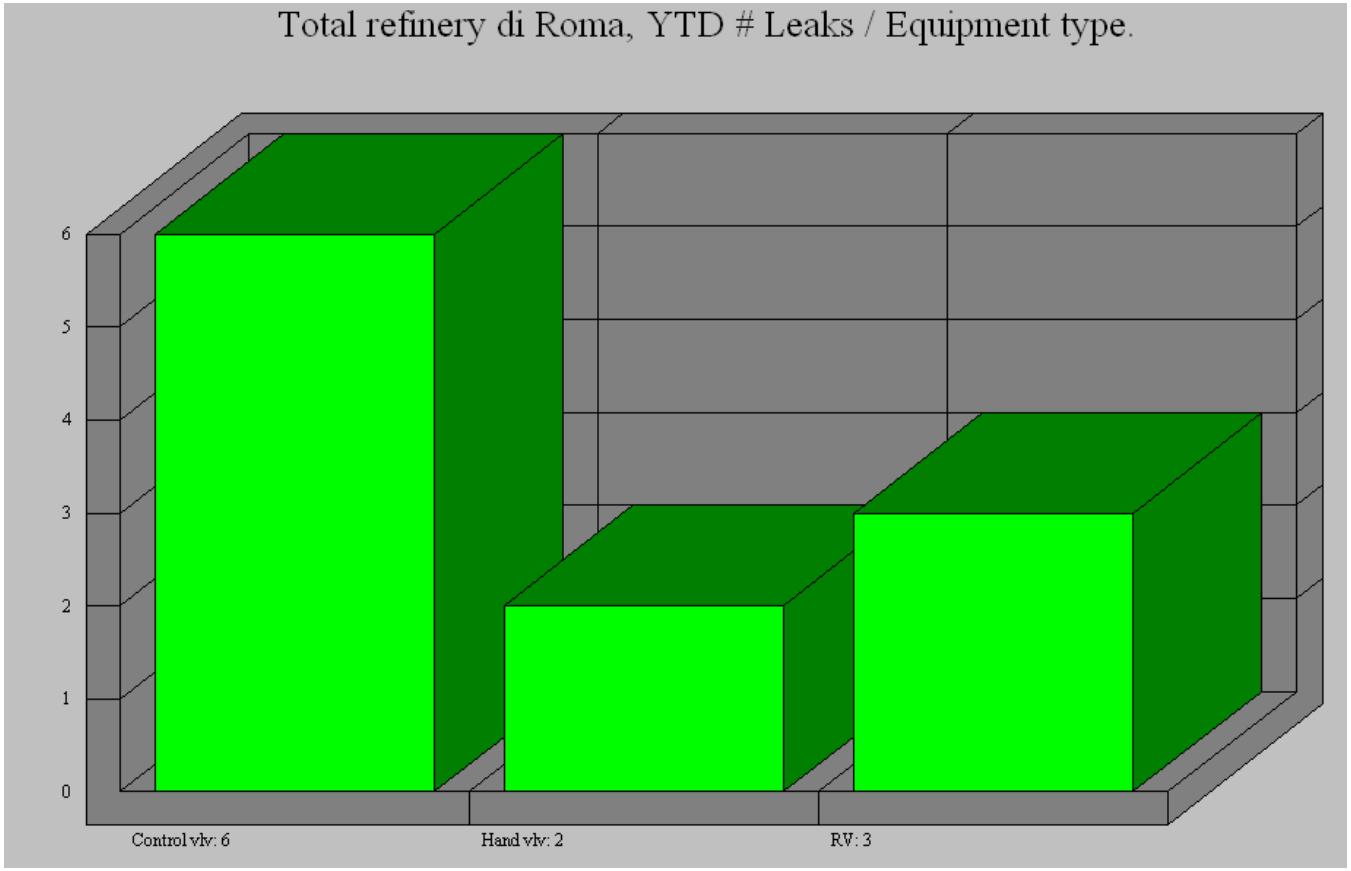
Criteria: none

Equipment type	# Sources	# Leaks	% Leak	Loss (kg/year)	Loss (cost/year)	Repair cost	Kg savings/year	Cost savings/year	Payback
Control vlv	17	6	35,3	536.045	0	0	-536.045	0	0,0
Hand vlv	214	2	0,9	34.168	0	0	-34.168	0	0,0
RV	131	3	2,3	16.182	0	0	-16.182	0	0,0
Total	362	11	3,0	586.395	0	0	-586.395	0	0,0

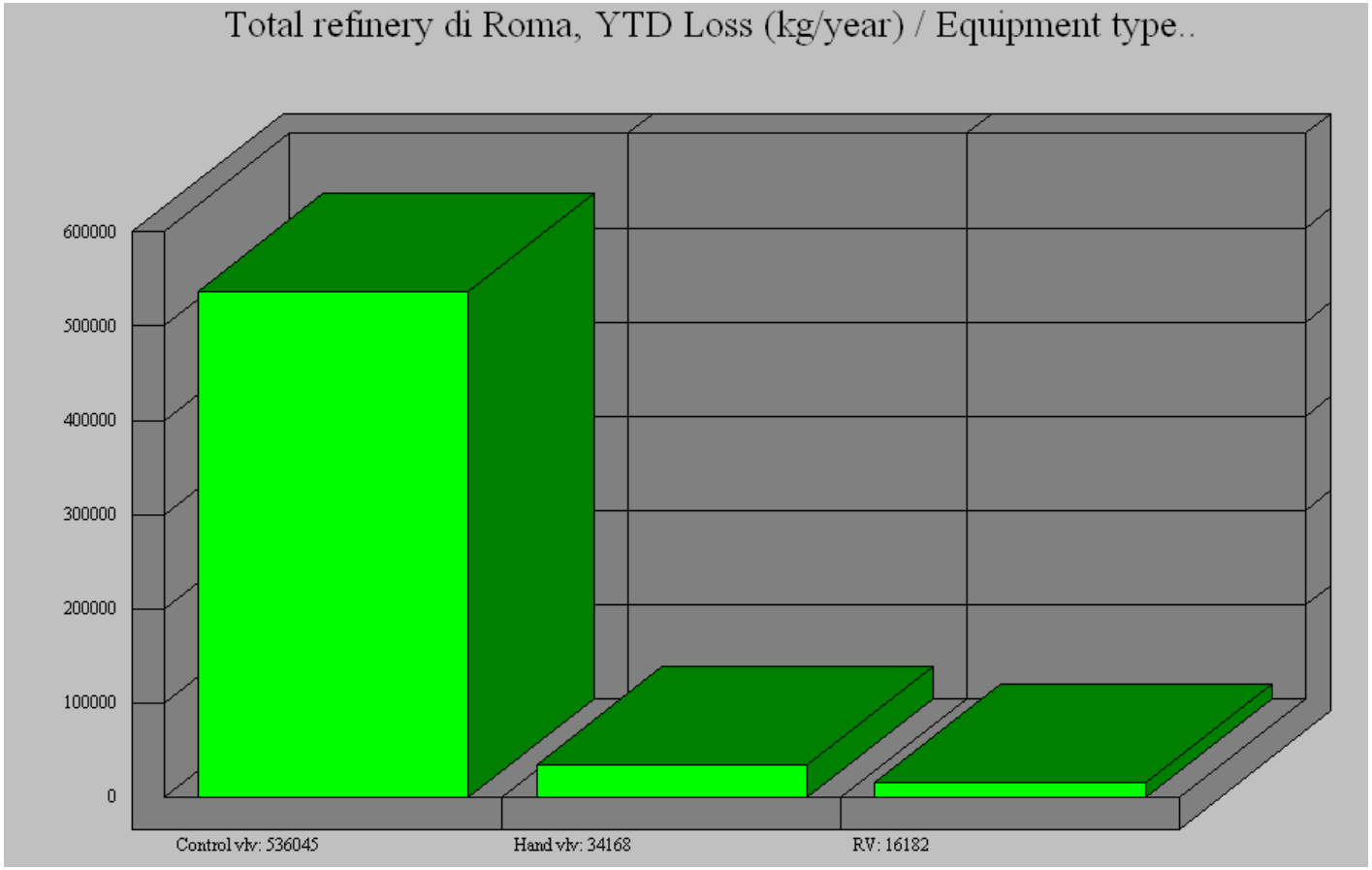
4.1. Chart: YTD # sources per equipment type



4.2. Chart: YTD # leaks per equipment type



4.3. Chart: YTD loss (kg/year) per equipment type



5. Overview per medium

Summery per medium from Total refinery di Roma on 12/01/2006.

Criteria: none

Medium	# Sources	# Leaks	% Leak	Loss (kg/year)	Loss (cost/year)	Repair cost	Kg savings/year	Cost savings/year	Payback
-	351	0	0,0	0	0	0	0	0	0,0
Ethane	2	2	100,0	43.988	0	0	-43.988	0	0,0
Fuelgas	3	3	100,0	10.797	0	0	-10.797	0	0,0
H2S	2	2	100,0	483.360	0	0	-483.360	0	0,0
Hydrogen	3	3	100,0	1.213	0	0	-1.213	0	0,0
Naphtha	1	1	100,0	47.036	0	0	-47.036	0	0,0
Total	362	11	3,0	586.395	0	0	-586.395	0	0,0

6. Overview per component

Summery per component from Total refinery di Roma on 12/01/2006.

Criteria: none

Medium	# Sources	# Leaks	% Leak	Loss (kg/year)	Loss (cost/year)	Repair cost	Kg savings/year	Cost savings/year	Payback
-				0	0	0	0	0	0,0
Ethane				43.988	0	0	-43.988	0	0,0
Fuelgas				10.797	0	0	-10.797	0	0,0
H2S				483.360	0	0	-483.360	0	0,0
Hydrogen				1.213	0	0	-1.213	0	0,0
Naphtha				47.036	0	0	-47.036	0	0,0
Total				586.395	0	0	-586.395	0	0,0

7. Repair list according kg / year

#	US-Num	Flaredrawing	Unit	System	Connection	Equipme	Inlet diamet	DB	Medium	Kg/yr.	Cost/yr.
1	US258	SNIF06	124	R2455	2401	Control v	6 Inch	59	H2S	303.312	0
2	US257	SNIF06	124	R2453	2415	Control v	6 Inch	54	H2S	180.048	0
3	US161	SNIF08	127	R2751	PV2703B	Control v	3 Inch	36	Naphtha	47.036	0
4	US172	SNIF05	123	T2302	Hand valve	Hand vlv	2 Inch	50	Ethane	33.834	0
5	US171	SNIF05	123	T2302	PSV2322	RV	2 Inch	51	Ethane	10.154	0
6	US146	SNIF08	127	R2752	PSV27023	RV	1 Inch	46	Fuelgas	5.192	0
7	US7	SNIF03	122	R2256	PV22006	Control v	2 Inch	25	Fuelgas	3.711	0
8	US16	SNIF09	129	R2901	PV2902B	Control v	0,5 Inch	27	Fuelgas	1.894	0
9	US19	SNIF09	129	R2908	PSV2907	RV	3 Inch	47	Hydrogen	835	0
10	US31	SNIF09	129	R2902	Manuel valve	Hand vlv	6 Inch	21	Hydrogen	334	0

8. Highlights

- ✓ There are **362 sources** checked on internal leakage.
- ✓ There are **11** internal **leaks.**
- ✓ The total loss is **586.395 kg/year**.
- ✓ By repairing US161 a 3 Inch Control valve, the loss will be reduced with **47.036** kg/year.
- ✓ By repairing US257, a 6 Inch Control valve the loss will be reduced with **180.048 kg/year**.
- ✓ By repairing US258, a 6 Inch Control valve the loss will be reduced with **303.312 kg/year**.
- ✓ It is possible that US257 and US258 return into the process instead of going to the flare system.

9. Flare drawings (Update & US-numbers)

10. Flare Drawings (Leaks)

11. Repair orders