

ISTD/ I-18-02

GELA - SICILIA (IT)

Context

The site is located in the Refinery of Gela (Italy) that belongs to the Company ENI S.p.A.

The treatment takes place in the old wasting site, divided in 2 zones, that contained refinery olefins deposited in the past (called FNP). This area, named Vasca A, is situated within the former landfill sites (also called Vecchie Discariche) in the Isola 32 of the Refinery.

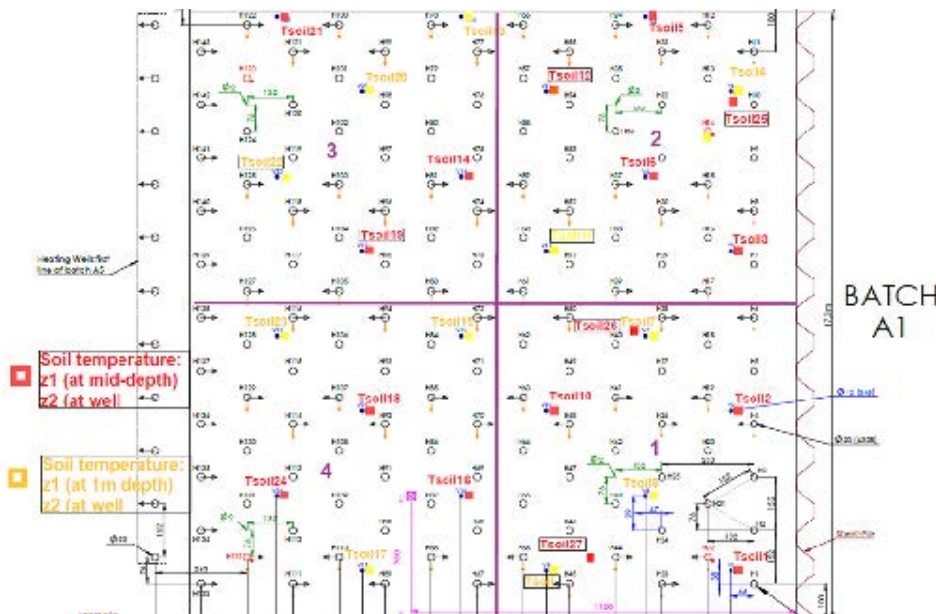


Figure 1. Treatment site - Gela (Italy)

Project Description

The objective of the full project is to treat by thermal desorption the zone for single batches (12 batches for zone A and 12 batches for zone B). For each batch the overall thickness to be treated is about $4 \div 4.5$ m corresponding to a volume of soil to be treated equal to 12.800 m³.

In details, the batch 1 is divided in 4 zones with the in installation of 143 burners and 143 vapour tubes in the same hole. In the figure is showed the general layout.



Key words

Contaminants
HCT

Max. concentration
18.000 mg/kg DM

Volume
Batch 1 = 1.394,47m³
Total = 12.800m³

Tonnage
118.8 Tons

Nb of heating tubes
143

Temperature Target
200°C

Heating duration
from 20/09 to 13/12/2017

Treatment targets
<750 mg/kg DM

Location
Sicily - Italy

Future Use
Industrial

Client
ENI - Gela Refinery

Partner
SIMAM and ICARO ECOLOGY

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Monitoring

the characteristics of the batch 1, are summarized in Table 1. The soils of the area of interest see the presence of Hydrocarbons C <12 and Hydrocarbons C > 12, Benzene, Chloromethane, CVM, 1,2 Dicloroethane, IPA and Mercury.

Batch 1 – Zone A	
Surface of treated area – m ²	293
Upper Treatment Depth – m (average)	+4,85
Volume– m ³	1.394,47
Mass- tons	2.889,2
Groundwater depth– m s.l.m.	- 1,60
COCs	Hydrocarbons

Contaminanti	Concentrazione media (mg/kg)	Concentrazione massima (mg/kg)	Obiettivi di bonifica (mg/kg)
IDROCARBURI ≤ C12	3610	26600	250
IDROCARBURI > C12	19745	130000	750
BENZENE	44	720	2
ETILBENZENE	48	352	50
STIRENE	12	140	50
TOLUENE	77	680	50
XILENI	140	1000	50
COMPOSTI AROMATICI TOTALI	275	2058	100
BENZO (a) ANTRACENE	7	82	10
BENZO (a) PIRENE	4,0	57	10
BENZO (b) FLUORANTENE	2,1	33	10
BENZO (g,h,i) PERILENE	0,9	9	10
BENZO (k) FLUORANTENE	0,7	9	10
CRISENE	7	74	50
DIBENZO (a,e) PIRENE	0,3	3	10
DIBENZO (a,h) ANTRACENE	0,5	5	10
DIBENZO (a,h) PIRENE	0,1	1	10
DIBENZO (a, i) PIRENE	0,2	2	10
DIBENZO (a,i) PIRENE	0,3	4	10
INDENO (1,2,3-cd) PIRENE	0,7	10	5
PIRENE	19	196	50
IPA TOTALI	41	485	100
CLOROMETANO (CLORURO DI METILE)	31	166	6,1
CLORURO DI VINILE	2,3	29	1,3
1,2-DICLOROETANO (DCA)	48	730	0,46
MERCURIO	12	42	-

Conclusion

The goal of the treatment, in terms of achieving the optimal concentration requested by the Italian law was verified thanks to internal sampling and final testing which confirmed the end of the treatment and the removal of contaminants in the matrix of the ground almost always below the limit of detection, dus, we can say that emediation objectieives are achieved and meet the requirements.