IMIA
WASTE INCINERATORS
Questionnaire Analysis

I - Preamble

1 - Main issues mentioned in the previous report

- Situation

An inescapable market development, especially the one of treatment of domestic waste by incineration with heat recovery. Mainly under the environmentalist lobbies, authorities are likely obliged to prepare legislations and regulations which will especially force local communities to treat domestic waste and, industrials to set up installations in order to recycle their products.

- Objective

The main objective is to start to build up a database available for all the insurers interested by this new market.

- Means

In order to reach this objective, a questionnaire had been sent out to all the delegations *to gather all the knowledge and experiences of each IMIA member* .

2 - Recall of the questionnaire contents

It consists of two parts, one dealing with the different underwriting aspects regarding this risk, the other dealing with loss experiences.

- Underwriting Aspects

a- Who is the subscriber?
b- The technical information needed for risk analysis
c- The different types of guarantees, those required by the prospects versus those accepted by the Insurers.

- Loss experience

Typology of the main claims according to the origin and nature of the damages.

II - Analysis of the returned questionnaires

1 - Introduction

Despite the fact that some delegations did not answer this questionnaire, probably due to a lack of experience on this topic, a large number of IMIA members contributed to building up this database with their own knowledge. I would like to take this opportunity to thank them for their support.

2 - Underwriting Aspects

i) the subscriber

All agree that these types of coverages (Waste incinerators construction risk) is generally subscribed by the user, or by the general contractor/manufacturer or the consortium of contractors, sometimes by the principal.

ii) documents needed for risk appraisal

Almost everybody agrees on the different documents needed to appraise the risk, such as

* a description of insured goods dispatching the building & civil works and industrial equipment.
* a description of the geographical location (location, specific risk, soil,...)
* an estimating cost of construction dispatching the building & civil works , the industrial equipment and the technical goods of equipment.
* the general program dispatching the different periods such as building and civil works, the assembling & testing period ...
* the technical requirements (manufacturer, type of construction, process description, drawing of the boiler circuit, type of grate, type of waste, type of smoke cleaning, filtration system,...
* drawings and details (location, sections, procedure outlines, industrial equipment settlement...)
* conclusions of the soil survey
* insurance and liability endorsement from the contract

iii) Supply and demand (on graphics supports)

* General comments:

According to the responses, Germany, Japan, and Switzerland seem to be the countries which experimented the biggest Losses.

A - Buildings/Civil Works

- Faulty design is commonly supplied.
- The vicious part coverage is not commonly supplied by the Insurers.
- Some countries like Japan and Norway never supply Maintenance cover.
- The fire coverage during the maintenance is not often delivered.

B - Industrial Equipment

- Faulty design is commonly supplied.
- The coverage on corrosion, even if it is often required , is hardly ever supplied by the Insurers. When supplied, special endorsements are used.
- Same remark regarding the refractories coverage which is also often required.
- The coverage regarding the fouling up is not very often supplied, hopefully it is not often required.
- The maintenance coverage is not supplied in all the countries, especially in Norway.
- The fire coverage during the maintenance is not often delivered.
- The vicious part coverage is not supplied in case of prototype.

C - Extension of guarantees for A & B

- The Sue & Labour Clause is not very widespread.
- Usually, most of these extensions are delivered with a first loss .

* Detail with graphics supports:

ABBREVIATIONS LIST OF THE GUARANTEES REQUIRED BY THE PROSPECTS

A - BUILDING/CIVIL WORKS		
a	Collapse during construction	
b	Faulty design w/ vicious piece	
c	Faulty design without vicious piece	
d	Visit Maintenance	
e	Extended Maintenance	
f	Full Maintenance	
g	Maintenance w/ fire	
h	Maintenance without fire	
B - INDUSTRIAL EQUIPEMENT		
i	Unloading on site	
j	After unloading on site	
k	Faulty design w/ vicious piece	
l	Faulty design without vicious piece	
m	Corrosion	
n	Refractories coverage	
o	Fouling up	
p	Visit Maintenance	
q	Extended Maintenance	
r	Full Maintenance	
s	Maintenance w/ fire	
t	Maintenance without fire	

ABBREVIATION LIST OF THE GUARANTEES REQUIRED BY THE PROSPECTS (CONTINUED)

C - EXTENSION OF GUARANTEES FOR A & B	
1	Sue and Labour Clause
2	extra charges for fast transportation and extra hours
3	Strike, riots, terrorism, attacks, pertubation
4	Debris removal
5	Existing property
6	Charges to access the damaged part
7	Fees for the technical expert
8	Fees for the insurer valuer
9	Storage out of the site
10	72 hours Clause
11	Clause transport 50/50
12	Waiver of subrogation clause
13	Basic Third Party liability
14	Cross Liability
15	Advance loss of profit
D - MACHINERY BREAKDOWN	
16	Machinery Breakdown without fire coverage
17	Water damages
18	Theft
19	Consequential Loss Insurance

3 - Loss Experience

*** List of the biggest losses**

01
Sum insured: 280.000.000 DM
Loss payment: 1.300.000 DM
Corrosion of the superheater after cleaning of the boiler, due to a faulty design.
02
Sum insured: 1.388.000.000 DM
Estimated Loss: 3.500.000 DM
Corrosion of the heat exchanger for water (Acid was likely to enter in the water system)
03
Sum insured: 175.000.000 DM
Loss Payment: 6.000.000 DM
Corrosion of the evaporator of the boiler due to a local shortage of oxygen in the flue gas.
04
Sum insured: 10.000.000 DM per event (ALOP)
Loss Payment: 8.000.000 DM
Interruption of operation for more than one year due to the previous loss.
05
Sum insured: 41.600.000 DM
Loss Payment: 300.000 DM
due to a faulty design, corrosion of a deficient coating in an emergency tank
06
Sum insured: 1.388.000.000 DM
Estimated Loss: 800.000 DM
Collapse of vibrator conveyor for ash due to a level and type of vivration unsuitable (resonnance with steel construction)
07
Sum insured: 1.388.000.000 DM
Loss Payment: 1.285.000 DM
Overheating of the flue-gas already in front of the heat-exchanger damaging the coating , this loss creating a loss of profits.
08
Sum insured: 40.000.000 DM
Loss Payment: 200.000 DM
Grate element to be repressed creating a loss of profits
09
Sum insured: 14.305.000 DM
Loss Payment: 1.300.000 DM
Detaching of the coating after chemical influence in the flue-gas washer/scrubber

10
Sum insured: 1.388.000.000 DM
Loss Payment: 32.000.000 DM
Fire ignition as a result of careless with hot reflector of spotlight damaging the flue-gas washer
11
Sum insured: 128.604.560 DM
Loss Payment: 200.000 DM
Loss due to corrosion
12
Sum insured: 120.000.000 DM
Estimated Loss: 750.000 DM
Machinery breakdown in a distant heating pipeline due to a corrosion
13
Sum insured: 72.000.000 DM
Loss Payment: 4.500.000 DM
Conflagration and collapse
14
Sum insured: 147.000.000 DM
Estimated Loss: 200.000 DM
Loss due to corrosion
15
Sum insured: 150.000.000 DM
Estimated Loss: 600.000 DM
Loss due to corrosion in the high duty section
16
Sum insured: 150.000.000 DM
Loss Payment: 280.000 DM
Cable fire due to a faulty design
17
Sum insured: 120.000.000 DM
Loss payment: 90.000 DM
Machinery breakdown of a distant heating pipeline due to corrosion
18
Sum insured: 120.000.000 DM
Estimated Loss: 146.000 DM
Machinery breakdown of an air suction due to corrosion
19
Sum insured: 120.000.000 DM
Estimated Loss: 450.000 DM
Natural event in machinery breakdown creating a loss of profits
20
Sum insured: 31.000.000 DM
Estimated Loss: 300.000 DM
Machinery breakdown of a filter insert (hose) due to a faulty design (Fire)

21
Sum insured: 280.000.000 DM
Estimated Loss: 500.000 DM
(Machinery breakdown) collapse of a filter insert due to corrosion
22
Sum insured: 120.000.000 DM
Estimated Loss: 250.000 DM
(machinery breakdown) collapse of the turbine
23
Sum insured: 120.000.000 DM
Estimated Loss: 270.000 DM
(machinery breakdown) collapse of the turbine
24
Sum insured: 17.400.000 CHF
Estimated Loss: 613.000 CHF
Machinery breakdown (internal breakdown of tubes in the combustion-chamber)
25
Sum insured: 30.000.000 CHF
Estimated Loss: 845.000 CHF
Machinery breakdown (internal breakdown of tubes in the combustion-chamber)
26
Sum insured: 60.400.000 CHF
Estimated Loss: 480.000 CHF
Machinery breakdown (internal breakdown of a gas-tank)
27
Sum insured: 247.000.000 CHF
Estimated Loss: 2.000.000 CHF
Fire-Explosion of various parts of the plant
28
Sum insured: 30.000.000 Yen
Loss Payment: 24.200.000 Yen
Machinery breakdown of a furnace due to a natural event
29
Sum insured: 150.000.000 Yen
Loss Payment: 140.600.000 Yen
Machinery breakdown (internal breakdown of a furnace)
30
Sum insured: 160.000.000 Yen
Loss Payment: 14.700.000 Yen
Machinery breakdown (internal breakdown of a duct)
31
Sum insured: 1.540.000.000 Yen
Loss Payment: 12.000.000 Yen
Collapse during construction of a dust trap
32
Sum insured: 1.230.000.000 Yen
Loss Payment: 18.700.000 Yen
Machinery breakdown (internal breakdown of a duct due to corrosion)

33
Sum insured: 830.000.000 Yen
Loss Payment: 11.400.000 Yen
Machinery breakdown (internal breakdown of a furnace due to a faulty design)
34
Sum insured: 15.000.000 SEK
Loss payment: 5.000.000 SEK
Fire-explosion of a waste crusher
35
Sum insured: 23.750.000 £
Payment of three losses: 11.400.000 £
Machinery breakdown (internal breakdown of deslagger base plates, deslagger drag bars and drive chain,et les kiln roller support bearings)
36
Estimated Loss: 14.000.000 FF
Explosion on the wet gas scrubber (Machinery breakdown)
37
Estimated Loss: 5.500.000 FF
Refractory coatings prematurely damaged in the combustion chamber
38
Estimated Loss: 2.000.000 FF
Internal breakdown of heating ducts of the heat-exchanger
39
Estimated Loss: 10.000.000 FF
Machinery breakdown (interna breakdown of a boiler due to fire)

*** General comments**

Further to this list quite frightening of the biggest losses experimented by the IMIA members, the causes which are the most frequent are the following:

Fire-Explosion

- Fire in the storage fit
- Fire in the refuse feeding hopper
- Fire in the wet gas scrubber
- explosion in the boiler when putting it into service

Corrosion

- due to gaz in the combustion chamber
- in the gas exhaust ducts towards stack (outside the combustion chamber)
- in the water screen tubes and superheater systems

Losses of heating or Acid fluid ducts collapsing

Losses due to faulty design which are not by themselves allways costly could generate consequential damages (loss of profits) very important (delays in operation)

Due to a rapid development of processes with more and more prototypes, it appears that we need to be aware and ask each time the technical references on this topic.