LIMA Programme

Comprehensive Machinery Insurance

20 September 2023

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NOT IF, BUT HOW

Image: Munich Re

Agenda

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Background

01

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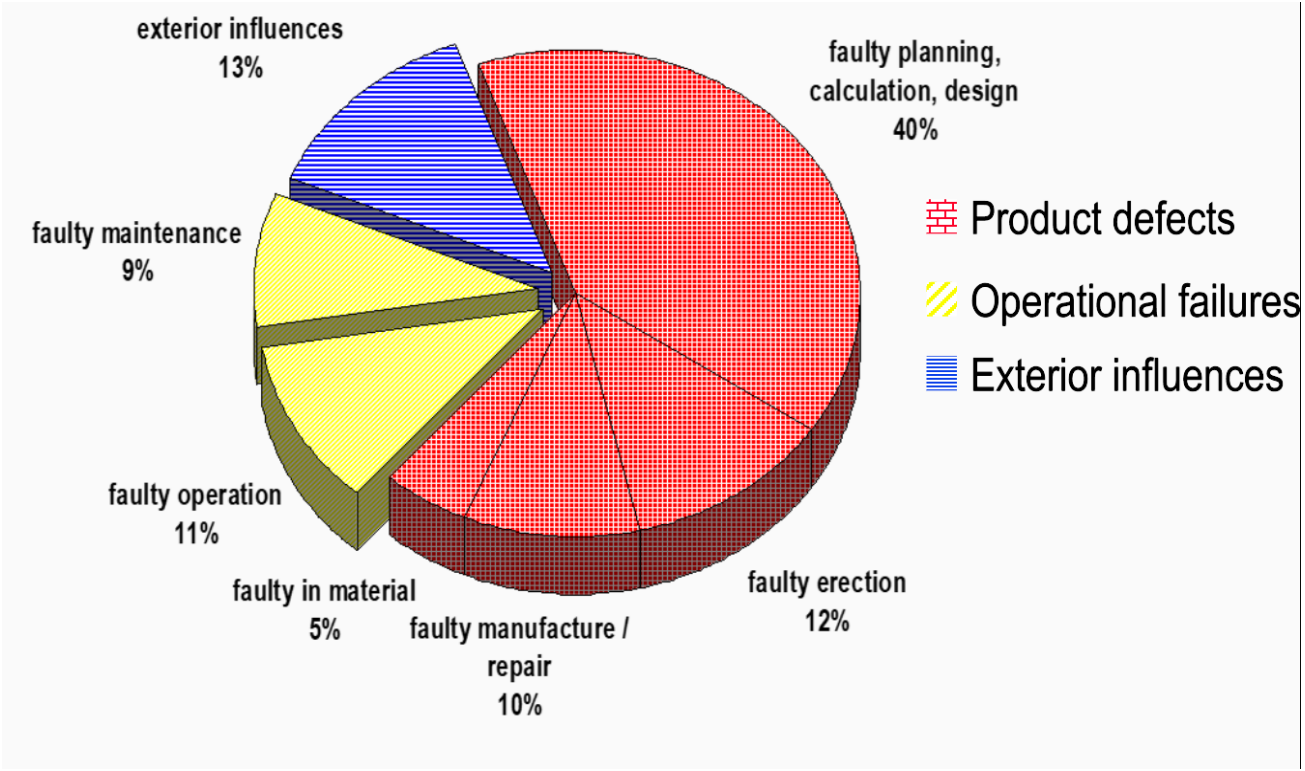
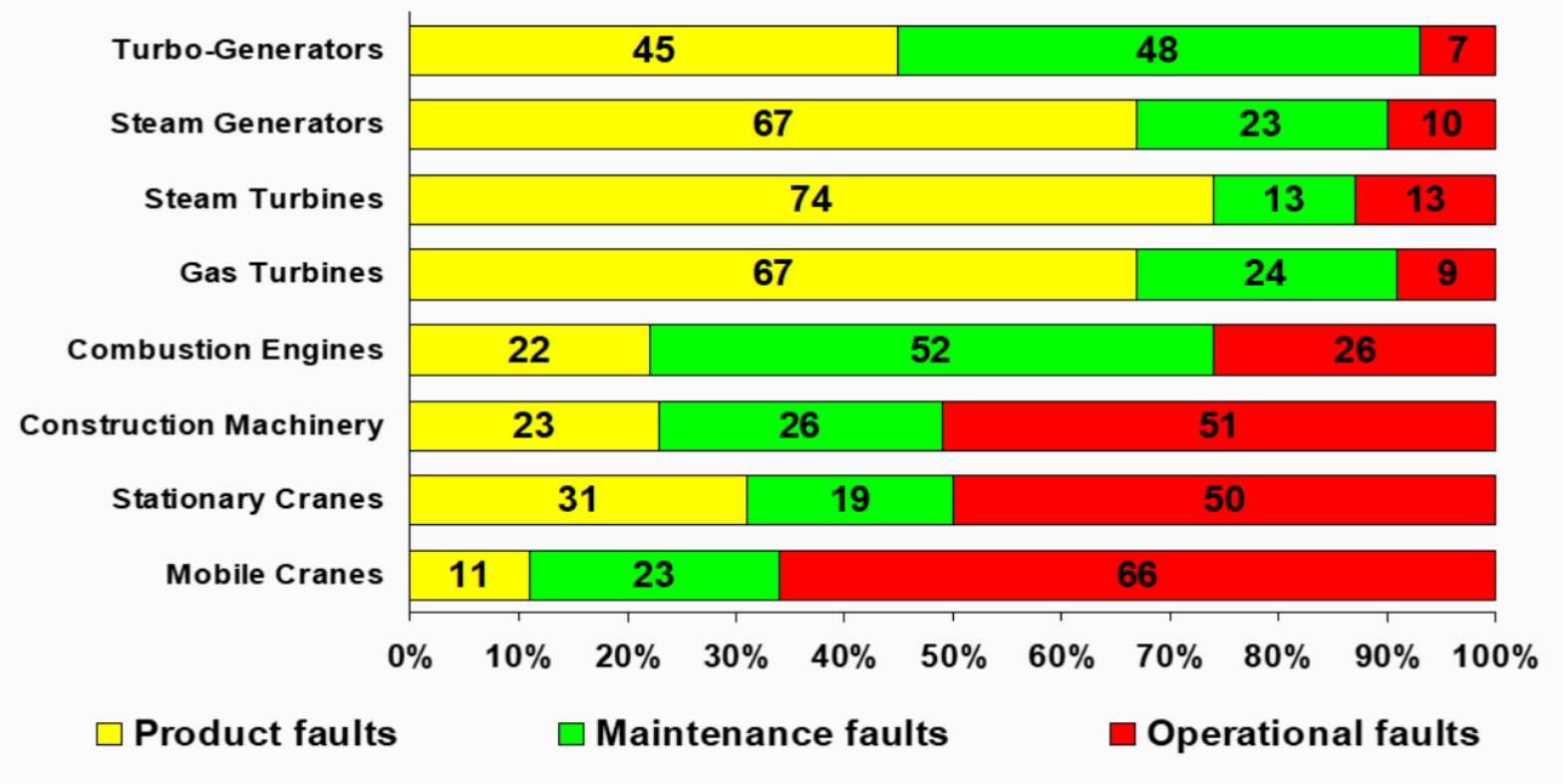
Background
Gas Turbines



Background

Causes of damage on various kinds of machines



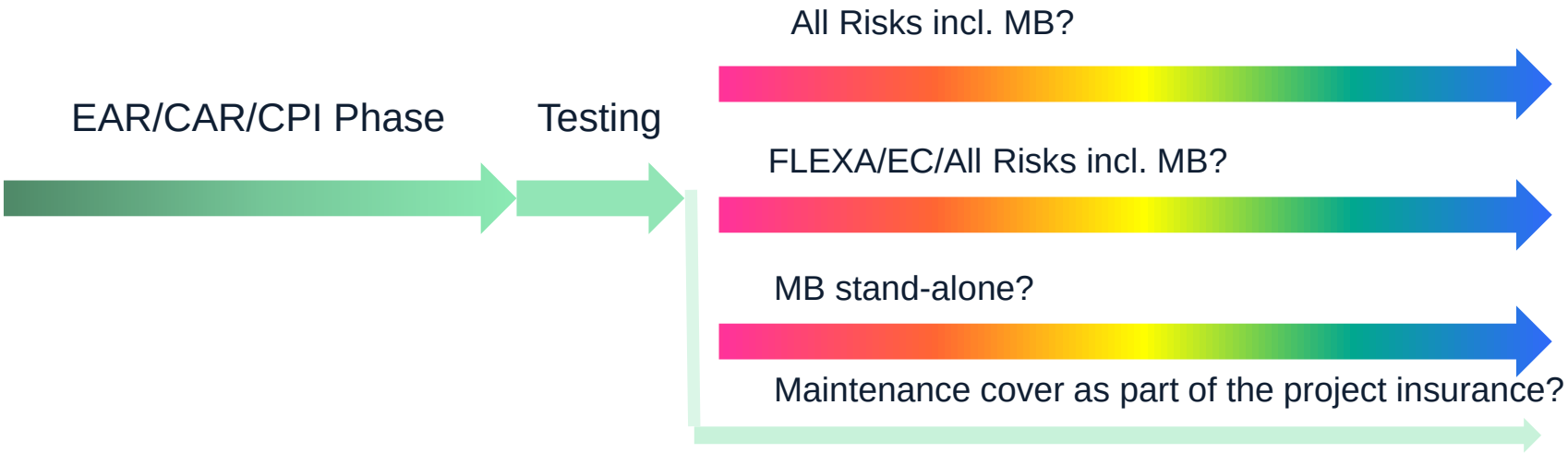
Background

- A fire policy (FLEXA or even All Risks) is not crafted for occupancies that are mechanical breakdown driven
- Some losses are inherent to the machinery and/or operation hence require a policy insurance that recognizes that
- Technical equipment in power plants represents a high concentration of values and their losses are very costly even more if business interruption is involved

Background

- To be applied after the Erection All Risks or Contractor's All Risks (resp. Comprehensive Project Insurance) cover (handing over of the Provisional Acceptance Certificate PAC has occurred, and the project has reached the maintenance phase)

- The importance of the CMI cover depends on the kind of business



Background
CM Insurance

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Type of Cover

- **All Risks** are covered which are not **specifically excluded**
- Annual cover

Structure of CMI policy

02

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Structure of the CMI policy

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Insuring agreement

- Definitions applicable to all sections
- Exclusions applicable to all sections
- Conditions applicable to all sections

Section 1

Operational material damage

Section 2

Operational business interruption

Exclusions applicable to all sections

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1. **No indemnification in respect of:**
   - 1.1 War, invasion, riot, strike, civil commotion
   - 1.2 acts of organized persons
   - 1.3 any act of terrorism
   - 1.4 ionizing radiation or radioactive contamination
   - 1.5 hazardous or contaminating properties
   - 1.6 atomic or nuclear fission
   - 1.7 act of default by the insured
   - 1.8 cessation of work
2. **Onus of proof in respect of exclusion 1.1, 1.2 and 1.3**

Definitions applicable to all sections

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Act of default Act(s) of God Actual value Additional insurance cover Consequential loss Deductible Insured Insured contract(s) Insurer Insurer's agent Insured party(ies) Insuring party Language of communication Material change in risk	New reinstatement value Period of insurance Policy of insurance Premises Premium Premium rate Property insured Proposal Representatives Schedule Section Site Sum(s) insured Terrorism

Conditions applicable to all sections

1. Payment of premium
2. Reasonable precautions
3. Multiple insured clause
4. Act of default
5. Subrogation
6. Risk inspections
7. Material change in risk
8. Claims notification
9. Fraudulent claims
10. Disclaimer of liability
11. Other insurances
12. Entire agreement
13. Dispute resolution
14. Termination of policy

Section 1
Operational material damage

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Property insured per	➡	Section 1_2
Additional insurance cover per	➡	Section 1_3
Sum Insured per	➡	Section 1_4
Period of insurance per	➡	Section 1_6
Exclusions (subject to) per	➡	Section 1_9
Conditions for loss settlement per	➡	Section 1_10

Section 1
2. Property Insured

Insured Contract

- permanent & temporary installations
- mechanical, electrical and electronic equipment
- buildings including contents, stock, goods in process, owned, operated, or held in the care, custody or control of the insured

Section 1

2. Property Insured Examples

- Chemical industry
- Power generation
- Cement industry
- Paper and printing industry
- Steel production
- Metal working industry
- Sugar plants, wood working industry, food industry, etc.
- Every plant working with the support of mechanical and electric equipment

Section 1

2.Property Insured Examples

- Paper Industry

- Wind Farm

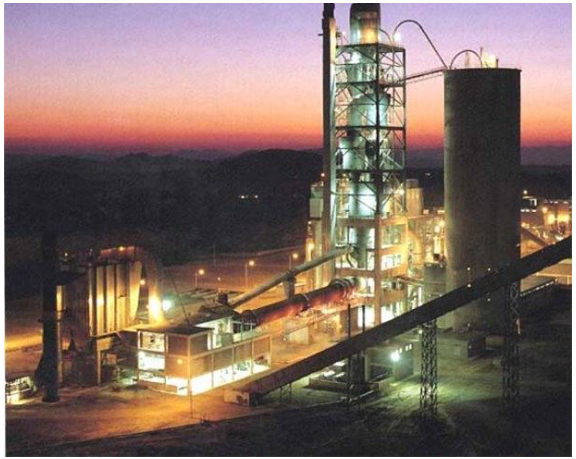

Image: MR Source

- Cement Industry

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Examples of insurable machines

- Steam and gas turbines, generators (high voltage, wear and tear)
- Compressors, pumps (centrifugal forces, temperature, wear and tear)
- Cement mills, rotary kilns (high wear and tear, temperature)
- Reactors for chemical processes (corrosion, temperature, pressure)
- Pipes (corrosion, wear and tear): Lost goods

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Examples of insurable machines

- Electric motors (failure of windings, bearings)
- Transportation systems (wear and tear, bearings)
- Production machinery (wear and tear)
- Cranes (overload, storm)
- Furnaces (corrosion, overheat, wear and t

Section 1

Property Insured Examples Insurable Perils

- Human failure, negligence

- Inherent causes (faulty design, material)
- Operational causes
- Electrical failures
- Specific natural hazards

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Insured Perils

- Faulty operation
- Lack of skill
- Carelessness
- Negligence
- Malicious acts

2. Property Insured Examples

Insured Perils

- Faulty design (calculations, plans, drawings and specifications)
- Faults at workshop or in erection
- Defects in casting and material
- Faulty operation, lack of skill, negligence
- Tearing apart on account of centrifugal forces
- Physical explosion, flue gas explosion in boilers
- Electrical causes such as short circuit
- Shortage of water in boilers

Section 1

3. Additional insurance cover

- 3.1 Capital additions
- 3.2 Expediting expenses
- 3.3. Fire-fighting expenses
- 3.4. Hazardous substances
- 3.5. Professional fees
- 3.6. Removal of debris

Section 1

4. Sums Insured

What should be declared ??

- Original purchase price?
- Current market value?
- Book value?
- New replacement value?

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Definition

The sum insured for each property has to be equal to the

NEW REPLACEMENT VALUE

of such property

The sum insured, less the deductible, is the **limit of indemnity.**

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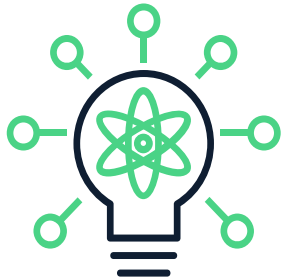
New Replacement Value Equivalent

Purchase price

- Transportation costs
- Insurance fees
- Customs duties
- Installation charges
- Other procurement costs

4. Sums Insured

It shall be a requirement of this *policy of insurance* that the sum(s) insured specified in the *schedule* in respect of the property insured shall not be less than the new replacement value of such property.



4. Sums Insured

The sum insured is the basis for the calculation of:

Premium

And

Indemnity

6. Period of insurance

6.1 one year from inception date unless agreed otherwise

6.3 automatic renewal unless 30 days written notice is given by insurer or insuring party

9. Exclusions continued

Perils excluded

9.2.1 defects which the insured ought to have reasonable knew off

9.2.2 release, discharge of toxic or hazardous substances except as specified in under item 3.4 (clean up costs per limit)

9.2.3 lack of incoming supplies including but not limited to electricity, fuel, water, gas, steam

9.2.4 damage which manufacturer is responsible either by law or contract agreement

9.2.5 any increase in the cost of replacement or repair due to enforcement of law

9.2.6 wear and tear_ but resultant damage to covered

9.2.7 disappearance

9.2.8 shrinkage, evaporation, loss of weight, change in flavour

9. Exclusions

Property excluded

9.1.1 property in cause of construction

9.1.2 mechanical, electrical & electronic equipment prior to performance tests

9.1.3 goods in process of *manufacture*

9.1.4 motor vehicles for public roads, railway locomotives, ships, vessel, aircraft

9.1.5 money, evidence of debt, works of art, valuable documents,

9.1.6 land, roads, runways, railway lines, dams, reservoirs, tunnels, bridge

9.1.7 flora and fauna

9.1.8, 9 & 10 nuclear activities

9.1.11 insured property transferred into possession of others

Section 1

10. Conditions of loss settlement

10.1.1 stock, goods in process, finished goods _ replace by material of the same

10.1.2 plans, drawings, records, data and programs for electronic equipment _ the cost of reproducing the same from originals

10.1.3 for mechanical, electrical & electronic equipment **> 5 years** _ calculation from date of manufacture

10.1.3.1 for damage to an insured item can be repaired – the Insurers shall pay expenses necessarily incurred to restore the damaged item to its former state of serviceability plus the cost of dismantling and re-erection incurred for the purpose of effecting the repairs as well as ordinary freight to and from a repair ship, customs duties and dues, if any, *to the extent such expenses have been included in the sum insured*. If the repairs are executed at a workshop owned by the Insured, the Insurer shall pay the cost of materials and wages incurred for the purpose of the repairs plus a reasonable percentage to cover overhead charges.

No deduction shall be made for depreciation in respect of parts replaced

Section 1

10. Conditions of loss settlement continued

10.1.3.2 if the cost of repairs equals or exceeds the actual value of the damaged property immediately before the occurrence of the damage, that property shall be regarded as a total loss

10.1.3.3 in the event of total loss the insurer shall pay the actual value of the property insured immediately before the occurrence of the loss, including charges for ordinary freight, cost of erection and customs duties, if any, provided such expenses have been included in the sum insured

10.1.3.4 the insurer shall also pay any reasonable costs to dismantle damaged property

10.1.4 **for all other property** the new replacement value or the cost of restoring the property to a condition equal to but not better than its condition when new, whichever is the lower

10.2 average clause,

NB: Actual value = Price of item of same age and capacity and similar make and quality.

Section 1

10. Conditions of loss settlement continued

10.3 Improvements or overhaul shall not be recoverable under this policy

10.4 Provisional repairs recoverable if part of the final repairs

10.5 Salvage consideration in settlement

CMI Policy Extensions

03

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CMI Policy endorsements

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Special insurance covers

1300 Strike, riot and civil commotion

1301 Extra costs for airfreight

1302 Underground machinery and equipment

1303 Business interruption resulting from machinery breakdown during a guarantee period

1304 Earthquake

1305 Prolongation of the interruption period due to deterioration

1306 Maximum demand charges

1307 Additional expenditure other than increased cost of working

1308 Failure of public power, water, gas or steam supply

CMI Policy endorsements continued

1309 Delay in repair

1310 Suppliers' extension

1311 Customers' extension

Special conditions

1360 Serial losses

1361 Refractory materials and/or masonry in industrial furnaces and boilers

1362 Refrigerant and lubricating oil

1363 Conveyor belts and chains

1364 Wires and non-electric cables

1365 Rewinding of electric machines (e.g. motors, generators, transformers)

1366 Repairs to combustion engines (e.g. diesel, gas engines)

CMI Policy endorsements continued

Special conditions

1367 Components along the hot-gas path of gas turbines

1368 Waiver of underinsurance

1369 Submerged and deep-well pumps

1370 Overhauling of platen presses

1371 Overhauling of electric motors and generators above 1,000 kW (other than turbo-generators)

1372 Overhauling of steam, water and gas turbines and turbo-generator sets

1373 Inspection and overhauling of boilers

1374 Sum insured on unit-price basis

1375 Flue gas purification plants

Underwriting Information

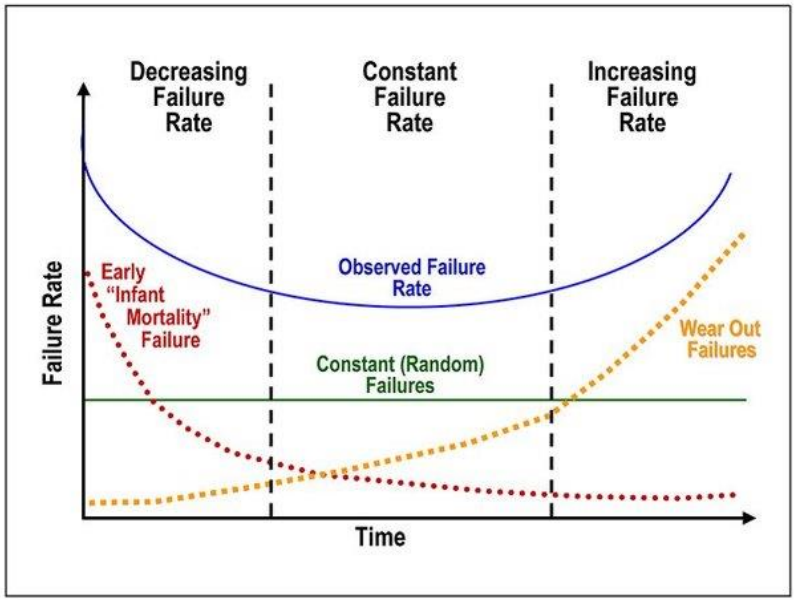
04

Image: Munich Re

Underwriting information

Background

The Bathtub Curve



- The bathtub curve is generated by mapping the rate of early "infant mortality" failures when first introduced, the rate of random failures with constant failure rate during its "useful life", and finally the rate of "wear out" failures as the product exceeds its design lifetime.
- In less technical terms, in the early life of a product adhering to the bathtub curve, the failure rate is high but quickly decreasing as defective products are identified and discarded, and early sources of potential failure such as handling and installation error are surmounted. In the mid-life of a product - generally, once it reaches consumers - the failure rate is low and constant. In the late life of the product, the failure rate increases, as age and wear take its toll on the product. Many consumer products strongly reflect the bathtub curve, such as i.e. cars.

Underwriting Information

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- Type of industry
- Description of manufactured products
- Process description
- Capacity
  (i.e. production per day)
- Location
  (where is the equipment located on the premises, accumulation of machines? (PML!))
- Serial Number and value of the equipment
  (at least every equipment unit or process step)

Underwriting Information

- Type of machines and manufacturer
- Year of manufacture
- Stationary or mobile

STRONG RECOMMENDATION:

Before giving cover, carry out a survey yourself or assign an expert surveyor to get an impression on the risk quality and to implement necessary improvements!

Underwriting Information

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Necessary

- Maintenance records
- Maintenance intervals
- Maintenance companies (always the same or constantly changed?)
- Housekeeping – personal and actual impression
- Staff and facilities (cutting of wages and firing of people in fashion?)
- Are underpaid subcontractor companies running the equipment
- Training schedules of the operators

Underwriting Information

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Necessary

Past loss experience

(at least loss record over the last 5 years)

Moral hazards:

Business reports of the last year and outlook for the present year; FLExA policies are more exposed (indemnification comes on new replacement value, though the insured may decide not to invest into the reconstruction of his business)

MB only indemnifies at the actual cash value, and “after the production of bills”

Underwriting Information

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Machinery Survey

- Identify installed machinery
- Assess sums insured (can be done by specialized appraisal companies, at the
- cost of the Insured). The SI shall be the present new replacement value of the
- machines
- Assess the possible maximum loss (PML), to fit your reasonable exposure
- Assess the technical condition
- Examine maintenance and loss prevention standards
- Identify possible hazards and exposure of cover

Conclusion

05

Image: Munich Re

Summary

- Comprehensive Machinery Insurance eliminate wording ambiguities and offer extended coverage which is flexible per client requirements
- It is ideal suited for occupancies where machinery breakdown is a major risk i.e. power plants as they are high exposure risks due to inherent machinery hazards that may result into huge losses compounded by the concentration of values at one location

Thank you for your attention!

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