



Contractors' Plant and Equipment insurance in international markets

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Introduction

The following publication deals with an internationally widespread form of Plant and Equipment insurance¹ (CPE). The advantages compared to Machinery Breakdown insurance are described and CPE is recommended for markets where the insurer does not have the appropriate technical experts available at the right location to enable him to successfully offer a Machinery Breakdown insurance for contractors' machinery as well.

“Contractors' Plant and Equipment Insurance in International Markets” provides insurers in less-developed markets with the required know-how to build up a profitable plant and equipment insurance portfolio. Insurers operating in the indus-

trialised German-speaking markets can learn how contractors' machinery and site installations can be more profitably insured in developing countries under CPE and why classic Machinery Breakdown insurance generally yields poor results for internal breakdown claims. Emphasis is therefore given to the main differences between CPE and Machinery Breakdown insurance.

1 Comparable to the form of cover common in Germany in accordance with the “Allgemeine Bedingungen für die Kaskoversicherung von Baugeräten” (General Conditions of Insurance for Contractors' Plant and Machinery), but not, however, with “Maschinen- und Kaskoversicherung von fahrbaren Geräten (ABMG)” (General Conditions of Insurance for Mobile Vehicles). Similar forms of insurance cover also exist in Switzerland and Austria.

1 Definition of Contractors' Plant and Equipment insurance (CPE)

CPE insurance covers damages of an accidental nature affecting machines and equipment as a result of fire, water, collision, overturning, falls, storm, theft, or malicious damage. The insurance does not, however, cover internal machinery breakdown damages unless these are due to an external cause of an accidental nature covered by the CPE insurance.

This is the case, for example, when a heavy truck careers off the road due to a defective brake system. In this case the crash damage would be paid, but not the repairs to the defective parts of the brake system – if it is indeed at all possible to identify these as the cause of the accident. If, however, the brake system is damaged and no consequential loss results, the loss is not covered by the CPE insurance.

CPE insurance is a type of engineering insurance. It is very similar to German plant insurance in accordance with the “General Conditions of Insurance for Contractors' Plant and Machinery” (ABG – Allgemeine Bedingungen für die Kaskoversicherung von Baugeräten) but markedly different from the “General Conditions of Insurance for Mobile Vehicles” (ABMG – Allgemeine Bedingungen für die Maschinen- und Kaskoversicherung von fahrbaren oder transportablen Geräten).

1.1 The benefits of CPE insurance

Plant and equipment often constitute a considerable part of a building contractor's investment. Accidents resulting in the loss of plant or equipment or which cause severe damage can have a serious effect on his business. The contractor relies on being able to deal with such losses quickly and without having to pay attention to costs. Small and medium-sized companies in particular are especially prone to the consequences of such losses:

- A limited fleet of vehicles and equipment used at full capacity make it impossible to replace defective plant with reserve machines.
- The losses incurred cannot be fully covered due to insufficient financial reserves.

CPE insurance guarantees a fast settlement of claims at reasonable prices. In addition, the insurance premium can be deducted from the company's tax payments as part of operating costs.

Even large contractors generally prefer to take out insurance with a fixed calculable premium, thus avoiding the risk of reducing the company's profits by setting aside too much in reserves.

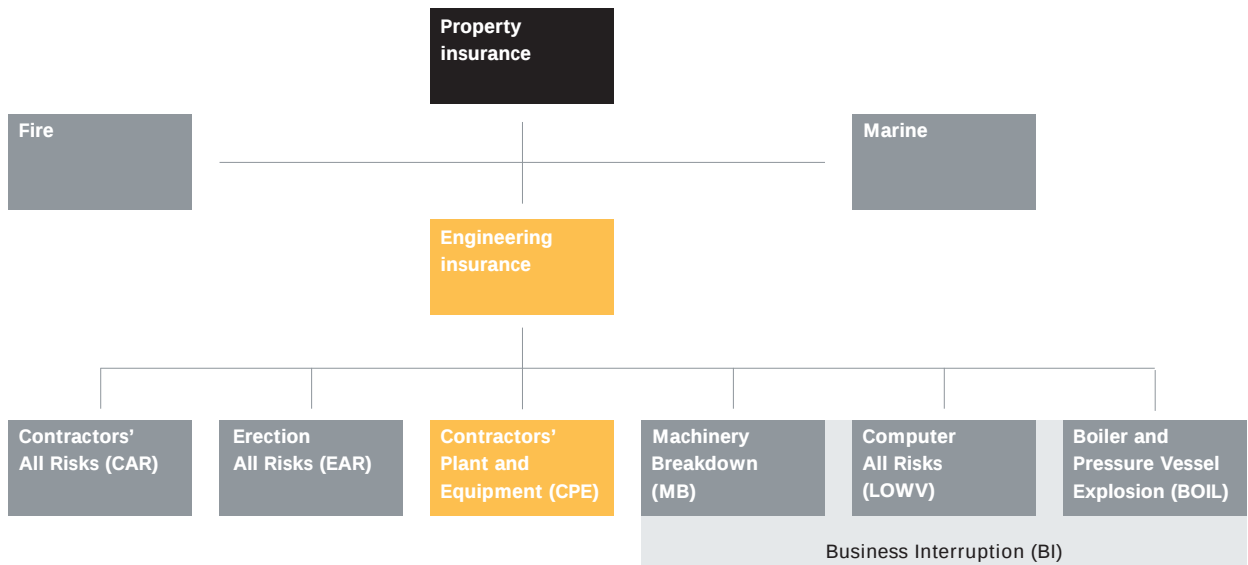


Figure 1.1
Contractors' Plant and Equipment
as a separate branch of insurance

1.2 The advantages of CPE insurance compared to Machinery Breakdown insurance

Machinery Breakdown insurance mainly provides cover for internal damage to stationary and mobile plant and equipment caused, for example, by placing an excessive load on engines, hydraulic systems, bearings, gears or machine frames.

It is not advisable to insure plant and machinery under a Machinery Breakdown policy unless an insurance company has specialists in this area. If this is not the case, this type of insurance should be avoided and the policy should be limited to cover *external* damage to plant and equipment, since Machinery Breakdown insurance often results in losses for the insurer. The reasons for this are as follows:

- The harsh working conditions cause greater wear and tear, increasing the likelihood of Machinery Breakdown claims.
- Damages arising purely from wear are excluded, yet these are still indirectly indemnified by the insurer when, for example, worn parts fracture and he is called upon to compensate for the resulting losses on other parts.
- The premium rates for Machinery Breakdown insurance are insufficient to indirectly cover a large part of the normal maintenance costs associated with poorly serviced machines via costs incurred for damage repairs.

2 Important marketing aspects

In the long run, CPE insurance can only be profitable for the insurer if attention is given to certain criteria: first-class customer services, professional advice, broad know-how, well-founded and conscientious risk-control and the rules of marketing.

2.1 Quality service as an essential basis

For the insurer, providing quality service means offering technical expertise combined with good service as well as guaranteeing sufficient insurance capacity and financial resources.

Specialists who are successful as CPE insurers:

- have know-how as risk managers;
- are able to competently assess the particular risks regarding individual machines and the area in which they are used;
- devise policies with clauses which take account of the insured's individual requirements;
- evaluate and settle claims;
- make a precise analysis of losses and use this experience to devise preventative measures.

The time invested in loss analysis is worthwhile since not only is time saved for examining and settling claims but claims costs are reduced as well.

2.2 Risk management consultation as an opportunity

Experienced engineers with risk-management know-how are important in providing an insurance company with valuable support. Their main task lies in the reliable assessment of all risks and in working out appropriate, up-to-date solutions for suitable insurance cover. They motivate their clients to implement individual and practical preventative measures, in particular to reduce the frequency of major losses.

2.3 Marketing recommendations

In establishing a healthy CPE insurance portfolio, as in other branches, certain rules should be followed:

A clear strategy in acquiring clients

A satisfactory result can only be achieved by those insurers who assemble their portfolio consciously, actively seeking out “good” risks – companies with well-organised and properly maintained plant and equipment who aim at a low frequency of breakdowns and losses.

Optimal availability of machines can be guaranteed:

- with regular maintenance, either after a certain number of hours of use or at certain regular intervals;
- when each large vehicle is entrusted to one driver only, ie the machine is only used by the driver allocated to it.

Insurers who acquire their clients in an unsystematic manner will almost certainly take on an above-average number of “bad” risks in their portfolio. In fact, they are often contacted by contractors who find themselves under pressure as a result of serious losses or who may even have had their cover withdrawn by another insurer.

Appropriate technical requirements

CPE insurance should not serve as a playing field for imprecise policy regulations and unconsidered cover extensions, although this is often the way things are in the international market. The policy should give attention to the following primary conditions:

- The insured's excess must be sufficient to cover at least the most frequent small losses (such as a damaged bumper on mobile machinery).
- It is vital that the sum insured be adjusted annually to the new replacement value.
- According to the market and the composition of the plant and vehicle fleet insured the policy should even stipulate for indemnification purposes an annual depreciation for certain types of machine or for parts which are particularly prone to wear.

Adequate technical control

It is vital that the plant and equipment be inspected before the policy is issued and that every claim arising be investigated. All of the insurer's marketing efforts are useless if he fails to undertake such necessary technical checks.

3 Insurable objects

Mobile and stationary plant and equipment can be insured as well as temporary buildings and site installations (accommodation huts, office units, workshops). This plant and equipment may be the contractor's own property or be rented by him.

3.1 Mobile construction machinery (Contractors' Plant)

"Mobile machinery" is taken to mean self-propelled plant or construction machinery. The most common of these being:

- bulldozers
- loading vehicles fitted with wheels or tracks
- dump trucks
- (conventional) excavators
- scrapers
- floating excavators
- road-surfacers
- rollers
- mobile cranes
- mobile drilling machinery.

3.2 Temporary buildings

Temporary buildings include:

- accommodation huts and stationary caravans
- workshops
- office buildings
- storage buildings
- other temporary buildings erected by the site contractor to allow construction work to be carried out efficiently.

3.3 Stationary equipment

This group includes:

- conveyor systems
- gravel processing plants
- concrete batching plants
- asphalt mixers
- tower cranes, hoists
- electrical generators and transformers for building sites.

3.4 Tools and tackle

It makes sense to set the excess so high as to exclude portable tools such as shovels, axes, portable saws, drills and grinding machines. Often the targets of petty theft, such small tools generally ought to be regarded as expendable items and should not be insured.

It is relatively difficult to determine which tools are uninsurable. Some policies use the definition “exchangeable tools and fast-wearing machine parts such as drills, crusher jaws and hammers, saw blades, screens, clam shells, chains, cables, crawler tracks, conveyor belts, ropes or tyres”.

Most policies generally exclude parts subject to wear but do cover losses concerning these parts where they arise in connection with an insured loss involving an insured machine. In such cases we recommend reducing the compensation to reflect the remaining service of such parts.

4 Cover available under CPE insurance

4.1 Particularities

CPE insurance covers either:

- individually listed insured perils (named perils); or
- all perils apart from those specifically excluded (all-risks policy).

The all-risks policy has become the norm in international markets. Both variations cover only accidental losses, regardless of the policy wording used.

The CPE policy covers insurable machines and equipment

- on the site or en route to a site – whether by rail, road, or boat on inland waterways. Machines licensed for use on normal roads are excluded. These are subject to vehicle insurance in accordance with prevailing legislation.
- in a machinery park or workshop.

Tunnelling machinery, mining machinery used underground and plant used at the water's edge, on barges, or on pontoons are only covered by special agreement.

CPE-type cover is also available as a special endorsement under internationally available Contractors' All Risks (CAR) policies. However, such CPE endorsements do not provide the same comprehensive insurance cover given by a dedicated CPE policy. (Germany, Austria and Switzerland are exceptions in this regard.)

These extensions of CAR cover only apply at the site of the insured project and have no validity either outside the site, en route to it, or in repair shops. In addition, a contractor insured under a CPE-type endorsement would be required to insure any machines used on several different sites during any one year under several separate, site-specific CAR policies. This procedure is complicated, makes it difficult to keep track of individual items and leads to increased costs. For this reason the CPE cover endorsement under a CAR policy is only recommended for major projects where machines are often used for several years at a time, and virtually all costs (including insurance premiums) can be allocated directly to that project.

Above and beyond this, on major building sites it is often the case that insurance is required for plant and equipment belonging to several consortium partners. A CAR policy with CPE extended cover therefore leads to greater simplicity: companies then have no difficulty omitting the plant used from their existing CPE policy for the duration of operations. A separate CPE policy for an individual major site can also be concluded. Nevertheless, individual companies still require the CPE annual policy for the remaining plant, regardless of whether this is in transit between two sites, in use on small sites, in storage or in the workshop being overhauled. This part of the machine fleet might constitute the largest share of the contractor's inventory.

It can be seen then that the CPE policy offers the best cover for protecting a contractor's investment in building plant – regardless of whether the machinery is rented, used primarily on a few major sites or on several small sites, in workshops undergoing repair or in storage.

The main differences between CPE and Machinery Breakdown insurance are illustrated in the following typical cover exclusions.

Figure 2:
Differences in cover
between CPE and
Machinery
Breakdown (MB)
insurance

CPE exclusions:	MB exclusions:
Internal mechanical or electrical breakdown such as rupture, cracking or deformation due to operational failure, strain or other internal failure.	Fire, lightning, explosion, flood, earthquake, tsunami, landslide, subsidence, rockfall, avalanche (corresponds to AMB in Germany – although these are covered under ABMG).
	
These exclusions are covered under the Machinery Breakdown policy. (In the event of an accident due to internal failure, such as a crash, collision or fire, the consequential loss is covered under CPE insurance.)	These exclusions are covered under the CPE policy.

4.2 Insured perils

An all-risks policy contains the cover clause “cover is provided for any loss arising from any cause other than those specifically excluded”. Nonetheless it is still important to inform the client by means of detailed examples of the protection available and which perils are covered. (Examples: collision, landslide or rockfall, vehicles or equipment on site overturning or falling into ravines or excavations, fire where vehicles are parked, storm, flood, earth or boulders falling onto plant and vehicles, subsidence, earthquake or any other cause of loss not excluded.)

4.3 Excluded perils

Generally common exclusions

The general exclusions which are a necessary part of any property policy apply equally to the CPE policy:

- wilful acts committed by the insured;
- damage and contamination as a result of a nuclear accident;
- war or warlike events.

Specific exclusions

Specific exclusions differentiate CPE cover in detail from other types of insurance. The most important of these is the exclusion of commonly occurring machinery breakdown without visible evidence of external force (see Figure 2). Machinery breakdown, ie damage to gears, pistons or motors as well as stress fractures on vehicle chassis, are commonplace due to the harsh conditions in which such equipment is used. Contractors therefore often incorporate “normal” repair costs into their maintenance budget and only insure their fleet against major losses – using a CPE² policy with a lower premium than a Machinery Breakdown policy.

2 Despite this observation, cover in Germany is usually in accordance with the ABMG.

As explained above, losses of an accidental nature affecting plant and equipment are also covered when these are revealed to have been caused by internal mechanical breakdown, provide further argument in favour of CPE insurance. Losses due to falls, collisions, and fires are insured, for example, if they are due to a broken steering column or a ruptured brake line.

The ability to clearly communicate these circumstances to the client is decisive for the success of a CPE policy.

4.4 The sum insured as the basis for indemnity

In the case of CPE insurance the new replacement value is taken as the sum insured. Every item of machinery must be listed in the policy together with the cost of its replacement. An undifferentiated total makes it impossible in the event of a claim to check whether the client is underinsured. The new replacement value of a machine comprises the cost of a machine of the same type together with the costs of replacement such as freight, customs and other duties and taxes, as well as the necessary installation costs. In some international policies, however, works accommodation, workshops, scaffolding and formwork materials etc are only insured at their market value at the time the policy is concluded. This deviation from the general principle is questionable.

Clients often query why the premium is based on the new replacement value of a machine when in the event of a major loss it is at most the actual value which is indemnified, even if the repair costs are greater.

The reason for this ruling is that the greater part of loss payments are for partial losses which are indemnified in full provided they are below the actual value (which is usually the case). Spare parts are always more expensive than their share of the whole value of the new machine; in addition to which labour costs are paid at ever-increasing rates. Moreover, the repaired machine is often in better condition than it was prior to the accident.

If there is a total loss or one involving high repair costs in excess of the actual market value, the indemnity will be limited to the actual value immediately prior to the accident. The following example shows the effect of the “new replacement value” approach compared to the “actual value” approach on premium and claim/premium ratio:

Example:

Original data:	
Purchase price	USD 100,000
Year of purchase	1992
Premium rate	1.5 % pa.
Loss costs	USD 1,200
Loss year	1992
Period under consideration	1992 to 1997
Yearly rate of inflation	10 % (assumed)

The following table tracks the increase of the sum insured ("new replacement value"), premium and the claim amount over the years based on an assumed annual inflation of about 10%. Attention should be given to the relation between loss amount and premium.

Table: New replacement value as sum insured

	New replace- ment value	Claim	Premium	Claim/ premium ratio
1992	100,000	1,200	1,500	0.80
1993	110,000	1,320	1,650	0.80
1994	121,000	1,452	1,815	0.80
1995	133,100	1,597	1,996	0.80
1996	146,410	1,757	2,196	0.80
1997	161,051	1,933	2,416	0.80

All amounts in USD

The following table shows the relation between loss amount and the premium with the premium calculation based on the actual market value.

Table: Actual market value as sum insured

	Actual market value	Claim	Premium	Claim/ premium ratio
1992	100,000	1,200	1,500	0.80
1993	85,000	1,320	1,275	1.04
1994	70,000	1,452	1,050	1.38
1995	55,000	1,597	825	1.94
1996	40,000	1,757	600	2.93
1997	25,000	1,933	375	5.15

All amounts in USD

When using the new replacement value, the claim over premium ratio remains constant, whereas if the premium calculation is based on the actual market value, a huge discrepancy arises with a rapid decline in the premium received and an increase in repair costs (materials and wages) due to inflation. Repair costs normally rise faster than the cost of new machinery as they are not balanced out by a growth in productivity.

The actual market value of a machine is not identical with the value in the insured contractor's books as adjusted for depreciation, but is defined as the "market value of a machine of equal conditions on the second-hand market". Suppliers of both new and second-hand machinery are usually reliable sources of actual market values, though it may be difficult to establish the market value in the case of special machines. Nevertheless, the new replacement value should be taken as the sum insured. If a major loss occurs, a "fair" actual market value must be established as the highest amount of compensation payable.

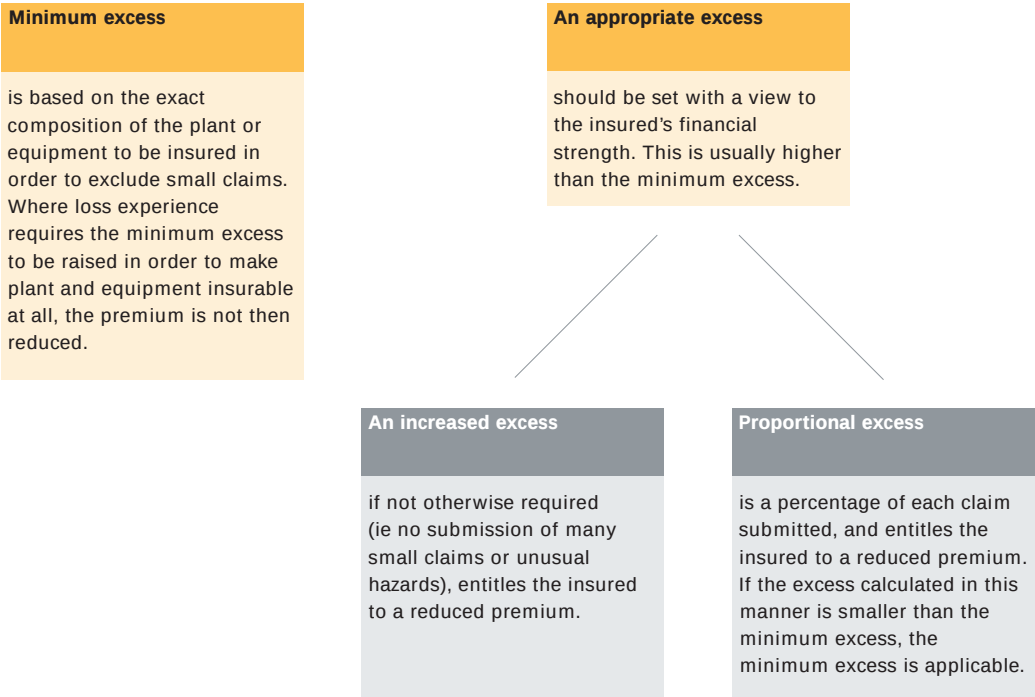
4.5 Excess

An excess must be stipulated for CPE policies as well. This should be based on local repair costs and insurance market practice. An adequate excess excludes the numerous small claims which cause relatively high claims handling costs. Furthermore, the excess improves the moral risk by giving the insured a vested interest in avoiding claims.

A minimum excess is usually stipulated for each class of machine and a percentage is defined applicable to all machines (for example 20% of each claim). This means that for every claim, the insured pays a 20% share – and at the very least a "minimum excess" of USD 2,500 (example). An upper limit can be set on the percentage excess too (eg: the insured bears 20% of each loss, with a minimum of USD 2,500 and a maximum of USD 50,000). The maximum excess – in our example USD 50,000 – should be fixed with a view to the insured plant's loss potential and the insured's financial strength. The prospect of paying the 20% excess on a million-dollar loss, a sum which would place a heavy burden on the insured contractor, is almost certain to increase his willingness to undertake preventative measures.

A higher excess also has a positive effect on the insurance premium, ie it falls. There are, however, cases involving unusual dangers or risks where an increase in the excess is necessary in order to make a fleet of plant and vehicles insurable at all. In addition, the excess must be adjusted to account for inflation.

Figure 3
Various excess options.
An increased excess increases the insured's interest in loss prevention and eliminates much of the effort involved in claims analysis and claims settlement. In turn the insured's premium is reduced.



5 Risk assessment and selection

5.1 Risk selection

Profitable business can only be concluded when the insurer is able to correctly assess contractors, their level of organisation, regional risk factors (such as mountain ranges), the nature and condition of the plant and equipment and the conditions under which it is used.

Experience shows that large contracting firms normally represent good acquisition targets for the insurer, even though they may not necessarily offer “good” risks, since the range and amount of their plant and equipment often exceeds the point where close supervision of drivers and maintenance is possible. The workforce’s performance-related pay scheme often leads to carelessness in their handling of the equipment and excessive speed sometimes results in serious accidents.

Well-organised companies are often difficult to acquire as clients. They know the repair costs of their insurance claims and are in a position to compare these to the costs of the insurance offered to them. Furthermore, they often do not acknowledge that their plant and equipment might fall victim to major losses (fire, falls, collision etc).

Important arguments in such cases are that with a higher excess – which makes sense in the case of a large fleet of plant and equipment – the premium can be reduced considerably and, as mentioned previously, can be deducted from the contractor’s tax on profit.

For smaller contractors, good and bad risks more or less balance each other out. Some contractors are extremely careful with their equipment whilst others only put their equipment in for maintenance when it malfunctions. The assumption that this is more economical is false, indicating a blinkered and short-term attitude.

Medium-sized contracting firms clearly represent the most attractive risks:

- They are usually badly affected by major losses and therefore more likely to take appropriate preventative measures.
- It is relatively easy to monitor the use and maintenance of the equipment.
- Machine operators are often well-trained mechanics.

Contractors who train their own machinists are attractive clients. There is a major European company whose track record is exemplary. This company, by means of qualified machinists and first-class organisation, has achieved a rate of availability as well as an average equipment service life which is unprecedented. The individual driver brings the equipment to the workshop and carries out all maintenance himself. He receives a bonus for the extended life and availability of the equipment and he works – depending on the site and conditions – for performance-related pay or for a fixed hourly wage.

Selective insurance

If a contractor only wishes to insure several items of equipment in his inventory, it can reasonably be assumed that these are most often used for hazardous work. We advise against such anti-selective insurance since this renders it impossible to achieve a balanced portfolio.

Rental machines

Rental and leasing agreements need to be closely examined. Maintenance costs should not be combined with repair costs as it is quite easy – where well-organised planning and checks are made by the leasing company – to carry out maintenance work at the same time as repairs. If the policy is concluded in the name of a leasing company, it is imperative for the insurer to carry out regular checks. It is easier to monitor risks if the leaseholder concludes the policy himself.



5.2 Special checks for major risks

The following are regarded as major risks:

- mobile cranes
- plant and equipment used underground
- excavators or cranes mounted on pontoons or floating platforms
- earthmoving equipment used in mountainous terrain.

Though human error remains the main cause of accidents, many losses are due to internal mechanical breakdown involving, for example, the steering mechanism or brake system. In such cases the indemnification and the paperwork regarding the loss must be checked to exclude repair costs related to internal mechanical breakdown which are not covered by the CPE policy.

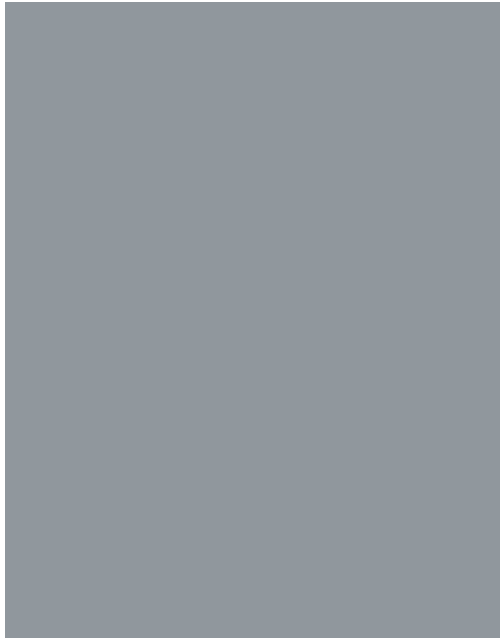
Particular attention should be given to companies contractually bound to leaving their plant and equipment behind for a nominal sum after completing a project, such as completion of a dam construction project abroad. In such cases there is often little incentive to enforce protective measures and little effort is made to repair or maintain equipment in view of its limited remaining use.

5.2.1 Mobile cranes

Over recent years mobile cranes have increased considerably in size and become both more efficient and stronger. They are, however, highly prone to overtoppling and the claims arising are correspondingly high. The danger of major losses should be taken into account by the insurer and include the appropriate reinsurance.

The main reasons for overtoppling have to do with the different sites where these cranes are used and the varying soil conditions. Mobile cranes use special lateral supports to provide stability. The soil underneath, however, is often unstable or too soft. Even when used to lift medium-sized weights it is no longer the crane's ability to bear the load which is important, but the stability of the soil beneath the outer supports.

Very large mobile cranes need to be assembled and disassembled at every site (unless they are telescopic cranes) – another reason for the greater loss potential.



5.2.2 Machines used in underground work

An assessment of the soil geology is a prerequisite for insuring tunnelling machines. The following clause might offer a certain guarantee against a contractor's disregard for the geological risk:

"Damage due to collapse of a tunnel or shaft is covered provided the machine can be salvaged from the underground site and brought to a repair shop. The costs of salvage, removal of debris and fallen material will only be indemnified if specifically insured for a specified amount."

The premium rates for machines used underground are twice as high as for the average risks for those machines used above ground. Nevertheless the loss frequency is generally high. The main dangers are the collapse of tunnels or cave ceilings, rockfalls and flooding.

5.2.3 Land-based drilling rigs

The standard CPE policy wording needs to be extended with specific clauses to limit cover and therefore keep any claims that occur within manageable limits. Losses affecting machinery caused by blowouts are, however, normally covered by a special clause.

Only experienced contractors should be regarded as clients worthy of interest for the insurer. It is important that they provide information on their previous loss experience. In the absence of comprehensive information insurers would do well to avoid taking on such risks – either from competitors or directly from a contracting company.

5.2.4 Floating equipment

Purely "aquatic" equipment such as pontoons, ships, floating work platforms etc, is not covered under CPE policies but under marine or transport insurance policies. By contrast, contractors' equipment such as excavators can be insured for use afloat by means of special clauses.

These special clauses stipulate that claims due to water, machinery running aground or being submerged, are only covered if the insured equipment can be salvaged and that salvage costs will only be paid if they have already been explicitly insured for a certain amount. The cover only applies to places where work is carried out. Cover for plant and equipment in marine transit comes under marine insurance.

5.2.5 Agricultural equipment

Agricultural equipment is often subject to small and medium claims, the main reason being insufficient maintenance, particularly neglected brake and steering systems. The consequences of this are that the machines crash or topple over. There is an above-average risk of fire as machines are frequently treated with grease or lubricant oil and kept in wooden sheds.

5.2.6 Camps, hutments, storage facilities

Fire losses occur frequently in this area. In addition, attention should be paid to the danger of storms and flooding. The insurer is obliged to insist on fire

safety measures and the enforcement of a no-smoking rule. Although fire constitutes the main risk, only the actual value and not the new replacement value should be guaranteed. Insurers must not dispense with the need for an excess in the case of fire risks, even though no excess is agreed in fire policies in many markets.



5.3 Rating

Swiss Re provides its treaty partners with special CPE rating guides. The following procedure must be followed for setting the correct rating:

- Check questionnaire and list of plant items submitted by the contractor to verify that all details are correct. If information is incomplete and a provisional quote is requested, premium offers must be clearly designated as non-binding.
- Every insured item in a class of equipment should be clearly allocated to a rating group so that the appropriate basic premium rate and the minimum excess can be ascertained.
- The premium rate is reduced for each item of equipment in accordance with the upper limit of the absolute excess and the size of the percentage excess per loss.
- The premium rates should be adjusted to reflect whether the insured items are used on various sites or on only one fixed site with regard to the following factors:

a) use on various sites (throughout the country)

- possible short-term insurance
- periods where machines are idle
- large plant inventories
- regional or national repair facilities
- contractor's loss history.

b) use on fixed sites (all year round)

- possible short-term insurance
- periods where machines are idle
- large plant inventories
- topography (important for mines and quarries)
- natural perils
- repair facilities
- plant utilisation
- contractor's loss history.

The base premium rate for equipment used on fixed sites amounts to 80% of that for plant used on varying sites. For every item (or group of similar items) the insurance sum is multiplied by the appropriate premium rate.

The total premium amount comprises the total of the individual premiums.

The procedure for calculating the premium is repeated for every excess variation. In this way the particularities of the plant and equipment fleet can be taken into account.

The premium always applies for a period of 12 months unless an agreement to the contrary has been made. Policies with two or three-year terms carry the same premiums as one-year terms (no reduction).

Short-term insurance cover may be provided. Such policies are, calculated in absolute terms, somewhat cheaper than annual policies but are more expensive compared to the actual length of cover. This is understandable considering the insurer has little interest in only insuring items when they are in use and hence particularly exposed to risk. At the same time the administration involved in processing a half-year policy is, for example, just as high as for a full year policy.

The factors applied when calculating short-term insurance premiums also apply where:

- a short-term insurance is to be extended (eg from 7 to 9 months);
- a policy is cancelled before the end of year;
- the insured applies to have the cover partially cancelled for a limited period. This may, for example, be desired where contractors' equipment is in storage rather than at the work site. In this case cover is provided against the risk of fire and natural perils at the storage site with a low premium.

In order to keep administration costs to minimum, partial cover cancellation for a limited period is only allowed where the machines are idle for at least 90 days of the year, in periods of at least 30 days. Individual periods of idleness must be reported to the insurer before they commence.

If, by contrast, the insurance should be extended by three months in excess of one year, the additional premium is calculated proportional to the base premium.

5.4 Provisional cover and quotation

Provisional cover and rates may be offered before the risk has been inspected. However, the insured must agree to accept any later modifications which the inspection deems necessary.

Such provisional cover may be granted for a maximum of 30 days; thereafter it may be cancelled by either the insured or the insurer. The premium should be paid before the date of cancellation.

5.5 Annual covers – the pillar of CPE business

CPE business can be profitable if:

- the rules of healthy technical underwriting are adhered to;
- a qualified team of technical inspectors is available;
- premium rate and excess per loss event are based on long-term experience.

For the insurer, annual policies offer advantages compared to project-specific CPE endorsements included in a CAR policy:

- premium rates and conditions can be adjusted annually, whereas CAR policies are generally fixed for two to five years;
- with the appropriate acquisition strategy and the support of a reliable technical service team, it is possible to achieve a large and balanced business volume;
- anti-selection can be better avoided, as insurers often only purchase restricted cover of plant and equipment on building sites where the risk-exposure is high;
- the portfolio is easier to manage.

5.6 Inspections by the insurer

The insurer can only set the definite premium rate after a detailed inspection has been carried out. During this inspection a comprehensive list of all items to be insured is compiled. In some countries it is the insurer – not the insured – who is responsible for ensuring that the list is correct. The insured is nonetheless obliged to provide all required information. The list should show which equipment is insured and at which new replacement value. In addition to providing an assessment of the condition of the equipment, the insurer's technical expert evaluates the quality of maintenance and the technical expertise of the contractor's own personnel.

The inventory list and the qualitative factors should be examined by the inspector once a year and any necessary adjustments made to the policy. In addition, an investigation of each claim must be carried out, which in turn provides the insurer with the opportunity to acquire additional information on the insured and the quality of the insured inventory. If the insurer evaluates this information carefully and introduces the appropriate measures, he will generally be able to prevent the entire policy portfolio from becoming a loss-maker.

Careful evaluation of this information and the introduction of appropriate preventative measures help increase the profitability of the whole portfolio. Experienced insurance engineers are in a position to uncover enormous opportunities for cost saving.

The following list enumerates the main points which should be checked during an inspection visit:

Condition of the machinery and equipment

Are vehicles roadworthy? Are their tyres in good condition? Are they fitted with rear-view mirrors? Do the brakes, steering and lights work properly? Are there any oil leaks? How many hours per day are the machines in use? Are they used at night? Is there any evidence of the machines having been used for purposes other than those they were intended for?

Reliability of drivers and operators

Are they well trained for the type of vehicle they are operating? Do they have specific training as mechanics, fitter or suchlike? Are normal work and rest periods adhered to? Are shift records including a record of accidents kept?

Standard of maintenance

Are there regional service and repair facilities? Are important spare parts stocked? Are service intervals adhered to? Is a service record kept? Are the workshop managers qualified?

Regular inspections by the insurer keep him informed and provide him with a general overview of the plant and equipment insured. This gives him a certain opportunity to intervene in the plant management and exert a certain moral pressure by indicating ways in which maintenance and training might be improved. At the same time the inspections help in loss prevention.

6 Claims settlement

The basic premise of claims settlement is that everything which might be repaired should be, and not replaced. The costs of repair may not, however, exceed the machine's actual market value.

Attention here should be given to two important aspects:

- every claim should be investigated and the repair discussed;
- the claims payment should be based on verifiable reports of work undertaken and materials used.

6.1 Claims investigation as a reliable source of information

The claim must be investigated immediately following its occurrence. Only then is it possible to identify the actual reasons for the accident.

Investigation carried out by a claims investigator with a good knowledge of the use and repair of contractors' equipment enables the correct level of compensation to be determined and increases the insurer's loss experience.

The investigation must provide evidence that the claims arose from an insured accident (collision, flooding, fire etc). It may be necessary to question witnesses and to piece together a jigsaw puzzle of information if the situation first appears unclear. Cases where internal mechanical breakdown (eg brakes or steering system) resulted in external damage such as collision, crashes, falls or fires, deserve special attention.

6.2 Loss settlement in accordance with general principles

The loss report provides the basis for the indemnification. Ideally the inspector will additionally provide a confidential report on the way in which the settlement should be dealt with.

The internal claims service must be able to answer the following questions:

1. Was the policy still in force and the premium paid at the time of the loss?
2. Was the damaged plant on the inventory list and is its new replacement value contained in the sum insured?
3. Is the loss covered?
4. Was the loss reported correctly? (Important for prompt inspection and assessment of the claim)

If all questions are answered positively the claim can be settled without difficulty (see Figure 4).

In accordance with general principles the following are indemnified:

- repair costs needed to restore the equipment to the same level of operability as prior to the claim. The upper limit is, however, the actual value if the damage can be repaired.
- In the case of a total loss, the actual value immediately prior to the loss.

The actual market value should be equivalent to that of a used machine of the same age and condition, and this is determined according to practical considerations and not an average rate of depreciation. The insurer should not forget to deduct the excess.

Damage should be repaired whenever possible. New replacements – even of individual parts – is not permissible where perfect repair is cheaper. “Cosmetic” damage which has no effect on the plant’s operation is no basis for demanding the replacement of damaged parts.

The insurer will only undertake provisional repairs when the machine is needed urgently. Cover may, however, be withdrawn until the machine has undergone a final and thorough repair if the provisional repair work might constitute an additional risk. Moreover, the costs for provisional repairs will only be indemnified to the extent that they constitute a part of the final inevitable repair. Improvements or alterations, as well as normal maintenance of the plant undertaken as a welcome additional “perk” of any repair work, are not indemnified.

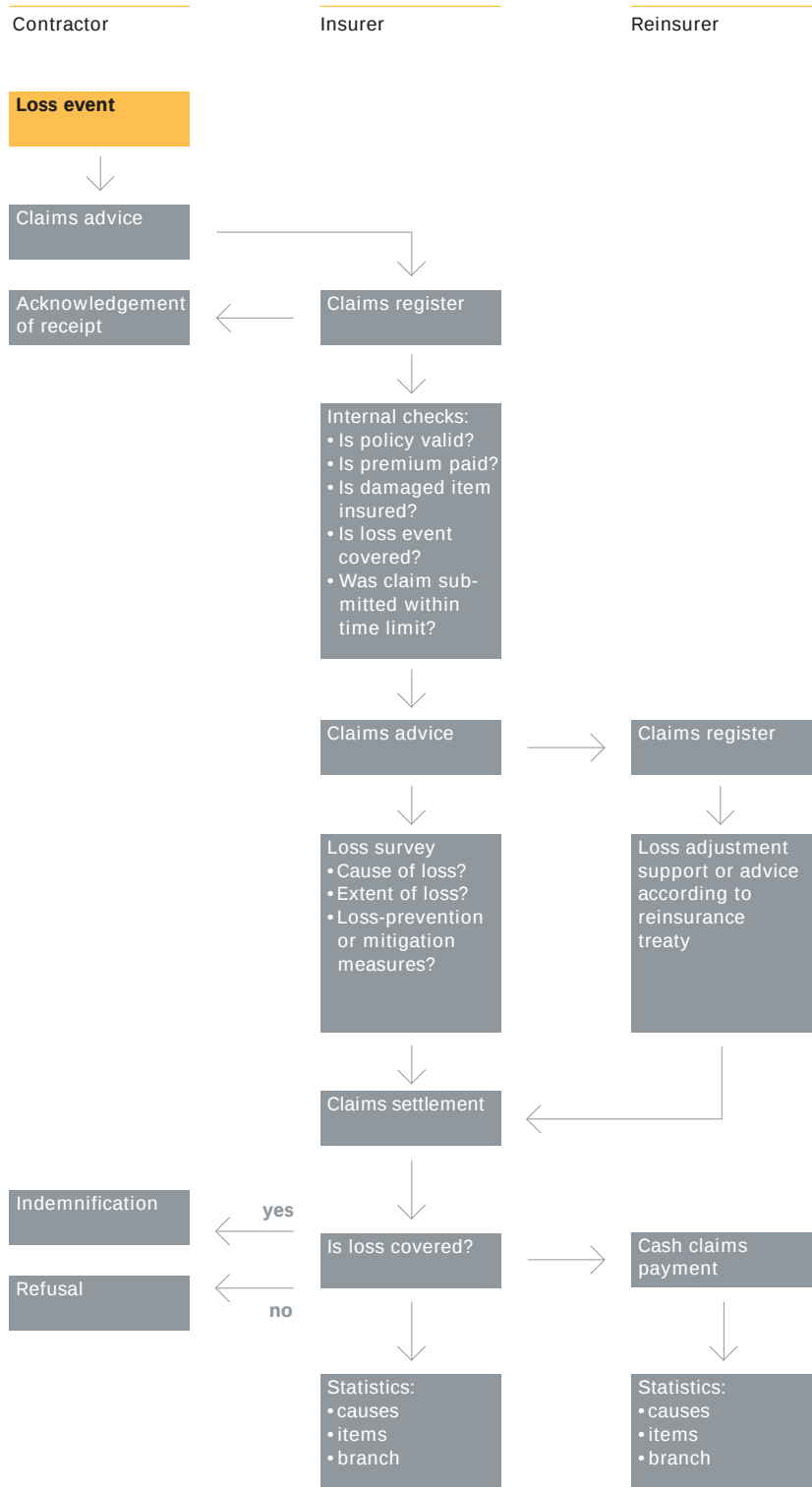
6.3 Underinsurance – problems for insurers and insured

Sometimes during the loss settlement it becomes evident that the sums insured no longer correspond to the new replacement value; in other words the equipment is underinsured.

In such cases, the amount recoverable by the insured is reduced by the proportion by which the sum insured was too low. The excess is deducted after adjustment of the loss amount for underinsurance.

Underinsurance, which can be not only costly for the client, but also result in too little premium for the insurer, can be avoided by annual checks.

Figure 4
Claims handling
procedures



7 Loss examples

7.1 Faulty erection

Example 1:

On a construction site, a technician was supervising the assembly of a revolving tower crane. The outrigger and the counterweight were already in position and provisionally secured when a strut in the main supporting column unexpectedly cracked and the entire upper structure collapsed due to the sudden imbalance. Investigations into the cause of the accident revealed that the sequence of operations was not in line with the manufacturer's prescribed assembly procedure. This loss fell within the scope of the CPE policy cover. The indemnity for the almost new crane amounted to USD 100,000, whereas the total value of the fully assembled crane was USD 120,000.

Example 2:

In another incident a crane was to be erected by two specialists working on behalf of the crane manufacturer. The outrigger counterweight was to be raised to a height of approximately 25 metres and fixed to an iron angle plate with screws. Altogether the counterweight's load, made up of a number of concrete blocks, amounted to some 8.5 tons. Part of the counterweight was already in position when the upper half of the steel construction suddenly buckled and a section fell to the ground pulling the counterweight and the two technicians with it. One of them was killed and the other seriously injured. The loss investigation revealed the accident to be due to faulty material in the iron angle plate. The material damage amounted to USD 125,000 compared to a total value of the crane of USD 170,000.

7.2 Tower crane collapses

During the construction of a highway bridge, a tower crane was mounted on tracks on a 4.4% gradient. The track ends were secured by buffers. To compensate for the incline the crane was propped up with steel plates.

Until the time of the accident the crane had been secured to the tracks with clamps. In order to undertake some concreting work the crane had to be moved downhill by about half a metre. This required that the securing clamps be removed. A securing device to hold back the crane on the sloping tracks was not considered necessary. Although the motors were only switched on very briefly to move the crane downwards it became unbrakable, slid further down the tracks until it reached the buffers, forcing these aside, and after collapsing and crashing onto the bridge, was completely destroyed.

The crane had to be written off as a total loss. Its new replacement value was USD 360,000, its actual market value at the time of the crash was still USD 210,000.

This loss would have been easily avoided by attaching a steel cable to the undercarriage of the crane to prevent uncontrolled movement.

7.3 Bulldozer taken by joy-rider

A bulldozer was kept in a fenced area near a construction site located some distance outside a town.

A joy-rider gained access to the machine, started the engine and drove it away over hilly terrain. Clearly inexperienced in driving such a machine, the operator suddenly lost control and drove the bulldozer over the edge of the road into a gully. The machine was completely destroyed. The CPE policy covers theft and the owner subsequently received USD 120,000 (following deduction of the excess, and based on the actual value of the machine).

7.4 Broken axle leads to collision

The following claims incident is typical of claims involving accidents caused by internal mechanical breakdown. A loader, which was perfectly operable until the time of the accident, collided with the wall of a building for no apparent reason and was severely damaged.

According to the driver the machine had suddenly become unsteerable, the reason being a broken rear axle bearing – as was later revealed by the accident investigation. The CPE policy does not cover internal mechanical failure – in this case a bearing in the rear axle and the differential – but an indemnity of USD 12,000 was paid for the collision damage.

7.5 Track dozer crushed

A track dozer was being used in rough terrain to prepare the ground for a motorway access road. Several large boulders loosened during earlier clearance work using explosives above the site where the dozer was being used, fell from a height of some 30 metres in the dozer's direction. The driver was able to prevent more serious consequences by putting the vehicle into reverse and jumping from the cabin.

The dozer was insured with an annual policy covering the contractor's entire plant in a specific country. Almost all parts of the vehicle, a mere two months old, were damaged. The USD 380,000 indemnity was therefore not far from the machine's current market value of USD 480,000.

7.6 Gravel-cleaning machine derailed

A special gravel-cleaning machine was being pulled to the worksite by a diesel locomotive on a narrow gauge track. The cleaning machine weighed about 60 tons and was some 25 m in length. Its maximum allowed speed specified by the designer was 60 km/h. The total new replacement value of this special train was USD 3,500,000.

During use, moving at a speed of about 37 km per hour, the machine's rear undercarriage suddenly derailed. Unfortunately the train operator did not notice anything wrong at first. After a further 25 metres with the rear carriage derailed, the machine overturned and fell down an embankment. Luckily the locomotive stayed on the tracks.

Three large mobile cranes had to be brought in to salvage the machine – accounting for 30% of the USD 400,000 loss amount. This did not include the cost of the uninsured tracks. The cause of the accident was found to be a faulty chassis construction, there having been insufficient suspension to compensate for the effect of vibration at certain speeds.

8 Future trends

The building industry has grown considerably over the last decades. This has led to a tremendous increase in the amount of contractors' plant and machinery in use. There are nowadays newer and more efficient machinery, able to meet greater technical requirements and operate under difficult site conditions. The market for CPE insurance has increased correspondingly.

With this expanding market the indiscriminate insurance underwriter may feel tempted to quickly acquire a sizeable insurance portfolio. Caution is advised, however. CPE insurance is a minefield for the inexperienced and only profitable for insurers having an above-average range of experience and a great deal of know-how. Many insurance companies have withdrawn from CPE underwriting following painful experiences. Heavy losses were incurred with cover conditions and premium rates ill-suited to the special features involved in the use of contractors' plant and machinery.

If the insurer is nonetheless determined to seriously tackle this special market, with the help of experienced engineers and the recommendations made, he will be successful.

Some insurers, owing to lack of experience, for example, set the premium rates based on excessively low sums insured corresponding only to the actual market value.

Occasionally it has been observed that the value of the plant on a large construction site is simply added to the total site value. With the premium rate valid for the entire construction period, only a fraction of the premium required was subsequently paid. Plant insurance has also made losses everywhere where insurance companies were unable to send their own experienced engineers, where the plant and equipment were insured against (internal) mechanical breakdown, and not only losses resulting from external perils. In this case the insurer not only financed a share of the inflated repair costs but also a good share of the normal maintenance costs.

All of these considerations and experiences lead to the conclusion that CPE insurance can be profitable, but only for those insurance companies with sufficient know-how and who continually monitor the policy portfolio. This requires engineers with a broad experience in this area.

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