# The Nuts & Bolts Of Engineering Claims

It is perhaps fair to say that the majority of claims professionals either have been, or remain actively engaged in the consideration of losses involving property damage, arising from a variety of causes.

The basic principles remain the same across classes of business and types of risk. Answers are always required to the what, the why and the when, often through on site enquiries. It is only then the claims professional is armed with such information that an assessment of the extent of the policyholder's liability can be made; to enable the proper management of quantum, to instigate subrogation, and for the policy to be properly applied. Has damage to Insured Property occurred? Are there any relevant endorsements, warranties or exclusions to consider?

That said, as with underwriting, there are specialist areas of business, where an adjuster or adjusting team will need both a greater depth of knowledge and industry experience to deal with claims notifications. Losses under Engineering covers fall within such a niche. To understand why, we must consider not only the nature of the machinery or plant likely to be insured, but also the type of indemnity which is granted.

The range of machinery and risk is immense: involving air-conditioning units, boilers and lifts serving commercial properties; constructional plant and equipment; plus all manner of power generation or process plant in factories, laboratories, power stations, refineries or workshops.

Building structures, or objects of a static nature, are generally exposed to damage from external factors or natural forces, the extent of which is often dictated by detail in either design or build specification. Such machinery is however dynamic, and therefore additionally exposed to damage resultant from internal causes or failure. These additional risks make the approach to the insurance of machines and the scope of cover required, quite distinct from general property cover.

Cover for such operational risk, often allied to periodic statutory inspections, is provided by the Engineering Insurer; either through a traditional Machinery Breakdown policy, in which "breakdown" is specifically defined; or more commonly in the current market, a policy where the operative clause makes reference to the wider term of "sudden and unforeseen" damage.

Breakdown is typically defined as:-

> *(a) the actual breaking distortion or burning out of any part of the plant whilst in use arising from mechanical or electrical defect in the plant causing sudden stoppage*
>
> *or*
>
> *(b) fracturing of any item of insured property by frost and necessitating repair or replacement before it can resume normal working*

The modern alternative, which is often extended to include risks of explosion and collapse as defined, and perhaps unnecessarily, accidental damage, would state:-

> *Sudden and unforeseen damage which necessitates immediate repair or replacement before the machine can resume normal working.*

Neither "sudden" nor "unforeseen" are traditionally defined, with commonly used dictionary definitions being sufficient. Similar to traditional property "all risks" insurances, the policyholder merely has to prove damage which is both sudden and unforeseen in nature has occurred, with the onus resting upon the Insurer to prove any loss or damage results from an excluded cause.

Common with other classes of business, the exclusions that are generally applied relate to risks which are deemed to be uninsurable, or better considered under separate policies. It is at this stage worthy of note that Engineering policies fall outside of the scope of the ABI Rules for Contribution. The exclusions often include:-

- *Perils (Loss or damage by risk associated with a Fire and Specified Perils policy).*
- *The cost of maintenance or rectification of faulty workmanship (but not resultant damage).*
- *Damage by the direct application of tools.*
- *Normal wear, tear or corrosion.*
- *Gradually developing flaws or fractures which do not necessitate immediate stoppage.*
- *Expendable items which require periodic replacement (unless damaged by a cause not otherwise excluded).*
- *Damage to safety or protective devices by their functioning.*
- *Damage during multiple lifting operations (where a load is shared between two or more machines).*
- *Damage arising during installation/removal or from testing or commissioning including deliberate overloading or load testing.*

Consequential losses are specifically excluded, but allied Business Interruption covers are issued. Reinstatement provisions are not often granted, and generally not in relation to machines over 24 months old (save for pressure plant).

Extensions are few, and often only extend to debris removal; and subject to nominal limits, temporary repairs, expediating expenses plus claims preparation costs (not professional fees).

Nevertheless, the nature of the exclusions detailed mean that indemnifiable damage can include that resultant from:-

- *Faulty or defective materials, design, construction or installation.*
- *Faulty maintenance, maladjustment, misalignment or poor calibration.*
- *Failure of safety or protective devices.*
- *Faulty operation, lack of skill in use or malicious acts.*
- *Defective lubrication, overheating, abnormal stress, molecular fatigue, centrifugal force or lack of boiler feed water.*

- *Failure of insulation, short circuit, electrical arcing or excessive electrical pressure.*
- *Perils such as impact, collision or flying debris.*

To identify the proximate cause and how resultant damage is sequenced can be complex, even when considering low value claims; requiring a thorough understanding of construction methods and contract procedures; chemical, electrical, mechanical and process engineering; information technology; metallurgy and statutory requirements. Such knowledge can only be obtained through a combination of academia and industry experience.

A multi-disciplinary skill base is thus required to adjust engineering claims, achieved through the creation of job specific teams. Whilst external materials testing facilities are utilised, at Teceris, our specialist engineering adjusting team leaders, (the policy and strategy men), rely upon a dedicated pool of engineers to tell them what happened and why. They will identify the widget that failed, and the mode of failure. They will also provide essential input into the assessment of the quantum of any loss: beyond issues of scope and pricing; identifying mitigation measures, considering temporary repair and parts sourcing options to enable consequential losses to be avoided, or at least properly managed.

Take for example the theoretical case of a manufacturing plant where the process undertaken leaves a gas rich in hydrogen and methane. Subsequent to the removal of elements which can be sold off site, and processing to remove pollutants, the remaining gas becomes a useful energy source. Utilising a combined heat and power plant, the gas is used as the main fuel source to run CHP boilers producing super heated steam, which is expanded through a turbine coupled to an alternator to produce sufficient electrical power for both on site demand, and a residue available to sell onto British Energy.

During start up procedures subsequent to planned maintenance the turbine fails. Investigations reveal physical damage to the final stage rotor blades, some of which have sheared with many others showing evidence of cracking. The combined heat and power plant is taken off line, and whilst the gas by product remains available, the site has to buy in power to remain in operation, and suffers a direct revenue loss.

In liaison with the turbine manufacturers, engineers quickly established that the damage is limited to the final stage blade row, albeit that this requires replacement. The minimum lead in time for the manufacture of parts is 10 weeks, with 2 weeks on site to install and to recommission.

To mitigate this, as an increased costs of working under the Business Interruption cover, the damaged section is removed, a temporary repair undertaken, enabling the turbine to be put back on line with a reduced number of stages. Whilst only capable of running at 80% efficiency, this at least avoids the necessity to buy in power to continue manufacturing, pending final repairs and recommissioning.

Particularly as the failure occurred subsequent to maintenance, the possibility of impact damage through the ingestion of some foreign body (a tool of some kind); or from a loose or dislodged screw was considered. The absence of damage to proceeding stages, and the alternator, allowed the engineer to discount this possibility. With the final stage removed to enable the temporary repair, the entire blade row was sent for metallurgical examination. Pending the results, we gathered operational data from site.

The blades showed no inherent weakness and the material was fit for purpose. Examination of cracking however suggested propagation due to low cycle fatigue. Calcium deposits were also noted, suggesting boiler water carry over resulting from abnormal fluctuations in load demand, and the absence of protective devices.

It was concluded therefore that the failure was both sudden and unforeseen, and whilst the crack development was gradual, it led to immediate stoppage. In the absence of relevant exclusions, policy liability for damage resultant from a design error had to be accepted under both the Engineering and Business Interruption policies. That said, subrogation was identified.

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