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LEG Clauses and their Application in the Developing Renewable Energy Industry (Solar)

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London Engineering Group (LEG) Clauses - Where will you find them?

- Widely used for CAR, EAR & Operational Policies
- Common in the Power, O&G & Construction Market
- There are three LEG wordings representing a varying degrees of coverage



Importance of LEG Exclusions

- Determines how the Policy responds to damage caused by defective material / workmanship / design / plan or specification
- There are contractual obligations to adequately design and complete the works and to rectify defects discovered during the project or within the maintenance / warranty period
- Balance between providing the Insured with cover for the physical damage resulting from a design or material defect or poor workmanship, and at the same time not guaranteeing the adequacy of the work / materials



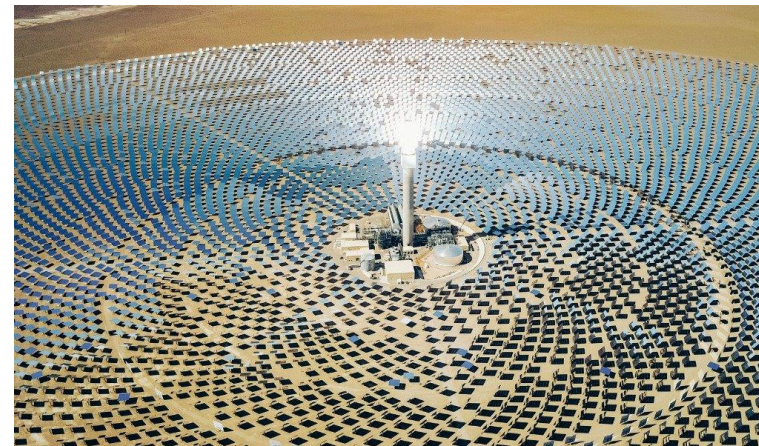
LEG Clauses – Coverage Brief

- LEG 1/96 – ‘Outright’ Defects Exclusion
- LEG 2/96 – ‘Consequences’ Defects Wording
- LEG 3/06 – ‘Improvement’ Defects Exclusion

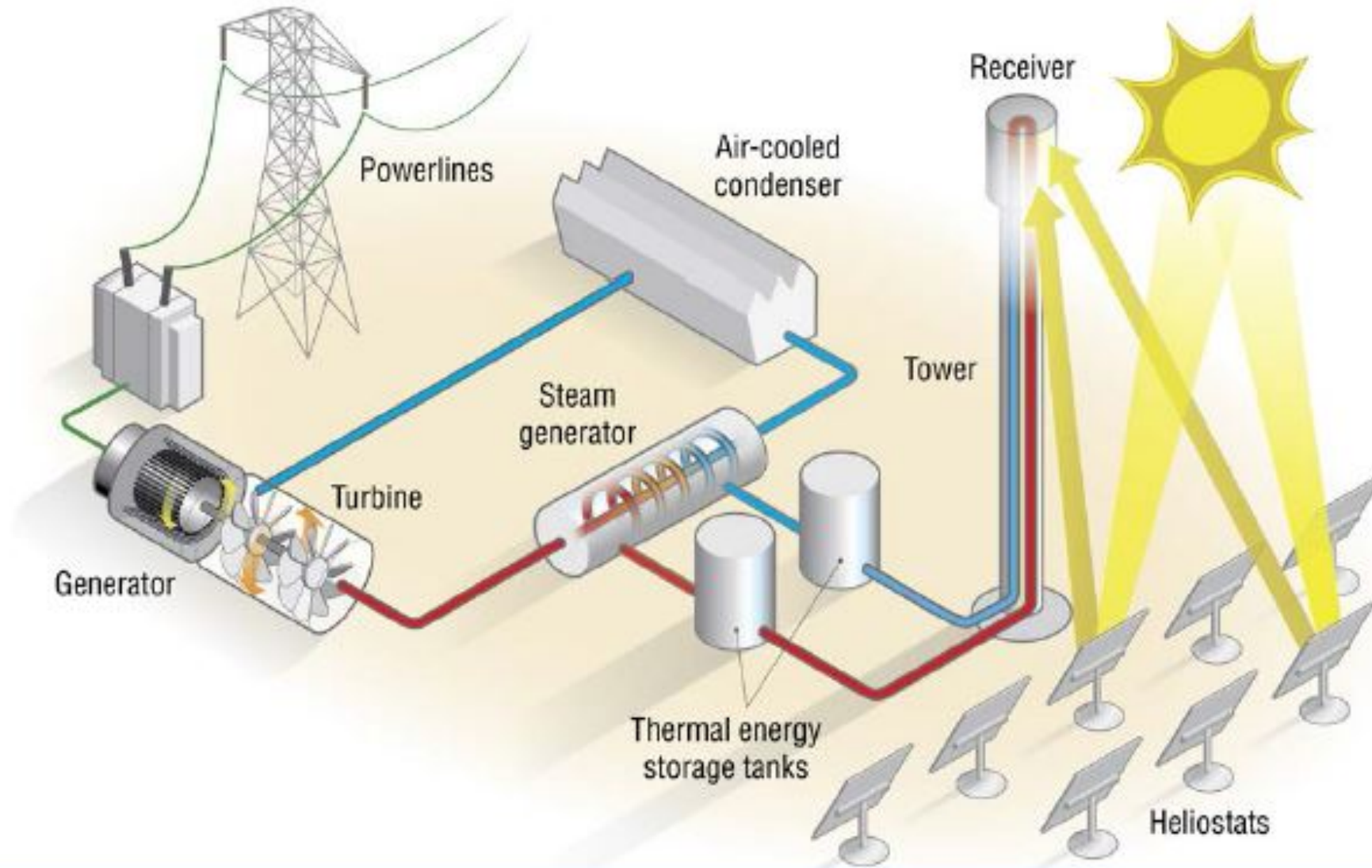


Solar Power Development

- Photovoltaic (PV) Plants are the most common Solar Plants
- PV usually arranged in strings; light is converted into DC. Inverter stations convert DC to AC, and Transformers step-up lower voltage AC to the required grid voltage
- Over the past decade, there has been significant investment and development in Concentrated Solar Power (CSP)
- CSP Plants use solar thermal energy to heat fluids or salts to generate steam and drive a generator via a turbine
- The main CSP technologies are Parabolic Troughs and Solar Towers



CSP



CSP Risk

- A recent study by the European Solar Thermal Electricity Association predicted that by 2050, CSP Plants will account for production 4,380 TWh, which would equate to 11% of estimated global power requirements
- CSP Plant production will be circa 80 - 100 times greater than the current globally installed capacity (depending on efficiency)
- CSP Plants include expensive equipment:
 - Solar towers
 - Turbines
 - Heat exchangers
 - Large storage tanks
- CSP Plant technology is in its relative infancy – how these Plants perform over a longer period of time has yet to be determined
- Due to their prototypical nature, wordings relating to defects are significant



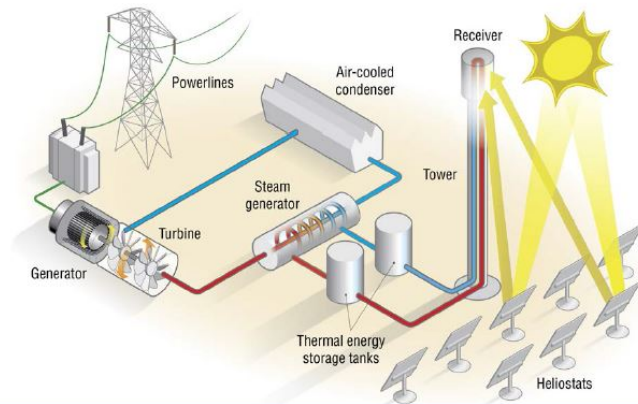
Claim Scenario – Molten Salt Background

- Molten Salts for CSP Plants are an eco-friendly mixture of sodium nitrate and potassium nitrate
- Molten Salts never need replacing and upon decommissioning of a CSP Plant they can be used as fertiliser
- Molten Salts can operate at extremely high temperatures (approximately 550°C) and are highly efficient at heat storage



Claim Scenario

- Insured procure Molten Salts for CSP Plant
- Due to incorrect design, relating to the ratio of sodium nitrate to potassium nitrate, the Molten Salts were more corrosive than the design documentation suggested
- When the Salts are introduced to the Steam Generation System, they cause extensive damage to the Heat Exchangers (Heat Exchangers were not defective, only the Molten Salts)



LEG 1/96 – Wording

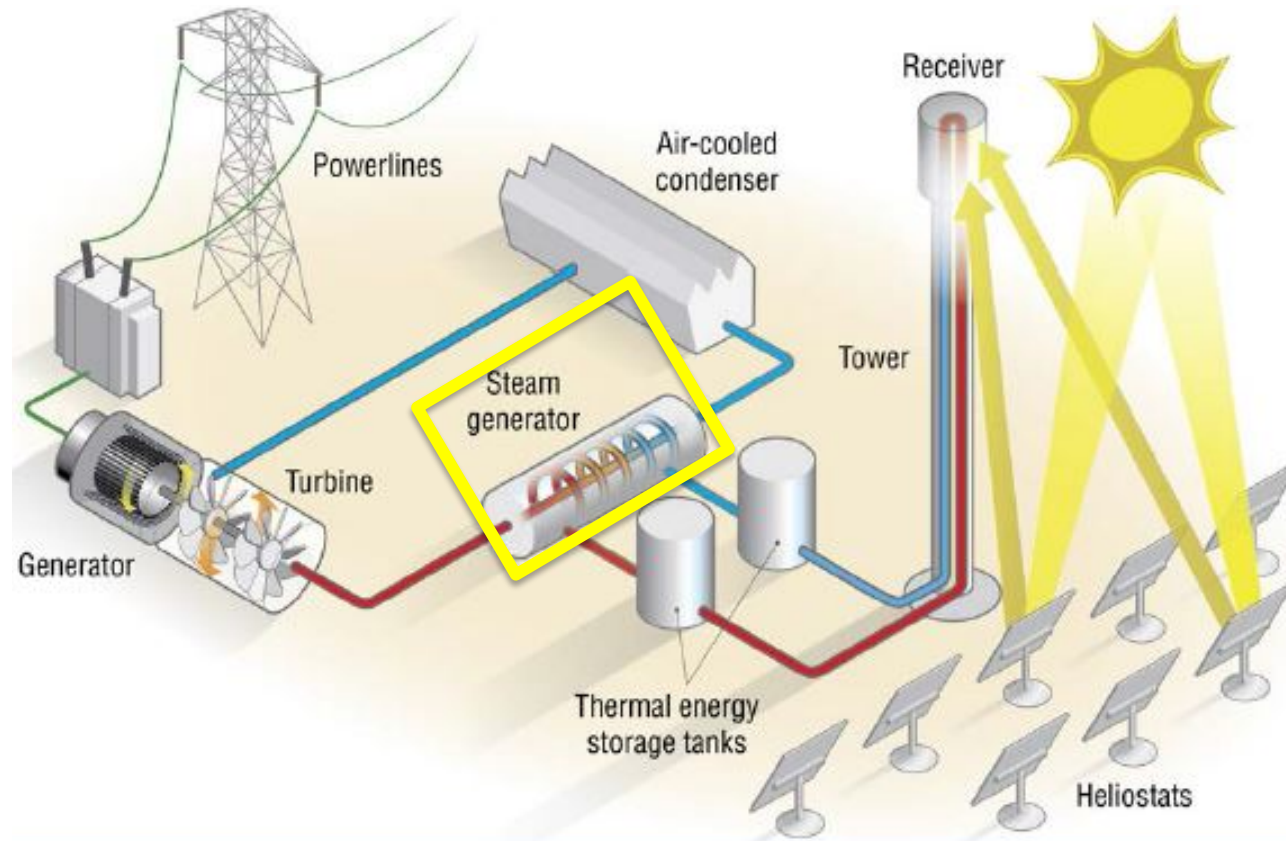
LEG 1/96- The London Engineering Group “Outright” Defects Exclusion

The Insurer(s) shall not be liable for:

Loss or damage due to defects of material workmanship design plan or specification

- **Outright exclusion** for damage resulting from a defect
- The exclusion is very broad - damage **due to** a defect





- Defective Molten Salts causes subsequent damage to Heat Exchangers within the Steam Generation System
- The cost of repair - USD 10,000,000 (Net)
- **No indemnity** under LEG 1
- Insured may seek to argue any alternate causes

LEG 2/96 – Wording

LEG 2/96 - The London Engineering Group “Consequences” Defects Wording

The Insurer(s) shall not be liable for

All costs rendered necessary by defects of material workmanship design plan or specification and should damage occur to any portion of the Insured Property containing any of the said defects the cost of replacement or rectification which is hereby excluded is that cost which would have been incurred if replacement or rectification of the Insured Property had been put in hand immediately prior to the said damage

For the purpose of this policy and not merely this exclusion it is understood and agreed that any portion of the Insured Property shall not be regarded as damaged solely by virtue of the existence of any defect of material workmanship design plan or specification



LEG 2/96 – Wording

LEG 2/96 - The London Engineering Group “Consequences” Defects Wording

The Insurer(s) shall not be liable for

All costs rendered necessary by defects of material workmanship design plan or specification and should damage occur to any portion of the Insured Property containing any of the said defects the cost of replacement or rectification which is hereby excluded is that cost which would have been incurred if replacement or rectification of the Insured Property had been put in hand immediately prior to the said damage

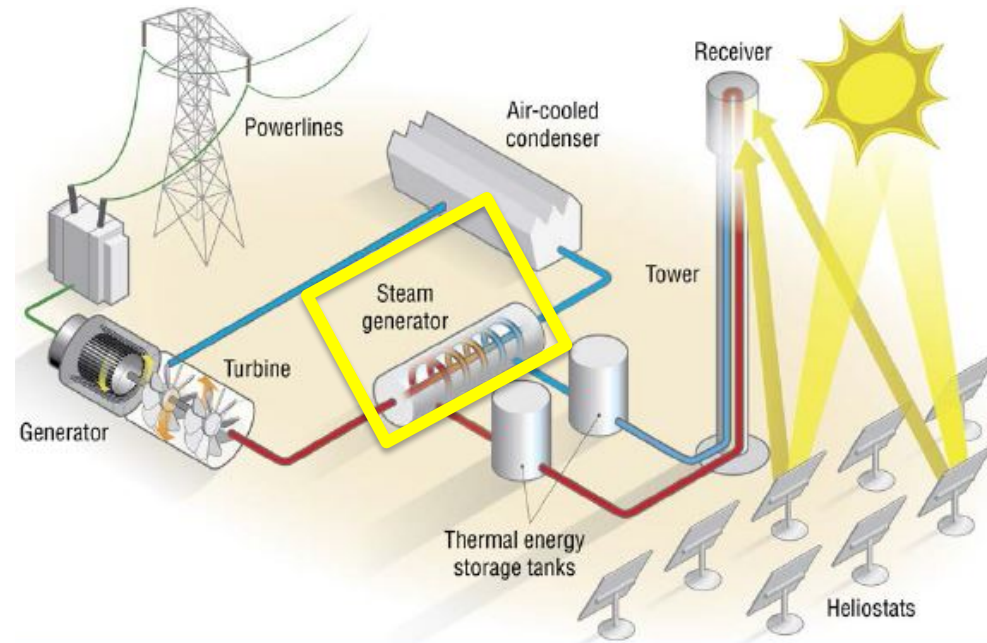
For the purpose of this policy and not merely this exclusion it is understood and agreed that any portion of the Insured Property shall not be regarded as damaged solely by virtue of the existence of any defect of material workmanship design plan or specification



LEG 2/96

- Excludes the cost that would have been incurred to rectify the defect, if that effort had been put in hand immediately prior to the damage
- The advantage of this approach is that it avoids a need to distinguish between the “defective property” and “other property” which can often be problematic
- Intention remains not to pay for those costs associated with the rectification of the defect
- **“Stop the Clock”** immediately prior to the occurrence of damage. What are the costs to rectify the defect at this time?
- It is the hypothetical costs of rectifying the defect i.e. the cost to put it right immediately before damage occurs





- Total repair costs amounted to USD 10,000,000 (net)
- **Stop the Clock** - It was calculated that it would have cost USD 4,000,000 to access and rectify the defect, prior to damage occurring (Design and Materials – new Molten Salts, access & draining costs) – These costs are **excluded** under LEG 2
- The final settlement amount would be **USD 6,000,000** - to repair the damaged Heat Exchangers
- Note: Insured may argue that introducing Salts to the system caused damage – therefore the Clock should be stopped before the Salts are introduced. Access and draining costs would not be excluded

LEG 3/06 – Wording

LEG 3/06 - The London Engineering Group “Improvement” Defects Exclusion

The Insurer(s) shall not be liable for

All costs rendered necessary by defects of material workmanship design plan or specification and should damage (which for the purposes of this exclusion shall include any patent detrimental change in the physical condition of the Insured Property) occur to any portion of the Insured Property containing any of the said defects the cost of replacement or rectification which is hereby excluded is that cost incurred to improve the original material workmanship design plan or specification

For the purpose of the policy and not merely this exclusion it is understood and agreed that any portion of the Insured Property shall not be regarded as damaged solely by virtue of the existence of any defect of material workmanship design plan or specification



LEG 3/06 – Wording

LEG 3/06 - The London Engineering Group “Improvement” Defects Exclusion

The Insurer(s) shall not be liable for

All costs rendered necessary by defects of material workmanship design plan or specification and should damage (which for the purposes of this exclusion shall include any patent detrimental change in the physical condition of the Insured Property) occur to any portion of the Insured Property containing any of the said defects the cost of replacement or rectification which is hereby excluded is that cost incurred to improve the original material workmanship design plan or specification

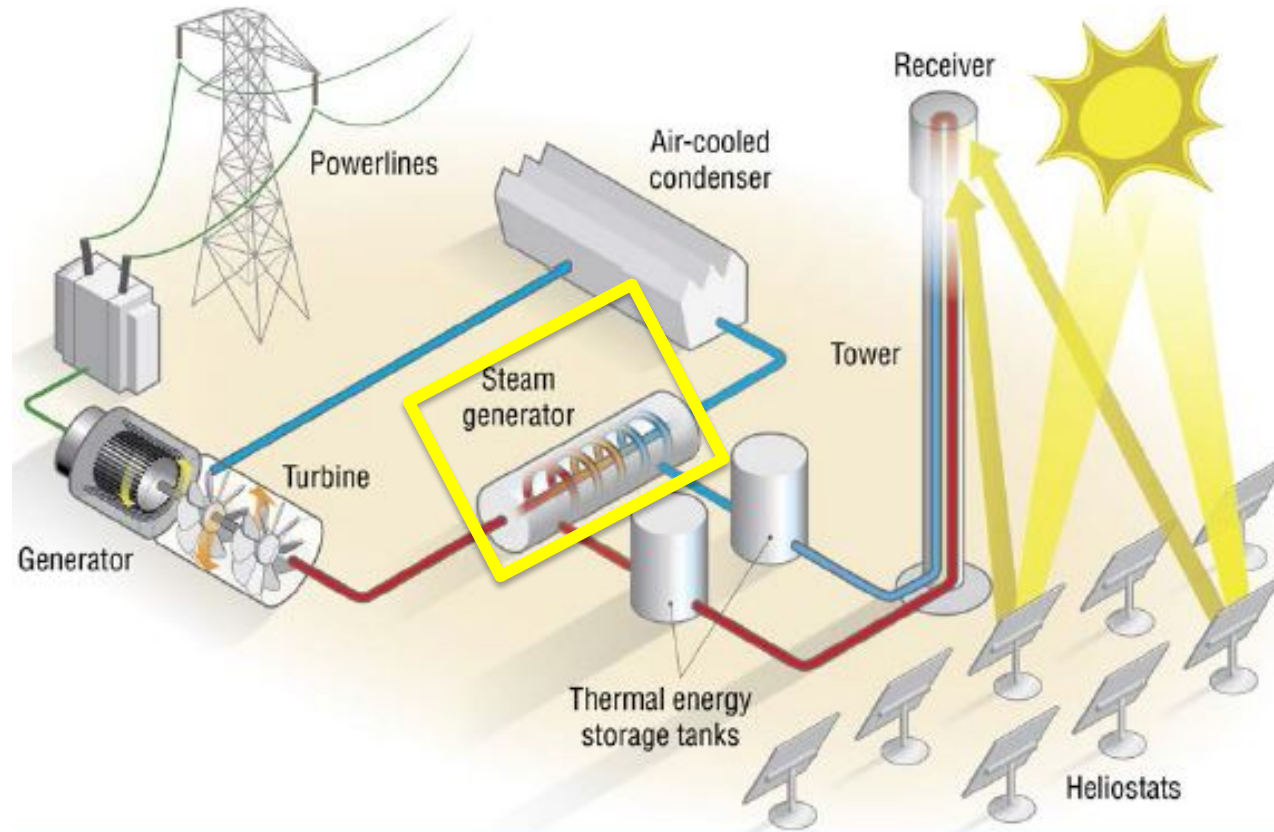
For the purpose of the policy and not merely this exclusion it is understood and agreed that any portion of the Insured Property shall not be regarded as damaged solely by virtue of the existence of any defect of material workmanship design plan or specification



LEG 3/06

- This clause permits cover for the damage to the defective property due to the defect
- But; excludes cost incurred relating to an improvement in the specification or any additional costs to improve the design (so as to avoid the damage occurring again)
- Often termed the “improvement / betterment” exclusion





- Root Cause Analysis (RCA) concludes that an inadequate design of Molten Salt was used. USD 10,000,000 (net) repair costs
- Additional cost of re-designed Molten Salt is USD 500,000
- Cover is provided for the full repair of the Heat Exchangers, excluding the additional cost of design for the new Molten Salts (the betterment)
- Final Settlement = USD 10,000,000 less the USD 500,000 = **USD 9,500,000**

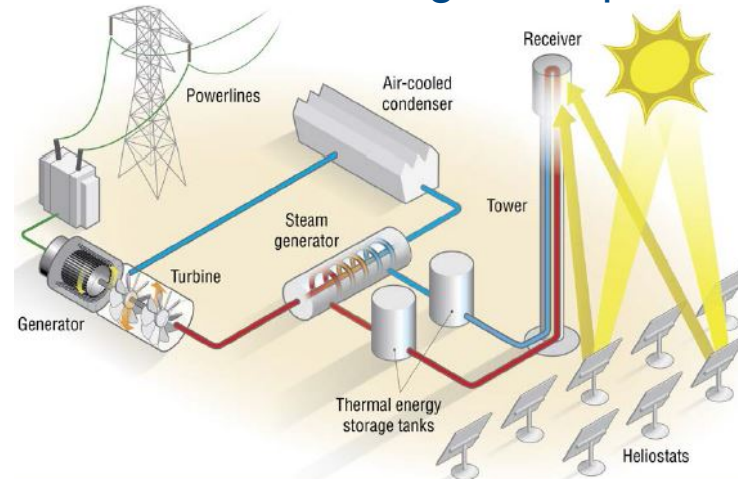
Damage v Defect

- Question : Is it “damaged” or “defective”?
- A defect can be defined as follows:
 - A condition causing premature failure which is present in the relevant part, when it is constructed or installed or, which comes into existence as a result of the way in which the relevant part was designed, constructed or installed (Sir Joseph Arnould - Law of Marine Insurance and Average)
- Traditional distinction between “defect” and “damage” is that damage requires some kind of occurrence whereas defect is a state of affairs (Potter LJ - Pilkington v CGU Insurance (2004))



Damage v Defect Example

- The inadequate design also affected the solidification temperature of the Molten Salts (resulting in solidification at a different temperature than specified in the design documentation)
- Defective Molten Salt solidifies in the pipes from the Cold Salt Tank
- A costly campaign to clear the blockage is required



Damage v Defect Example

- Does this blockage constitute damage?
- Scenario: No equipment was physically damaged as a result of the defective Salt
- Do Underwriter's Insure the functionality of the Salt?
- It depends on the Jurisdiction within the Policy
 - In the USA and the UK, some form of physical damage has to occur and the presence of a defect does not, in itself, constitute damage



LEG Discussion Points

- While the LEG Clauses have removed the onus of having to identify the “defective part” (which has been a bone of contention in many cases), they have some drawbacks:
 - It needs to be determined when a “defect” manifests as physical damage. Microscopic analysis may detect molecular changes in a material (e.g. a weld)
 - Would the progressive development of a defect be considered damage? Is this a “physical change”?
 - Example: LEG 3 - Insured discovers a defect through microscopic analysis of a weld. Can they wait for the weld to fail and then claim from Underwriters?
 - LEG 2 can often exclude access (disassembly & reassembly) costs – as these costs would have been incurred in the “Stop the Clock” assessment (i.e. these costs would have been incurred to rectify the defect)

Final Thoughts

- The LEG Clauses have been largely successful in addressing the contentious topic of identifying the “defective part”
- There is still some uncertainty as to the interpretation of LEG 2. Relatively little case law exists to establish precedent
- It appears that any potential LEG Clause related claim issues are being settled between the Parties on a case-by-case basis



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