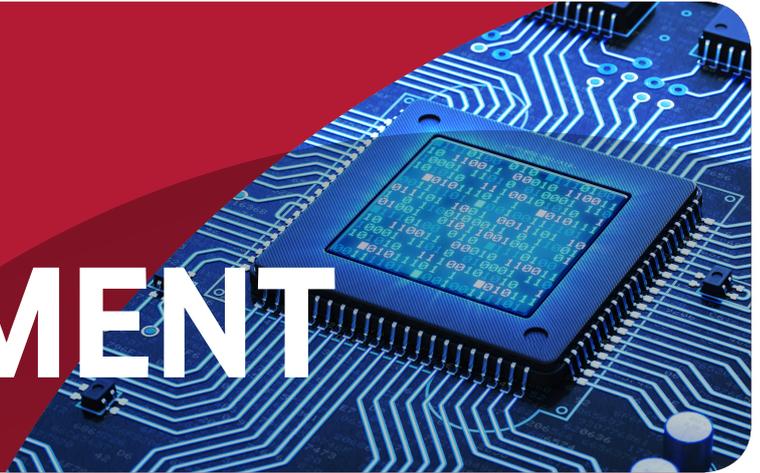


RISK MANAGEMENT

SEMI-CONDUCTOR INDUSTRY



Micro objects create mega risks

It has been argued that one of mankind's major achievements to date is the invention of the microchip – a tiny device containing components that may be invisible to the naked eye. Everything depends upon microchips. Practically every device needs them to function, and even non-chip-containing devices can only be manufactured by utilising equipment which owes its functionality to the inbuilt chips.

Making the microchips

Both the manufacturing of the chips and the plants in which they are made are amazing. Each part of the process has from dozens to hundreds of steps, with every process requiring astonishingly pure air, water and (sometimes rather hazardous) chemicals. Even the tiniest particle can contaminate the wafer and the microchip will have to be thrown out.

The fabrication building (the 'Fab') is also amazing. It's made of materials that shed as few particles as possible, and the flooring and machinery must be built to prevent even the slightest vibration. Temperatures and humidity must stay within very narrow limits.



Managing the risks

For insurers and reinsurers, an industry of this complexity can pose a range of risks which need to be understood to be able to offer capacity that is sustainable. The first category to be considered is the location of the plant.

Fabs are often located in regions prone to natural catastrophes – California, Japan and Taiwan for example, leaving them exposed to earthquake,



tsunami and typhoon and the subsequent consequences in terms of service interruption for electricity, fire or explosion.

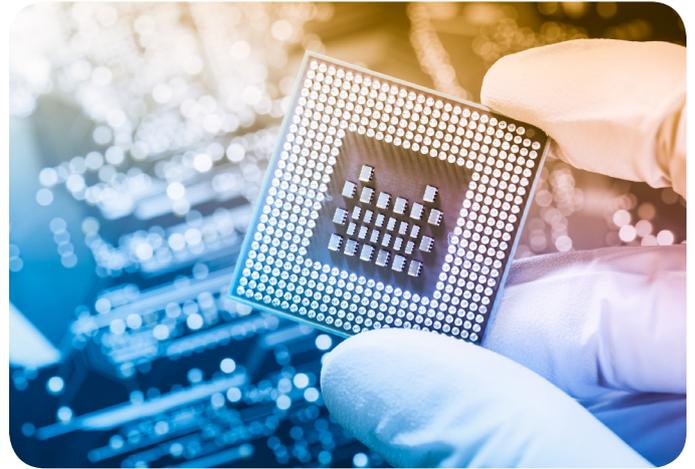
This also poses a serious business interruption risk for both producers and consumers of chips. Until recently it was thought that there was sufficient global back-up production capacity across nine countries to mitigate these events. However, now the picture is very different (especially for high-end micro-chips), with only four lead manufacturers. There is also consolidation in the key equipment makers.

The size and special nature of the Fabs also pose some unique problems. The first is that there is real concentration of high value assets in this space. The value at risk can range between USD \$100,000 and \$200,000 per square meter and the most expensive piece of equipment could be priced at USD \$50 million (wafer stepper). The second is that what is taking place in the space are high tech processes using hazardous chemicals – many of which have a very high risk of explosion and fire.

Back-up is also an issue. Sometimes there is only a single machine set-up, site service or utilities, which is very high risk in the event of a failure. Even when there is a back-up, a process cycle will be interrupted and work-in-progress may be lost. In both situations, the business interruption exposures are often extremely high.

It is in everyone's interests – the insurer and the insured – to really think about how they can prevent these catastrophic losses. Putting in sprinkler systems is vital, as well as protecting plastic ducts and creating a box within a box for the clean room (where high value assets sit) to delay fire by at least 60 minutes.

Minor events can lead to multi-million dollar losses. These may be rare events but the consequences are severe when they happen. For example, in 2013, there was a loss of over a billion dollars on a plant in China. Insuring these plants and their products requires knowledge and expertise – from the construction of the plant to the hundreds of thousands of types of equipment, chemicals, metals, minerals required for manufacturing and the complex heating, cooling, building systems involved.



For more information about Allied World's Risk Management services or our insurance and reinsurance solutions, please visit www.alliedworldinsurance.com

ABOUT THE AUTHOR

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Previously, Anton worked with two large global insurance carriers where he established their Semiconductor Specialty Business Groups.

Anton has over 25 years of experience within the Insurance Industry, embedding Risk Management Systems for Fortune 500 Clientele. His silicon platform client list includes telecommunications manufacturers, LCD screen manufacturers and other leading electronics firms.

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