



THE COST OF TECHNOLOGY

Technological advances in a number of industries have created gains in efficiency, but have driven up claims costs at the same time

>> BY ROB SPARLING

When we think about technology we generally envision computers, cellphones and other electronic devices, but technology extends to the materials used in goods, the robots and machines used in industry, the telecommunications infrastructure, and more. Technology is ubiquitous; it is everywhere and in almost everything we use. The ongoing evolutions in the wide variety of technologies that permeate society make claims difficult to investigate and often much more costly as those technologies change.

Materials

Engineered materials once reserved for use in spacecraft and research are now commonplace. Carbon fibre, one of the strongest lightweight materials known, can be found in everything from car parts to hockey sticks. Exotic alloys of rare metals like tantalum and neodymium are widely used in cellphones and motors. Simple alkaline batteries have been replaced by lithium polymer batteries in computers and toys. Where alkaline batteries would typically leak in a failure event, lithium polymer batteries catch fire or even explode, leading to injuries and/or property damage. Such materials do not have a long track record in the marketplace and as such pose difficulties in assessing risk associated with their use in consumer goods.

An example of the higher cost of these materials is carbon fibre bicycles, which can cost 10 times more than conventional aluminium or steel bicycles.

Manufacturing

I was recently at a manufacturing plant where they were making plastic kitchen storage boxes, the kind that cost \$2.00 at your local grocery store. I was surprised that a company in Canada could compete with cheap, offshore consumer products in such a low-cost goods market. Touring the factory floor, it quickly became apparent how:

robotics and automation. The raw granular plastic was automatically conveyed through pneumatic pipes to the injection-moulding machines that make the boxes. Robots picked the boxes out of the moulding machines and stacked them. Other machines applied labels and placed the stacked boxes into cartons. The only human intervention was a quick visual inspection for defects. The equipment in such facilities can be worth tens of millions of dollars. Prior to automation, it could have been less than one million.

Large companies like GM and Ford employ even more complicated automation for car part production. Where automotive engine cylinder heads were manufactured 20 years ago by teams of workers operating milling machines and presses, head plants are now virtually empty of workers except for engineers and quality control staff who oversee robotic equipment. The automation equipment used in automotive costs hundreds of millions of dollars.

Where claims occur in a high-tech manufacturing environment, both the cost to investigate the claim and the cost of repairing or replacing damaged equipment are exceptionally high. Often, experts are required to determine how system failures occurred and to determine if subrogation is an option. Production rates in these plants are very high and even very short periods of downtime (hours or minutes) can mean massive business interruption costs.

Construction

Increasingly, architects are specifying novel systems to enhance the appearance of structures. In Toronto's downtown core last summer, there were a number of panes of glass on condo balconies that failed, resulting in reported injuries to passersby on the street and the costly replacement of these architectural features. While glass seems relatively benign, the technology designed to keep the balcony panes safe in conjunction with manufacturing defects resulted in the panes literally spontaneously exploding.

With the advent of LEED (Leadership in Energy and Environmental

Design) certification, building systems are becoming more and more complex. Where heating/plumbing systems have historically been relatively simple systems of heaters, fans, pipes and valves, they now routinely employ computer control systems, variable frequency drives and automated valves that help to reduce overall energy costs. Where failures occur, they may be the result of insufficient design, mechanical failure or a control system failure. As such, where a general adjuster would previously have been able to investigate such a failure, an expert is now needed and equipment replacement costs can be substantial.

Consequently, claims costs in this sector have also gone up in recent years. It is not unusual for a broken pipe in a high-rise condominium to result in \$500,000 in damages. In extreme cases broken sprinkler pipes have resulted in claims exceeding \$15,000,000. Premiums, not only for builders' risk policies but for condominium corporations, must reflect the exceptionally high cost of such events.

The Computer

I was one of the first generation to grow up using computers. We got our first computer at home in 1980, a Commodore 64. At the time, I did not realize how this machine would change the world. A little more than 30 years later, almost every desk in the world has one of these machines. They are interconnected with servers to a global infrastructure that provides vast amounts of information and data at easy reach. For most of us it is now impossible to imagine working without these machines. Thus, claims involving computers and computer systems can be exceptionally costly; where a server was damaged by a failed water pipe, a company may be shut down for days or weeks while the system is restored. Where a tornado hits a factory, for example, the automation computers may be damaged greatly, limiting their ability to carry on business. While the costs of replacing computers due to damage may be expensive, it is often the business interruption caused by not having the computers

that represents the larger portion of the dollar loss. If a mutual fund company were to have their server damaged, even one day of business interruption could mean millions or even tens of millions of dollars in business interruption costs.

Power Generation

There has been a dramatic shift in the power generation industry over the past decade. Solar and wind energy have become a major focus for governments and large investments have been made in incorporating these technologies into our energy mix (hydro, nuclear, coal, oil, and gas). These technologies are relatively new and there have been numerous issues with integrating these systems into larger power systems. Where energy was generated in mass quantities at large power plants, it is now being generated in farmers' fields and on the rooftops of the stores where we buy our food, clothes and building products. These changes in technology make it difficult for insurers and brokers to determine premiums. When an electrical short and fire occurs in a rooftop solar system, it is not only the power generation site that is damaged by the ensuing fire but also the retail location below, making risk determinations more involved.

Summary

While technology has obvious benefits to society, its increasing complexity challenges the insurance industry. Where objects, materials and processes were historically simple, they are now often complicated systems which require experts to understand them. Failures of small components can have very extensive repercussions for larger systems shutting down large offices and assembly lines. This makes assessing risk, investigating claims and subrogation much more difficult and costly. Brokers with clients in technology-driven industries are advised to closely monitor developments and review the adequacy of coverage regularly. **IB**

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