

Gilmore Engineers

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Date : 6th January 2020

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CAPABILITY STATEMENT

FAILURE ANALYSIS

The Failure Analysis Division of Gilmore Engineers Pty Ltd complements e3k, the New Product Design and Development Division. It conducts failure analyses with in excess of 1,500 cases investigated and formally reported since 1984. Dr Duncan B Gilmore has been preparing reports for 30 years. These reports are used for the purposes of system design review, mediation and litigation. The reports are carefully compiled and written by experienced engineers of your choice, with PhD and Masters level qualifications. Those same senior personnel are available to verbally present this material in any forum required.

The “failures” investigated include machinery and system of work failures leading to property loss, loss of life, and personal injury. Further services include the analysis of motor vehicle accidents to establish the probable cause, forensic analyses to assist criminal investigations including arson and murder, intellectual property defence support (copyright and patents), and product liability reviews and experimental testing.

In most circumstances, examination of evidence in our office, on site or in a laboratory is required. Normally, measurements and photographs are necessary. A project typically begins with a briefing document, a contract outlining what will be performed for both a fixed or estimated cost; and an estimated timescale. Further discussions and meetings follow. Some projects require a desktop examination of evidence already collected or a critique of existing reports. The same analytical tools which we use in our New Product Division to design advanced products, are often put to work in reverse to probe possible failure modes. Advanced computer modelling and analysis is a specialty – Fluid mechanics, stress analysis, thermodynamics and dynamic behaviour.

The keys to hiring a good expert to examine a failure are:

- *Well qualified, experienced, and professional*
 - *An enquiring and quick mind*
 - *Ability to communicate at a high level in both written and verbal forms*
 - *Track record of success and the ability to suggest suitable tests and lines of investigation*
 - *Well rounded personality, able to lead a team if required.*
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The personnel offered by Gilmore Engineers have these qualities and maintain the support of the whole organisation i.e. other experienced associates are available to assist if required. The services are offered on a worldwide basis, with particular attention being paid to countries on the Pacific Rim.

Numerous successful cases in each failure analysis category have been performed, including typical examples below:

Machine Failure

Helicopter/aircraft failures
 Construction Crane collapse
 Mobile Crane collapse
 Industrial equipment explosion
 Heavy Transport Vehicle Cracking
 Engine failures
 Fracture Mechanics

Product Liability

Consumer Product analysis and testing
 Furniture/equipment testing
 Analysis of material stress
 Supply of defective machinery
 Motor vehicle compliance with standards
 Swimming pool heating system
 Analysis of fire spread and behaviour

Loss of Life

Portable industrial grinder
 Industrial heavy equipment incident
 Forensic murder evidence defence
 Suffocation
 Elevating Platforms
 Arson investigations
 Ergonomics

Motor Vehicle Accident Analysis

Passenger car head-on impacts/rollover/skids
 Pedestrian impacts
 Heavy vehicle roll-over, seat belts
 Stopping distances, brake failure
 Position of vehicle pre-impact
 Bicycles/Motorcycles
 Tyre, suspension, other component failure

Personal Injury

Cumulative trauma disorders
 Slips and Falls, impact, friction
 Back injuries
 Noise and Vibration effects
 System of work assessment.
 Ladder failures
 Motor Vehicle Injuries

Patent/Copyright defence Support

Fish harvesting machine patent
 Industrial conveyor belt system
 Heavy haul trailer design copyright
 Heavy vehicle suspension performance patent
 Building product patent infringement
 Sunshade and playground products
 Engineering comparisons of technology