PRESS RELEASE

36th Annual Conference of IMIA - The International Association of Engineering Insurers

The 36th Annual Conference of IMIA was held in Stockholm, Sweden from 15th to 17th September 2003.

IMIA is an international forum for the exchange of information, knowledge, experience and opinions between Engineering Insurers. Such co-operation is needed, as Engineering Insurers are permanently confronted with risks emanating from new technical developments in Industry on a global basis.

IMIA is a non-profit organisation and operates through an Executive Committee, which in 2002/2003 comprised the Chairman A. LINDBERG (If P&C Insurance, Stockholm), H. HELLER (Allianz, Munich), D. HEIDENHAIN (Munich Re, Munich), M. PETRUZZELLO (HSB, Hartford) and the Secretary A.WATT (Great Britain).

Membership of IMIA comprises 18 countries representing the major part of the world-wide premium income of engineering insurance. Member countries are Australia, Austria, Canada, Denmark, Finland, France, Germany, Great Britain, Israel, Italy, Japan, The Netherlands, Russia, South Africa, Spain, Sweden, Switzerland and USA.

42 delegates were welcomed by the President, C. Blückert, Zurich, Stockholm.

The total premium income for engineering insurance for 2002 reported by the delegates amounted to over 5.6 billion US$.

The guest speakers at the conference were:

Torbjörn Magnusson, CEO of If P&C Insurance

Manfred Schäfer, Securitas Versicherung, Germany

The following topics were considered by working parties who presented reports at the Conference on:

Mold – Risk for Engineering Insurers?

Risk Management approaches in CAR/EAR Projects

Forensic Investigation of Engineering Claims

Construction and Operation of Hydro Power Plants – Engineering Insurance Exposures

Micro Gas Turbines, Risks and Markets

High Speed Railway Construction Projects – Engineering Insurance Exposure

Analysis of Transformer Failures

Development of the IMIA web site has continued on the Internet, www.imia.com, in order to improve the information about IMIA and to provide a tool for distribution of information and best practices in Engineering Insurance. Papers presented at this year's conference will be published on the IMIA web site.

The next Conference will be held in Rome from 13th to 15th September 2004.

Anders Lindberg, Stockholm

Press Releases on individual papers:

Mold – Risk for Engineering Insurers?

The International Association of Engineering Insurers (IMIA) provides a forum for the exchange of information, knowledge, experience and opinions between engineering insurers from throughout the world. The 36th annual conference held in Stockholm, provided a platform for such exchanges and allowed delegates to discuss and confront the risks emanating from new technical developments in the industry.

This paper was presented at the conference by Mike Pero from General Cologne Reinsurance, Stamford.

Mold is a fungi and is everywhere around us. It has been on the face of the earth since time began. Mold plays many roles in our daily lives and not all of them are negative. Quite the contrary, the contribution mold makes to such products as bread, cheese and beer are examples of its positive side.

Recently however, mold has received much attention as the cause of several large insurance claims, especially in the USA. What then, does this mean to Engineering Insurers?   This paper looks at the potential for loss within Engineering Insurances, explores recent claims activity and discusses what action insurers can take to deal with the issue.

High Speed Railways

This paper aims to give an overview of the engineering insurance aspects for High-Speed Railway construction projects.

We have focused on the main countries in which this kind of technology has been developped (mainly in Europe and in Asia).

After having given a definition of what we call « High-Speed » for trains, we describe the differences between pure high-speed trains and telting trains.

We present the main steps of a High-Speed Railtrack construction from earthmoving to testing and give three examples of claims occured during erection of this type of projects in giving some recommandations to prevent loss.

Even if construction of high-speed railways do not show any specific losses (tunnels construction is the main issue) we detail all underwriting aspects to take into account for best practice.

Risk Management

This paper presents a best practice guide for implementation of Risk Management / Loss prevention measures for Construction and erections projects (CAR / EAR). One objective being to promote the awareness within the Engineering insurance community of the importance and benefits that a proper loss prevention implementation can bring to the all stakeholders (i.e projects itself, insured, insurance, reinsurance, and third parties).

This approach should not be limited to the largest risks, where this is already partially in place, but also to the medium and minor projects where the majors risks remain fire and flood. The paper present some practical check list, describe contents needed, and clause as example, that can support efficiently underwriters and loss prevention engineers.

Forensic Investigation of Engineering Claims

Forensics is the use of science and technology to investigate and establish facts after the occurrence of an event. Forensic investigation following a loss event can establish its true cause, assess blame, determine where liability lies and prevent recurrence. It can be utilised following a wide range of events including fires, explosions, plant and building failures, vehicle accidents, pollution and contamination incidents and system failures.

Forensics investigators act as detectives, obtaining evidence, witness reports, examining data and carrying out tests on material to establish what happened. Investigation may entail precise determination of the sequence of events, including the establishment of a time-line. It may entail examination of materials from which the failed component is constructed to ascertain at what stage faults were introduced. Materials testing methods include non-destructive techniques also employed for preventative maintenance such as magnetic particle, dye penetrant and ultrasonic inspections, use of X-rays and gamma rays, scanning electron microscopy and eddy current testing. Mechanical, electrical or chemical tests may also be employed to ascertain tensile strength or material composition.

Forensic investigation assists the insurer by determining whether a loss is covered by the policy and, if so, the possibilities of recovery against other parties. The investigation may also highlight deficiencies in operating, maintenance and training procedures, poor quality repair or maintenance, design or manufacturing faults and the failure to comply with legal requirements. Consequently, parties such as plant owners, repair and maintenance contractors, plant manufacturers, regulatory authorities and law enforcement agencies will also be interested in the investigator’s findings.

Forensic investigation can be of benefit to the wider community where findings lead to the introduction of new and better regulation and a healthier and safer working environment.

The cost of forensic investigation, where employed judiciously, may be considered small relative to the overall benefits gained.

Wind Energy / abstract

After being re-invented in the early seventies, wind energy has become an important part of the energy market in the USA and Europe.
Today, wind energy has more than 25,000 MW of installed capacity worldwide. In Germany, the number of wind turbines is about to reach 15,000 or more, with an installed capacity far exceeding 10,000 MW. Medium-term estimates show installation figures of over 50,000 MW worldwide within the next 5 years.

The following article provides an overview of wind energy trends in Germany over the last three decades. It explains the construction of various wind turbine types and then goes on to describe the construction elements of modern wind turbines as a way to illustrate state-of-the-art wind technology.

A large part of the article focuses on the very important question of safety and liability in operating modern wind turbines. Standard safety devices like lightning protection, brake systems, fire protection devices, and condition monitoring systems are explained.

Furthermore, a broad overview of the status of development of modern wind turbines for both onshore and offshore applications is shown.
A separate section explains the technique of modern offshore wind turbines and discusses the potential of offshore wind energy.

Finally, a detailed risk assessment of both onshore and offshore wind energy turbines is given, including an estimated loss potential.

Renewable energy -
Implications for the field of engineering business interruption insurance

As a rule, projects in the field of renewable energy have to be secured (requirement by lenders). Engineering business interruption insurance covers any economic loss due to material damage during the construction, installation and operation phases. Economic loss mainly results from renewable energy subsidies, a dominant role being played by the Renewable Energy Law, which fixes prices for feeds depending on the form of renewable energy.

On the basis of the growth rates currently forecast, and if the current subsidies are maintained (especially under the Renewable Energy Law), potential premium income in engineering business interruption insurance is estimated at approximately € 25.0 million annually in 2010, corresponding to approximately 40 percent of the overall premium income in engineering business interruption insurance in Germany in 2002 (according to GDV statistics).

The subsidies have given rise to a multitude of engineering firms, companies and operators who work with renewable energy installations. Many fields of renewable energy are at the cutting edge of technology, and the people involved often do not pay sufficient attention to quality. Many operators of renewable energy installation have little or no experience in operating these installations. Slow reaction times and lack of training in handling crises increase economic loss. Renewable energy technology has earned a bad reputation as a result of the tendency to optimize installations commercially but not according to engineering aspects.

Because there is still a serious lack of long-term experience with most forms of renewable energy (except for hydroelectric power and, to a certain extent, wind energy), the technical risk has to be analyzed carefully. Indeed, experienced engineers who can not only assess technical and commercial risk, but also examine and analyze know-how in the field, are especially important in the area of engineering business interruption insurance.

This brings both opportunities and risks to the field of engineering business interruption insurance, the former applying to existing potential and the latter to technology. In the long run, profitable business will be limited to those insurers who can master the technical risk and make a solid economic assessment. Suitable instruments (e.g. detailed loss statistics/information exchanges) will be important in obtaining a clear view of the current market situation and to respond quickly to changes.

Abstract:

Renewable energy (such as hydroelectric, wind and solar power) may be a way to prevent imminent climatic catastrophe, one that could save shrinking reserves of conventional primary energy sources.

Steps have already been taken to push for renewable energy sources. The Kyoto Protocol for example stipulates the following goals:

- The European Community is to cut greenhouse gas emissions by 8 % by 2012 over 1990 levels.
- Germany is to reduce greenhouse gases by as much as 21 %.
- The Commission has called for a reduction in CO_2 by 20% to 40% worldwide and by as much as 70 % by 2020 as a long-term goal.

Meeting these targets will be a challenge, as individual renewable energy sources vary in importance and level of development from one country to the next. In addition to geographic factors, political decision-making processes and political instruments play an important role in renewable energy development.

The need to replace power plants at the end of their life cycle provides a good opportunity to introduce new alternative technologies as a way to lower emissions and use resources more efficiently. (European power plants with capacities around 400 000 Megawatts will have to be replaced between 2010 and 2020.) The German government has determined that renewable energy sources in Germany must account for 12.5 % of overall power consumption by the year 2010 and as much as 50 % by 2050.

This essay provides a brief overview of renewable energy sources and discusses hydroelectric power, wind and solar energy, biomass and biogas plants as well as fuel cells, hydrogen power and geothermal energy. It compares their potential and shows how they measure up againg conventional power technologies.

The last chapter of the essay provides facts and figures about special technologies such as solar chimney systems, tidal energy and wave power.

Fuel cells and hydrogen technology

A fuel cell is an energy converter in which hydrogen reacts with a catalyst and is then converted to electricity, water and sometimes heat. Six different systems are under development.

Although fuel cells have a wide rage of potential applications, they are currently used mainly in the manufacture of automobiles and buses.

In addition to small models with capacities between 1 and 500 watts for portable personal computers and mobile telephones, fuel cells are developed for cogeneration plants in the 200 to 300 kW capacity range for supplying district heating networks, hotels and hospitals as well as private households, where a range of 1 to 5 kW can be provided.

With the exception of the Alkaline Fuel Cell (AFC), all types are expensive and have limited life cycles, problems that have yet to be overcome.

Portable installations will begin series-production in 2004, with mass-market introduction of the fuel cell car expected to follow in 2010.

Until then, however, extensive research and development is required before fuel cells can become the norm. They are likely to take a significant share of the market by 2020.

Hydrogen seems to be the ideal fuel for fuel cells.

Because hydrogen production must be environmentally safe before it can gain general acceptance, research and development efforts focus on several different production methods.

Due to the fact that certain fuel cell types are sensitive to contamination, hydrogen must be "clean". This article describes different fuel purification methods.

Also under development are new fuel storage methods, which are needed to solve the problem of stationary and portable storage installations as well come up with effective ways to store liquid and gaseous hydrogen.

Biogas

The conversion of biogas to electricity and heat offers the potential to greatly reduce the volume of carbon oxide gas.

Because the method has not be standardized, insurance companies face claims arising from poor engineering, poor design, poor workmanship and improper use.

This article explains the components of a modern biogas plant, starting with the mixing pit and hygienization unit, which are regulated under German food hygiene laws.
Chapter 9 describes the various fermenter types.

A wide range of biomass types can be converted into biogas.

The biomass is highly sensitive to loading errors. Three months can pass between the beginning of fermentation and full biogas production. The process can be very easily interrupted if the biomass mixture is changed too rapidly. If the gas production comes to a standstill, the entire fermenter mixture is ruined and must be removed.

The core of all biogas plants is the control unit. Serious claims very often arise through the lack of proper control units/systems. The best way to operate a biogas plant is through the use of computerized control equipment, which is particularly true in the case of gas analyses which must be carried out/controlled correctly. Gas analyzers require high-quality and careful maintenance. Farmers are particularly subject to financial loss due to improper control.

Gas purification is another very important function. Contamination through water vapor, dust, sulphur and other substances must be minimized to avoid rapid destruction of motors and consequently the exhaust systems. This is why five different types of desulphurization are used. Following purification, biogas is used mainly in cogeneration power plants.

Dual fuel motors are a special case, for they are not designed specifically for dual fuels. No manufacturers in Germany or Austria produce motors designed for dual fuels, which explains the lack of warrantees. Instead, workshops convert standard engines to dual fuel types. Due to their higher combustion temperatures, we have seen a great many claims filed after just a few hours of operation.

If the gas contains excessively high amounts/levels of sulphur, highly corrosive sulphite may be produced after combustion, again resulting in lub oil acidification and consequently high abrasion of the copper components. Regular oil analyses and a proper desulphurization process are essential for motors in biogas plants.

Summary of solar installations

This section discusses the history and operation of solar installations as well as development programs and claims experience in this field.

In 1889 the French researcher Bacaquerel discovered a way to convert light directly into electricity. Early silicon solar cells were produced in the United States in 1954 and subsequently refined with the launch of the space program. Solar installations began to attract attention only during the first oil crisis.

The basic element of a photovoltaic installation (PV installation) is the solar cell: a thin wafer that consists mainly of silicon. Incident light causes positive and negative carriers to be released on the silicon wafer, establishing the conditions for electric current to flow.

There are two types of PV installations: autonomous isolated systems and grid-connected installations. Isolated systems are not connected to a public utility grid and therefore are economical for use in remote off-grid areas.

Grid-connected PV installations are used when the installation can be connected to the public power grid. The electricity generated is fed into the network and the price charged for it is fixed by the Electricity Feed Law.

Heliothermal installations differ from PV installations in that they do not generate electricity, but transform solar radiation into heat. The installation heats water through solar radiation, using a collector that may be mounted on the roof. This water is used primarily as process and heating water for single-family homes and apartment complexes.

The technology of heliothermal power plants is, for the most part, quite advanced. Sunlight is concentrated onto a collector by means of tracking mirrors. The liquid in the collector is heated to 800° C. Electricity is generated using a downstream turbine.

The Renewable Energy Law in connection with the 100,000 Roofs Solar Program lays the foundation for economic operation of PV installations. Sustained growth in the sector with require ongoing state support, especially when oil, gas and coal are reasonably priced. In 2001, 20,000 applications for PV installations were approved and more than 100,000 thermal solar installations constructed. Solar electricity's share of the total electricity consumption in Germany is expected to rise from 0.02 percent at present to 1 per cent by 2010.

The PV and thermal solar installations currently available on the market are technologically advanced and reliable. When maintained and inspected on a regular basis, the risk of internal operating damage to the installations remains low. Experience has shown that natural events such as storm, lightning, snow and frost as well as wanton destruction by vandalism do pose a risk.