



香港岩土及岩土環境工程專業協會
ASSOCIATION OF GEOTECHNICAL &
GEOENVIRONMENTAL SPECIALISTS (HONG KONG)

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A Technical Seminar supported by AGS(HK)

**The Åkenes/Tafjord Project – Monitoring Norway's largest potential
rockslide**

- Date :** Tuesday, 09 December 2008
- Time :** 7:00pm (following the AGM of the AGS(HK))
- Venue :** Hong Kong Football Club, 3 Sports Road, Happy Valley, Hong Kong
- Enquiry :** Angus Maxwell (email: info@maxwellgeosystems.com or tel: 2268 3479)
Tse-hung Lee (email: tsehung.lee@gammonconstruction.com or tel: 2516 8524)
- Registration :** No registration is required.
- Speaker :** Lars Krangnes, Fugro Survey A/S, Oslo, Norway

Abstract

A major potential rockslide was discovered 10-15 years ago in one of Norway's most scenic and popular tourist areas. The area, which is located on Norway's west coast in a UNESCO World Heritage area, comprises a narrow fjord surrounded by steep mountains.

The unstable zone covers an area of almost 0.8 km² with the main rift 900m above sea level. The unstable zone holds a possible volume of 30-100 million m³ of rock, moving with a velocity of 3-10 cm per year. Should the unstable zone suddenly fail and plunge into the fjord, a tsunami wave up to 40m in height will be generated, which will wipe out the communities living by the side of the fjord.

Following extensive risk analysis work, a major monitoring and early-warning system was implemented to track the rockslide movement in real time and thus to allow early evacuation in the event of a failure. The monitoring system had to overcome many challenges due to the rugged and remote terrain and the severe weather conditions. The monitoring system uses several novel and advanced survey and instrumentation techniques, including interferometric radar system, lasers, GPS and robotic total stations, as well as more conventional instrumentation such as geophones, climate station, extensometers and borehole instrumentation. Data from the system is available in real time over an integrated web-based system.

The presentation will give an overview of the project and the monitoring system.



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About the speaker

Lars Krangnes is Laser and Land Survey Manager at Fugro Survey A/S in Oslo, Norway, and is the project manager for the Åknes/Tafjord rockslide project.

Although the primary business of Fugro Survey A/S is positioning and geodetic-related surveying for the offshore oil industry, the company has for several years been involved in developing systems for automatically monitoring unstable slopes and structures.



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Note :- Map Courtesy of Centamap Ltd

Location Plan of The Hong Kong Football Club