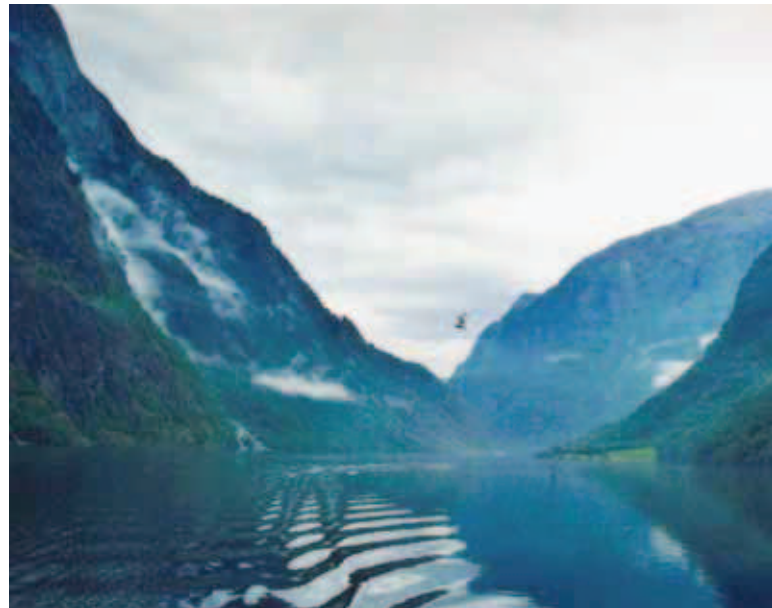


## Norway's Flåmsbana (The Flåm Railway)



by Ir. Tham Kum Weng



**IN** July 2013, my wife and I went on a relaxing two-week (short according to the Ir. Chin Mee Poon scale) whirlwind tour of the Nordic countries of Scandinavia (Denmark, Norway, Finland and Sweden). We travelled on planes, buses, trains and ferries.

Among the more interesting journeys through Norway's spectacular natural countryside was the ride on the famed Flåm Railway. The incredible one-hour train ride over a distance of 20.2km took us from Myrdal (altitude 863.5m) to Flåm (altitude 2.0m). It traversed down the precipitous mountain sides to the edge of the majestic Aurlandsfjord, which is a branch of the world's longest fjord (the Sognefjord on the western coast of Norway). The mountain station of Myrdal is located on the Bergen to Oslo Railway Line (west coast to south coast) inaugurated in 1909.

Built in 1923, the audacious design and construction of the railway track obviously would have presented many challenges to engineers then. There are 20 tunnels (many of them twisted) wending their way through the mountains at various levels. Eighteen of these were excavated by hand. The railway line criss-crossed the river and the bottom of the valley three times to avoid risk of avalanche. River tunnels generally replaced bridge crossings. The tracks were laid in 1936 and the line was opened for steam trains in 1940 and for electric trains in 1944. The trains are still operating as present.

From Myrdal Station, the train snaked its way down sheer inclines and sharp bends with 80% of the Railway Line at a gradient of 5.5% (1:18). People flock to the Flåm Railway ride as it is considered one of the world's most attractive and spectacular railway lines. The journey provided us with a panoramic view of some of the wildest and most striking features of the Norwegian mountain landscape. Deep ravines cut by rivers, towering, snow-capped mountains, impressive cascading waterfalls and all round natural mountain beauty. It gave us many moments of awesome spiritual peace and tranquillity.

Norway, the land of summer midnight sun, is the most beautiful country in Europe. It is blessed with many natural landscapes formed during the Ice Ages and many are in UNESCO World Heritage List.

During our brief holiday in Norway, we were truly blessed to have experienced so many wonderful moments to enjoy such spectacular, pristine views. Each encounter literally took our breath away. The feeling of being close to nature, the peace and the serenity were simply beyond words. ■

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**Ir. Tham Kum Weng** worked for JKR for 18 years before practising as C&S consulting engineer for the past 21 years. His current focus is on engineering inspection, assessment and evaluation of structures and bridge engineering. He shares relevant travel sights of engineering interest through his occasional travels.