

# Trainee's Project Report

Job Code	BE3742
Department	BE
Discipline	Surveying
Supervisor	MISSIAEN Dominique

## Description

The precise alignment of the components of the particle accelerators (10000 components along 63 km of beam lines) requires special techniques. The increasing size and the demand for tighter and tighter tolerances for these machines have led to the development of special instruments and methods. The present needs, in terms of relative accuracy along the beam lines, are around 0.1 mm (r.m.s.), and they are fully satisfied by these original techniques. Some standard metrological equipment, such as Laser trackers and laser scanners is also used to fulfill these requirements. In the framework of the high precision geodetic measurements, in particular for the LHC (Large Hadron Collider) project, the trainee will contribute to industrial measurements on huge electro-magnets using laser tracker technology and the computation of the results; measurements, calibrations, data handling and processing, analysis and quality assessment of results issued from least squares adjustments; the control of the as-built infrastructure in the underground LHC installations using a 3D Laser Scanner.

## Special Requirements

MSc or Dipl. Engineer degree in Geodesy and Surveying.

## Training Value

Geodesy, Surveying, Mastering of the most advanced techniques in large scale metrology including laser scanner and tracker systems, least squares adjustments and data analysis.

