

HIGHER TECHNICAL INSTITUTE

MECHANICAL ENGINEERING DEPARTMENT

DIPLOMA PROJECT

**DESIGN OF A MOBILE
TELESCOPIC CHAIN ELEVATOR**

M/1024

BY: SOLOMOU NICOLAS

2006

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Project report submitted by

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M/1024

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DEDICATED TO MY FAMILY AND CLOSE FRIENDS

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Nicolas Solomou, June 2006

INTRODUCTION

Elevators began as simple rope or chain hoists. An elevator is essentially a platform that is either pulled or pushed up by a mechanical means. A modern day elevator consists of a cab (also called a "cage" or "car") mounted on a platform within an enclosed space called a shaft or more correctly a "hoistway". In the past elevator drive mechanisms were powered by steam and water hydraulic pistons.

Hydraulic elevators use the principal of hydraulics to pressurize an above ground or in-ground piston to raise and lower the car. Roped Hydraulics use a combination of both ropes and hydraulic power to raise and lower cars. Recent innovations include permanent earth magnet motors, machine room-less rail mounted gearless machines, and microprocessor controls.

Hydraulic type

Conventional Hydraulic elevators are quite common for low and medium rise buildings (2-5 stories). They use a hydraulically powered plunger to push the elevator upwards. On some, the hydraulic piston (plunger) consists of telescoping concentric tubes, allowing a shallow tube to contain the mechanism below the lowest floor. On others, the piston requires a deeper hole below the bottom landing, usually with a PVC casing (also known as a caisson) for protection.

Roped hydraulic elevators use a combination of ropes and hydraulics.

Twin post hydraulic

Holeless hydraulic elevators do not require holes to be dug for the hydraulic cylinder. In one design manufactured by Otis, the cab is lifted by a pair of hydraulic jacks, one on each side of the elevator.