

## BCS Controls NZ's First Automated Car Park

BCS successfully completed commissioning of New Zealand's first ever motorised 'car-stacker' car park in February this year.

The automated car park is installed in the recently opened Bolton Hotel. The 20-storey high luxury hotel, located in Wellington's Central Business District, provides 144 stylish, contemporary style rooms and suites.



The project was a partnership with Auckland company PowerPark, who designed and engineered the car park, modelling it on similar systems commonly used in Japan. Apart from its space saving features, the car park also offers the advantage of always keeping



cars safe from vandalism or parking accidents, as well as rapid parking and retrieval of cars.

BCS designed, installed and commissioned the intrinsically safe and easy to use control system for the project, meeting the primary client criteria.

The 30m high car stacker is a vertical carousel which can hold up to 28 cars, each parked on individual carriages. A motorised roller door on the ground level controls entry to the car park.

A single large motor and gearbox drives the carousel in either direction to deliver cars to the load/unload position in under 90 seconds.

To operate the car stacker, the porter simply types in the number of the carriage they require. That carriage is automatically moved to bottom of the carousel where upon the car park door opens, ready for a car to be stored or retrieved.



### Safety Features

BCS paid particular attention to operator and public safety in our design, whilst ensuring ease of use for the Hotel's porters who operate the car stacker 24 hours a day. Some of the features of BCS's design include:

- A safety relay monitors the safety circuit and controls shutdown under emergency stop.
- A magnetically coded safety switch on the access doorway ensures the system cannot run unless the door is safely closed.
- A switch with a removable key allows the porter to disable the system when they are parking or retrieving a car. The key is removable only in the Disable position.
- Photo electric sensors are used to ensure the car is parked correctly and is not oversized.
- 2 indicator beacons provide clear information to the driver to assist in parking the car.

### Technical Information

- The carousel is driven by an SEW 45kW motor with helical bevel gearbox.
- A 75kW SEW MoviDrive controls the motor, running "Modulo Position" software to provide fast and accurate positioning of the carousel.
- A Siemens S7 PLC controls the car stacker, and communicates over a Profibus network to the MoviDrive and the operator panel.
- A Pilz safety relay monitors the safety circuit and controls emergency stop shutdown, including a delayed shutdown of the MoviDrive to allow it to stop the system.
- An absolute encoder ensures that the carousel's position is always known in all conditions.

