The New Zealand LIFT FAX

The New Zealand Lift Fax is produced bi-monthly for the NZ lift industry. Just send your email address to LEC to subscribe.

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EDITORIAL. 100 Issues:

I suspect its fitting to say something about the 100th issue with only two, maybe three missed since the **first issue on March 1992**. (see attached copy)
I must admit my inspiration has mostly to do with the ambivalence of the industry to introduction to the change in Governance under the Building Act, and to try to retain a hysterical record.
I must admit it has given me much to write about, although with seemingly little effect as little process has improved in this period from 92 to 2009. Then again the lift industry has gone through a tumultuous period over this time moving from locally managed to multinational, from a high-labour workforce based on trade skills, to a minimised workforce reliant on high technology and the skills of off-shore engineers.
This era has seen ***installation*** go from 12 weeks to four for a 4 stop lift; ***maintenance*** from 30 units/person a month to 60; ***in-house installation*** to sub-contracted labour; ***proprietary maintenance*** to institutional maintenance contracts; ***company management*** from industry experienced to accountant; ***knowledge*** from person to computer; ***industry experience*** from workplace to consultant; ***training*** from apprentice to corporate; ***certification and inspection*** of lift equipment from cenralised to laise-faire; ***industry spirit*** from keen to PC; ***industry association*** from corporate club to a void; and lastly, ***loyalty*** from corporate to self interests.
Thanks to those who keep me on my toes, and to those who provide feedback and opinion, even though sometimes you may not realise it! Ed

WHAT'S GOING UP or DOWN THIS MONTH

KONE NEW APPOINTMENT, OLD NAME:

Ex Otis NZ Sales Manager **Terry Viccars** has just been appointed to oversee the KONE Sales team in Auckland. This should take some of the load off the boys in the sales team.
I don't know if it's an Otis plan, but it sure adds to the high number of ex-Otis employees now working for the ex-Otis now KONE NZ ManagerRon Perez.
We best be careful as some in the Commerce Commission might see this as a form of collusion!

AMREIN DYNASTY CORRECTION:

Last issue I reported that **Nigel Amrein** who had just joined KONE as their new Installation Manager, was well known industry entity, **Brian Amrein's** son, but instead Nigel is his nephew, for he is the son of Brian's brother Nick.
And who thankfully should make this all clear to me, but Peter Logan, of Logan Elevators, who is Brian's sister's son. So apologies Nick, I hope its all clear now. There always was a bit of nepotism in the lift industry!

DESIGN-COM EXPANDS FULL COLOUR LIFT DISPLAY RANGE:

With the 6.4" and 10.4" TFT lift information screens produced by Design-Com in Australia being so successful & reliable locally and internationally, they have now announced a further 3 new modules.

These are the **LD-90C** (4.3") for landings, the **LD-170C** (7.1") wide screen, and the **LD-200C** (15") lift screens as an alternative to their top end (e-screens) that incorporates video etc.
The lower cost end is still service by their (blue on white) **LD-33** and **LD-88** monochrome screens.

HAVE YOU CONSIDERED DESTINATION?

As the lift industry gets its head around the expanding use of the lift Destination control system, the mix of Sales information and competitive misinformation understandably tends to make prospective user conservatively hesitant when it comes to yes or no decisions.

Of course it doesn't help that suppliers milk early design costs out of market advantage from something new that looks good by making it exclusive. Such with Schindler's Miconic 10 that has now been on the market well over a decade and still because of its exclusivity hasn't touched the base market of up to 10 level buildings in NZ, let alone the goods lift market.

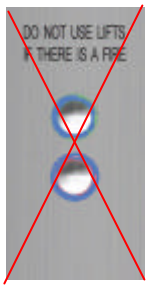
From someone who has been keen on the Destination control concept since first experiencing Leo Port's idea, and EPL's (Kone) relay logic control solution installed in Sydney Law school back around 1970, it is interesting to see the conservative pace at which the concept has been accepted.

For those still unaware, this architect Leo Port thought it would be much more efficient for a lift system to know where the user wanted to go before allocating a demand to the control system, as compared to the past system; and I say past deliberately, where most existing lift controls don't know where the passenger want to go; only that they want to go Up or Down, until after the lift has been allocated.

The simplest analogy is to think of the inefficiencies of a taxi system where the driver doesn't know where anyone wishes to go until they stop the taxi and get in, as compared to a bus system where everyone lines at the stop dependant on their destination.

Now Schindler using a patent advantage could see high rise multiple lift performance solutions would give them system advantage in the exclusive area of the market, and marketed it accordingly with their Miconic 10 control system. But what they didn't do was interface it to their whole range of lift sizes and solutions, and so overlooked the many other advantages of Destination control, by focusing on the single user input, with no need for additional car inputs.

Yes, to market the new single user input across the board of lift solutions from 2 stops ¦ to odds and even floors ¦ to mixed levels served by multiple lifts ¦ to remote lifts no longer needing single lobbies ¦ to multiple paths, all able to be efficiently serviced through a users single destination input. But what about goods lifts, vehicle lifts, periodic dedicated service lifts, they are all able to be serviced by a single input.



Why would you entertain a Directional double input call button system again.

Lets look at some scenarios.

1. A single 3 stop lift having a 3 button station at each landing. Single input, no more hands, great from those with disabilities.
2. 2 lifts one wide 800kg the other long 1125kg same lobby, one serving basement and 4 floors, the other no basement but servicing 3 extra upper floors. Single input, great for the basement plus 4 floor medical center.
3. A single 5000kg goods/passenger lift serving 4 floors 2 front, 2 rear with electric forklift movements between floors. Single input using remote pedestal for easy access or proximity device for service to dedicated levels. No hands.
4. A 4500kg vehicle lift serving 6 apartment levels with swipe card security access from single landing stations plus passengers. Input your destination or swipe your dedicated card from the car window like exiting the airport car park and drive in when you lift arrives. No the driver doesn't need to try to reach the COP from the car window.

The system can handle it simply and with a single input, the same system that serves a 50 storey multi-rise building. All users needs to know and input is their DESTINATION.

Yes you can use the 'PAST' Directional system with multiple and dedicated controls and hybrids to achieve the same thing in most cases only less efficiently, but why not use the flexibility of the Destination technology of today for **ALL** systems, and so liberate the user, building designer, and solution complexity in all instances. Be innovative!

CONSENT PROCESS FAILS BUILDING OWNER:

Property owners after years of hard work bought their 3 level dream-home overlooking the beautiful Tasman Peninsular in the late 1990's. The property included a lift that they didn't need, but thought it would be a great asset as they got older.
What they didn't know was that leaky buildings were an inconvenient, but the adhoc lift certification process in place since 1992 under the Building Act, could be deadly.

It was when the aesthetically pleasing, solidly engineered 10 year old lift that he had a maintenance contract on and occasionally used that made more noise than usual as it began to descend one day that changed his world.
The memory of that inherent fear of being trapped in a runaway lift will never be erased as he plummeted the 6 meters to the bottom of the shaft, fracturing back and leg bones in multiple places.

Why? How this could happen in a highly legislated environment haunts him to this day, such that the only solution he can see once his body has had time to sufficiently heal, is to move away from the memory, and find out why this could happen so that others won't be placed in the same unsuspecting position he was.

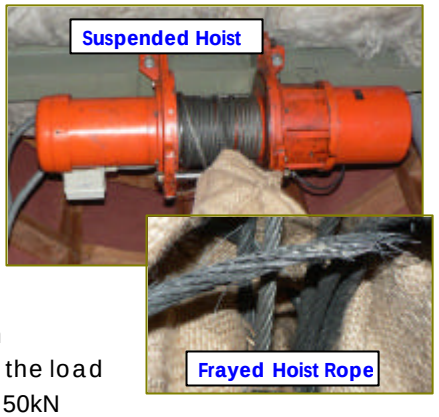
As an independent lift industry consultant with some 40 plus years of experience in the world wide lift industry, I was still arrogant enough to think that lifts cannot fall uncontrolled such as this lift had, because of the inherent fail safe features learnt over the 100 plus years of history of the industry, and of the certification processes in place.

But I was wrong, not because the industry's learned experience failed, but because this experience wasn't appreciated; fully considered, or applied by the designer, of the equipment, nor was the Consent process functionally carried out in New Zealand.

In my opinion, the reason why these personally devastating injuries brought this building owner's daily life to a halt was because of 2 critical failings:-

1. Because of its deficiencies in design as the design must never have been fully considered or tested by an experience lift inspector.
2. Because the Consent process failed with no documented record of assessment, testing or design documentation recorded.

How was the design safety deficient?
The closest industry practice based code to the small domestic lift installation in NZ is D2/AS2, or its full title under the Building Act – ***Mechanical Installations for Access, Domestic and Service lifts- An acceptable solution***. And although this is an old code, it contains the fundamental safe practices to use when designing this type of lift.



In this instance, the first weakness of design was in the use of a suspended wire rope winch fitted with single standard 11mm RHOL 6x19 wire rope.
This rope is more than adequate to support the load with an approximate 50kN breaking strain, but break it did because it is not designed to wrap onto a 150mm diameter drum, let alone pass over an approximate 50mm 2:1 pulley.
The rope wires fatigued and broke over the 10 year period until they reached a point where they could no longer support the 400kg or so rated load.

The rules require over-head machines to be supported and not suspended to ensure fixing attachment failures don't end up with the hoisting equipment on top of the user.
Another rule overlooked was to not pass the rope over a suitably sized drum or sheave, proportional to the rope size, to ensure maximum life of the rope is achieved, and also to not fit two ropes to maintain a fail safe environment.
In this instance a minimum sheave diameter for the 11mm RHOL rope should be around 520mm. This was 150mm.

The second weakness was in the design of the safety gear, purposely designed for this job, that if tested and operational, would have engaged and stopped the lift falling as soon as the rope parted.

The broken rope design relied on spring initiation upon the parting of the hoisting rope; to force neoprene padded shoes laterally against the guiding channel and presumably exert enough force to stop the vertical descent of the lift.
In actuality, there was never any lateral force applied because the mechanism would never set, and if it did, it is suspected the channel guides would flex sufficiently to the lateral load to be ineffective.

Local codes require the safety gear be located beneath the platform and to bring the car and its maximum full load to rest and to securely hold it in position.
And so since inception this solution was an accident in waiting for an unsuspecting building owner to use it, all because of an ineffective certification structure in NZ.

Safe Industry Practice in Alternative Solution Lift Control Circuits:

With 15 years of inconsistent practice in the evolution of lift control circuitry since introduction of the 1991 Building Act in the local lift manufacturing market in New Zealand, along with the regulatory processes of inspection coming under review by the Department of Building & Housing, it may be time to consider a consistency of practice within the industry to enable a single efficient inspection process to evolve.

To enable manufacturers of D2 Alternative Solution equipment in NZ to establish the status of their control systems against good industry practice, it is therefore considered prudent for local manufacturers to compare the features of their control system designs against the following safety critical features, and to raise any issues of concern or opinion regarding deficient circuitry, to be considered and addressed accordingly.

The following RISK characteristics should also be considered for users of the equipment relative to failure of any critical safety circuit design features in your lift control system:-

- The ***consequence*** risk factor. *ie. High likelihood of injury unless trained to avoid it.*
- The ***frequency*** and exposure time risk factor. *ie. Every time the lift is used.*
- The ***possibility*** of avoiding the hazard. *ie. Almost impossible unless trained to avoid it.*
- The ***probability*** of the unwanted occurance. *ie. Very low where good design, maintenance and inspection practices are implemented.*

The following checklist of lift industry safety-critical design features that should be considered where applicable for incorporation into any lift system control to achieve a fail safe design are:-

1. Up and down direction control confirmation of rest state before restart.
2. A minimum of 2 control components in each main directional drive control.
3. Hydraulic check valve.
4. Hydraulic over pressure valve.
5. Hydraulic over speed valve.
6. Hydraulic door lock valve.
7. Overtravel.
8. Passenger overload sensor.
9. Door lock.
10. Car gate.
11. Electric drive protection.
12. Phase failure & reversal.
13. Top of car EM stop.
14. Pit EM Stop.
15. Sub-floor EM Stop.
16. Non-enclosed car EM stop.
17. Safety gear switch.
18. Overspeed governor switch.
19. Slack-rope or chain switch.
20. Terminal slow limits.
21. Terminal stop limits.
22. Maintenance inspection device-set switch.
23. Handwinding set switch.
24. No critical safety control function fully reliant on a PLC output.

It is suggested, that upon applying the checklist against any lift control system, each of the 24 points be either confirmed as included, or a brief comment detailed beside the point as to why it is unnecessary or not applicable to the solution.

Where sufficient response is forthcoming, these responses will be put to the CBIP industry expert group for consideration and reply.
Dependent upon DBH agreement, it is envisaged that a performance standard be developed to be used as an industry guideline for all future manufacture of these systems.

Thank you for you cooperation and response as soon as possible, in this intention to ensure consistent manufacture and inspection of safety critical circuits.

I might add, that where good cooperation is evident there should be improved respect for self-governance of this industry, which should lead to common processes of efficient documentation and inspection for the industry.

If commercial sensitivity is of concern, there is no need to identify the manufacturer or control system, and by responding through LEC, this discrimination will be maintained.

Of course any comments on the list to improve or adjust it are welcomed. Ed.