

Retrofit and the Building Industry

It is reported that 42 per cent of construction work in Australia over the next three years will consist of refurbishment and retrofitting work.

As clients and developers are finding that money is getting tighter, improving value to existing assets is becoming a preferred choice instead of undertaking a new build.

Building codes and Energy Efficiency are dramatically changing from the 1960 - 2000's.

Challenges and Research Ideas:

- Mitigating the expenses. The starting point for any design must be the existing infrastructure, with building owners tasked with working out how best to utilise it and minimise the need for additional structural members.
- Existing concrete slabs on ground are typically trenched and new services are laid underneath before the slabs are re-instated. As an alternative, we try and use existing structural frame to channel/support services – such as cables – down and within steel columns and through existing roof members. In addition, the strengthening of existing structural elements is sometimes required to achieve greater spans and / or heavier loads.
- Improving or providing disabled access is now fundamental to any upgrade project. Difficulties here come as a result of existing building constraints, whether due to the footprint or services, which simply did not give consideration to such requirements. Balancing the need to buildable solutions while minimising cost and ensuring the structural integrity of existing building is a primary goal and close collaboration with architect and or / interior designer is crucial.
- Reducing operational costs of buildings remains the primary driver of retrofit activity, government policy is growing influence as states, municipalities and federal governments increasingly provide incentives for reductions in building environmental footprint.
- Developers in the commercial market have found their way to energy efficient buildings through benevolent motivations and the promise of global benefits, many more require policy and regulatory requirements or incentives to inspire them to enter the energy efficient retrofit market.
- This type of retrofits are encouraged through incentives or ratings that reward the most efficient buildings. More often, government agencies encourage higher efficiency buildings by educating the companies buying and selling buildings about the effect that the buildings will have on the environment and, more importantly, on their utility costs.
- Building and Construction Sector will be primary beneficiary of growth in this area. Gains will flow upstream to manufacturers and suppliers in categories

such as heating, ventilation, and air conditioning (HVAC), lighting, commissioning, control, solar, water management, and building envelope as well as offerings from energy service companies.

- Environmental Upgrade Agreements introduced in New South Wales and Victoria in 2010 and aimed primarily at commercial, industrial, strata scheme and large multi-unit residential buildings, EUAs (Environmental Upgrade Agreements) are a type of agreement whereby a bank or financial institution lends funds to a building owner for water, energy and other environmental upgrades. The money is then repaid by to the bank by the council and is reclaimed from the building owner through a local council charge on the land.
 - The involvement of the local council in this way provides greater certainty and lower risk for the bank, and thus attracts a lower rate of interest for the building owner (whose tenant gets the benefit of reduced energy bills) than would otherwise be the case under a normal loan.
 - The new guide outlines opportunities presented by EUAs and explains how to negotiate a win-win situation for all involved. In addition to exposing common stumbling blocks and barriers EUAs can help overcome, it covers issues such as the type of refurbishments that suit particular buildings, the finance and accounting profiles for potential deals and how to engage the various stakeholders to bring projects to fruition.
 - Lower operating costs One of the biggest and most obvious benefits to reducing energy consumption in buildings is that energy bills go down.
- **Lower environmental footprint and greenhouse gas emissions** A building that uses less energy is responsible for fewer greenhouse gas emissions. Retrofits also present the opportunity to improve waste management, use more sustainable construction materials and improve water efficiency.
 - **Improved indoor environment quality** Indoor environment quality has become an important issue in modern office buildings. Retrofits offer the perfect opportunity to improve indoor environment quality, which in turn may have benefits for tenant health and productivity.
 - **Money saved investing in energy infrastructure** If a building becomes more energy efficient it is possible that upgrades to switchboards and other electrical infrastructure can be avoided, saving both time and money.
 - **Improving corporate image** Your commitment to energy efficiency and sustainability can have corporate image benefits.

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