An Introduction to Lightweighting

What is Lightweighting?
The reduction of component weight in a product, resulting in lighter overall weighting.

What does it involve?
Change of design and materials with lighter-weight options such as:

- Polyolefins (polypropylene)
- Syntactic foams
- Thermoplastic composites
- Composites

3M technologies used to enable light-weight solutions

"Adhesive bonding is an enabling technology that can give designers and engineers the ability to choose different, lighter materials and combine them in new and innovative ways to assist and create light-weight assemblies."

Dr. Antonio Pagliuca - 3M Senior Technical Specialist.

Bonding challenges of lightweighting

- Bonding dissimilar materials.
- Simultaneously bonding & sealing
- Noise, vibration & harshness (NVH).
- Thin substrates.
- Thermal expansion capability.
- Aesthetics.

Next generation of materials can be bonded with tapes and adhesives

Examples: Thermoplastic composites, fibre reinforced plastics, engineering plastics.

Benefits

- Improves productivity
- Improved design/performance
- Less environmental impact
- Design flexibility