Developing products or services with consideration for repair, re-use, recycling and repurposing. Designing with the whole lifecycle in mind, so products, materials and energy stay in use for as long as possible. This means gaining the maximum value from them and enabling deconstruction, repair and repurposing at end-of-life.

**JML Contracts** are paving the way for Structural Insulated Panel (SIP) house design in Scotland. And by using offcuts for other purposes, they’re doing it the circular way. Leftover materials are used to build bespoke garden rooms. Offcuts are even used for premium kindling. In short – nothing goes to waste.

Imagine a world where we design and manufacture products in such a way that they can be used and re-used for as long as possible, maximising their value.

Where by-products are captured and used to create additional valuable commodities. And then, at the end of their life, products are refurbished or remanufactured into other high value, high quality products.

**Resource recovery**

Creating new, higher value uses for by-products and co-products. Unlocking hidden value in existing processes by reintroducing energy, materials, products and resources back into the product lifecycle – or into the lifecycles of other products.

**East Africa Sisal** use sisal from discarded coffee sacks as part of the base material for their sustainable insulation products. From a business perspective, East Africa Sisal were able to cut cost, and the result is a truly circular business model that unlocks value in a ‘waste’ product.

Using advanced tools and systems like data collection, sharing platforms, machine learning, asset management and tracking systems and dynamic modelling to enable circular business approaches and behaviours. Sophisticated asset tracking is the backbone of improved logistics, knowledge sharing and collaboration.

**Enabling technologies**

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**RAB Microfluidics**’ ‘lab-on-a-chip’ technology analyses machine-lubricating oil 1,000 times faster than commercial labs and means clients don’t have to pack up and send oil samples away for testing. Their best advice for going circular? “Don’t give up. If you’ve seen something as a need, you’ve been able to evaluate the market potential.”

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Circular Strategies

Product as a service

Customers pay for the service while ownership, management and responsibility of the asset remain with the manufacturer. This turns the relationship upside down, incentivising manufacturers to understand product use so they can maximise ongoing value, durability and performance.

*EGG lighting* believe that lighting systems can be the backbone of the Internet of Things (IoT). EGG’s circular design model allows them to build a strong customer base, and a steady source of revenue. Customers save energy – and benefit from lights that can be upgraded with the latest technology, simply.

Leasing

Customers pay regularly for continued use of a product over an agreed time span, after which they return the product so that it can be remanufactured, repaired, re-used or recycled. The manufacturer retains ownership and responsibility for delivery, maintenance and take-back, which encourages circular design.

Leasing a product changes the relationship between manufacturer and customer. The ongoing reliability and eventual post-use value of the product becomes important to the manufacturer, which pushes them to consider that whole lifespan in their initial design and development.

Remanufacture

Dismantling a product and refurbishing, repairing or replacing each part to produce a new product, with a warranty, that matches or exceeds the quality of the original. This extends the life and inherent value of the product.

*Elite Contract Furniture* work on a products-as-a-service (PAAS) and remanufacturing model, which allows them to retain control and have a stable income. Seemingly the first in their sector to go circular, they are self-proclaimed guinea pigs. In their own words? “It’s high risk, high reward.”
Retaining a product or component’s inherent value for longer by continuing to use it for its primary intended purpose for as long as possible. Keeping a product or component in use extracts a far higher ongoing value than recycling it could.

**Re-use**

Re-use is the simplest circular strategy there is. Continuing to use products as they were originally intended for as long as possible will always be more sustainable than creating new products, replacing products, or disposing of products. It’s a no-brainer.

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**Repair**

Extending the life of products by maintaining or improving them through repairing or upgrading. This extends the product’s economic usefulness and value, reduces waste and saves on materials.

Manufacturers can encourage a culture of repair and extended use by designing in the ability to repair their products from day one. At a community level, it is vital to provide skills, workshop spaces and tool libraries that enable a repair culture to thrive. Enabling technologies like 3D printing or spare parts will support this shift.

**Sharing economy**

Treating products as assets that can be used by multiple customers, multiple times. Manufacturers can retain ownership and provide shared access, or customers can create peer-to-peer sharing marketplaces. Both lead products to be thought of as long-term asset investments.

Circular thinking can be applied to the provision of products, spaces and skills just as much as it can be applied directly to products. Designing products and services that are robust enough and accessible enough for shared use can help enable whole communities to embrace a circular mindset.