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WHAT PROGRESS IS BEING MADE ON THE CIRCULAR ECONOMY JOURNEY?

The third article from the BPF Pipes Group about the circular economy.

In our previous two articles we explained what the circular economy is and why it is important, by detailing the larger picture and the challenges faced extracting raw materials and keeping them in use for longer, thereby minimising waste. We talked about initiatives such as the Construction Leadership Council's *ConstructZero* programme, and the Government's plans along with other aspects to consider in transitioning to a circular economy.

We now look at actual examples of progress being made, citing our own plastic pipes industry as an example of what can be achieved to keep products within the circular economy loop for longer.

There are four key areas in a product's lifecycle – whatever the product – where manufacturers and installers can make positive contributions. These include: optimising materials use at the early manufacturing stage and minimising environmental impact (both in extraction and in manufacturing); optimising product use during installation by using methods such as offsite efficiencies; maximising the lifespan of systems through high quality products and efficient/best practice installation; and closing the loop by recycling that product at the end of its life and turning it into something equally useful.

Optimising materials use during manufacturing

So, if we look at optimising materials at the manufacturing stage, in the case of plastic pipes reworked materials from offcuts and trimmings during manufacturing are widely reclaimed within the same processes that generated them, both for pipes and for fittings, as quality control is straightforward and they are the manufacturers' own reprocessed material.

Furthermore, developments in design and manufacturing technology have led to the development of pipes which minimise material use whilst maintaining the required mechanical properties, twin wall stormwater pipes and ribbed drain and sewer pipes being two examples.

Optimising product use during installation

There are many ways in which product use can be optimised during installation and there have been significant developments in methods like offsite manufacturing, reducing the need for onsite work prior to installation. Offsite fabrication is a very efficient way to optimise product use as under factory controlled conditions the highest quality pipes, joints, chambers and fittings can be made and minimal waste generated. With no damage and correct installation procedures, no re-visits are required to repair failures. Packaging is also minimised and advice is freely given by manufacturers on alternative solutions to save materials.

The supply of pipe coils to site – increasingly up to 500 metres for 63/75mm diameter pipes – advances efficiencies as longer lengths mean fewer joints and fittings are required. This accordingly maximises productivity on site, minimises losses through offcuts, reduces transport and minimises security straps and end caps used on pipes. If best practice techniques are employed, getting it right first time also means correct installation, whether for new or refurbishment projects. Trenchless techniques like sliplining coils further reduce site time, traffic disruption and waste materials. Unused pipes can be returned or moved from site to site, eliminating wastage on site.

Maximising the lifespan of systems

The emphasis should always be placed on getting installations right first time as best practice techniques and high standards reduce the need for additional materials or extra site travel and time. Correct installations using the right products will ensure maximum lifespans. For example, correctly made joints will last the lifetime of the piping system. Incorrect jointing techniques will require the pipeline to be dug up and repaired long before its natural lifetime.

The ability to make under pressure connections can extend the useful life of a piping system. Using products like saddles and valves mean fewer joints need to be made, lowering leakage risks, and with additions like a single saddle and valve, integrity testing can be undertaken without refilling and testing the main, also reducing contamination risk.

Recycling products at end of life

Lifetimes of over 100 years (and up to 200) are reliably predicted for polyethylene pressure pipe systems buried in the ground for transporting water and natural gas.* Long lifetimes minimise the need for new products and removal of existing assets.

At the end of those lifetimes, these pipes can be dug up and recycled, either into new pipe or other products, such as below ground drainage inspection products, chambers, highways or telecommunications ducting. Many wastewater piping systems and chambers are already successfully constructed from recycled plastic pipes (including plastic waste from other sources such as household waste). European standards for PP, PE and PVC-U underground drainage ancillary fittings, shallow chambers, manholes and inspection chambers (BS EN 13598 Parts 1 and 2) and PP and PVC-U stormwater boxes (BS EN 17152-1) allow the use of recycled material from any source.

As can be seen from the above, plastic pipe manufacturers are one example of those in the industry who are working hard to ensure circular economy principles are built into every stage of the lifecycle of a product or system.

Fundamentally, best practice in installing pipes and fittings is vital as only through the highest standards of work can pipelines be built that will last for many decades without faults – and then be used to manufacture other viable products to continue their life inside the circular economy loop.

This and the two previous articles on the circular economy can be found on the WWT website or at www.bfpipesgroup.com