**You may recognise this stuff. It’s called Terrazzo, which is really just a poncy marketing name for a composite material created to use up otherwise useless chips of marble or granite by bonding them together in cement. This isn’t actually real Terazzo – it’s printed! I couldn’t get the real thing in time for filming, but anyway…you get the idea!**

**Many people regard it as an aesthetically pleasing material, and no doubt one or two of you may have even used Terrazzo tiles for the floors or walls of your kitchen or bathroom.**

**It’s not just a nice-looking product though, it’s also extremely durable, which is why the real thing is used in high footfall areas like the platforms of underground train stations.**

**You may also recognise this stuff – it’s called trash, and it’s what millions of us chuck into our bins every day, quietly hoping that it might actually get recycled instead of simply being chucked into landfill. Except in the vast majority of cases it’s NOT being recycled and it IS being chucked into landfill, with all the environmentally catastrophic consequences that most of us try to pretend we don’t know about, but that we actually do know about don’t we?**

**Why am I bringing these two apparently unconnected and almost diametrically opposed articles to your attention? Well, because what I’m suggesting we have a little think about today is the concept of converting THIS stuff in a low heat, low energy process, into a second life raw material that can be used to make this stuff.**

**That’d be pretty cool right? Well, I think it would anyway, and so does a French startup called Néolithe who have apparently perfected a method for doing precisely that, and who reckon they could potentially reduce the carbon dioxide emissions of their country by as much as seven percent in the process. So surely, we ALL need a bit of that don’t we?**

**Hello and welcome to Just Have a Think.**

**If you’ve ever wondered just how much waste we humans produce and how it gets dealt with in different parts of the world, then firstly you’re not alone, and secondly, there’s an app for that…well it’s not an app exactly, it’s more of a software driven report. It’s called the Global Waste Index and it’s compiled by a smart waste management company called Sensoneo, which operates in eighty countries around the world, literally placing sensors into waste collection bins linked up to clever software that can record how full each container gets in real time. The main point of their system is actually to optimize waste collection routes based on the fill level of bins, traffic conditions, and one or two other key factors. That reduces the number of kilometres travelled by each waste collection vehicle, which in turn reduces greenhouse gas emissions and saves the operator money. It also enables businesses and residents to pay for collections based purely on the amount of waste they actually generate. That drives good behaviour in consumers because it encourages them to minimise their waste in the first place and to properly recycle more.**

**Anyway, I digress. The Global Waste Index combines data from Sensoneo’s own software with statistical reports from the World Bank, The European Union and the Australian Department of Environment and Energy to spit out a few choice numbers like these…**

**The human species currently produces two billion metric tonnes of waste per year.**

**The World Bank predicts that, if we don’t change our ways, that number will be seventy percent higher by twenty-fifty.**

**The United States is currently the largest producer of waste, at an average of eight hundred and eleven kilograms per person per year. That’s an increase from the twenty-nineteen figure of eight hundred and eight kilograms per person. It’s more than double the waste production of Japan, and about half of that waste ends up in landfill, where the organic products decay underground, generating greenhouse gases.**

**Germany is often held up as an exemplar for recycling. But the high recycling rates for plastic waste are based on what arrives at the front door of recycling plants, not the amount of reusable stuff that comes out at the other end. In reality only a fraction is genuinely reused. The rest is incinerated in an energy recovery process, which while much better than landfill, still uses fossil fuels for combustion. Friends of the Earth Germany estimate that less than sixteen percent of the recyclable waste earmarked for recycling in Germany can actually be reused.**

**To be fair, Germany is actually one of the ‘least bad’ countries. It’s much worse in other parts of the world. One of the biggest problems is the way manufacturers still mix materials in their packaging. For example, something as simple as a yogurt pot could comprise a plastic carton with an aluminium lid wrapped in a cardboard sleeve. If those different materials are not separated out before they arrive at the recycling plant, then despite being registered as “recycled” for national statistical purposes, there’s a high probability they’ll all get rejected and sent for incineration.**

**All in all, according to the folks at Néolithe, the treatment of the waste products we throw away every day accounts for six percent of global greenhouse gas emissions, not to mention the untold environmental damage caused by toxic materials leaching out of landfill sites into soil ecosystems and waterways.**

**So, what’s their solution then?**

**Well, they tell us they’ve developed a patented process that they call Fossilisation which can apparently turn any non-recyclable, non-inert and non-hazardous waste product into a mineral aggregate that can be used in the construction industry.**

**Now, like most companies that have developed a proprietary process that they don’t want anyone else to copy, Néolithe are not exactly a hundred percent transparent about exactly how their process works, so I’m going to tell you everything I can about it, and I’ll leave to you to see if you can spot the gaps.**

**Stage one sorts all the mixed incoming waste to separate the easily recyclable stuff out from the non-recyclable material. Recyclable items get diverted to normal recycling, because why not? Metals also get removed and dealt with in their own, very well-established recycling stream. Then the awkward, non-recyclables like mixed plastics, textiles, wood, plaster and insulation materials get chucked into a crushing machine where they get pulverised into a fine powder about the consistency of flour. That powder then gets combined with what Néolithe call a ‘low carbon binder’, whose formula is confidential, in an eighty : twenty ratio. So, we don’t know what these binders are, but Néolithe assure us that they are made from non-toxic, abundant materials that have no significant environmental impact.**

**Water is added to the mix to produce a stone pulp which then goes through a press machine that forms the pulp into an end-product that Néolithe calls an ‘Anthropocite Aggregate’. That aggregate can then be used by the construction industry for stuff like road building, concrete blocks, and potentially even decorative panels like the terrazzo we looked at earlier. And there’s some serious volume here too. According to the Global Aggregates Information Network…someone’s got to do it haven’t they..?**, **the global construction industry uses an estimated forty billion metric tonnes of aggregate material annually**, **representing more than half of the total volume of solid material extracted from the Earth each year.**

**Néolithe aren’t exactly DISRUPTING that market just yet, but their demonstrator set up can apparently process twenty tonnes of waste per day, which is not insignificant. In March twenty-twenty-three they installed their first commercially operational machine at a waste sorting facility in the north west of France, and they plan to sell between five and ten more machines by the end of the year. From an environmental perspective, that will allow processors to claim brownie points over competitors who currently bury or incinerate non-recyclable waste. And according to Néolithe, their process costs the same or less than traditional waste treatment solutions, which are becoming more and more expensive as regulatory restrictions become ever more difficult to achieve. By twenty-twenty-seven, Néolithe hope their technology will have converted two million tonnes of the thirty million tonnes of otherwise unrecyclable waste produced in France each year, which is what currently makes up that seven percent of emissions number that I mentioned right at the start of the video.**

**What we don’t get much detail about here is arguably the most important bit though, which is what exactly happens inside their ‘Fossilizator’ machine. The company says their proprietary mineral binders ‘cause a chemical reaction’ which allows them to form the composite material into lumps of aggregate under pressure. Néolithe claim their process uses no heat and produces no greenhouse gas emissions. Now, if that all sounds just a little bit vague to you, it’s because it is a bit vague to be honest, so for the purposes of this video, I’m taking Néolithe at their word. If it all turns out to be a bunch of greenwashing BS, then they will no doubt be found out and exposed in the fullness of time and I will make another video to tell you all about it. But for the time being, I’m going to give them the benefit of the doubt and work on the assumption they’re a bona fide outfit who happen to have found a potentially extremely useful process for dealing with stuff we currently just chuck away.**

**In a recent interview the company’s co-founder and CEO, Nicolas Cruaud suggested that each tonne of waste processed in their machine avoids a hundred and twenty kilograms of carbon dioxide equivalent that would otherwise have been produced by the landfill process, PLUS it embodies a further three hundred and twenty kilograms of carbon dioxide equivalent in the aggregate itself which, in theory, is then more or less permanently locked away in the end product.**

**As I’ve said a few times before on this channel though, we’re currently right in the middle of a very exciting, but slightly crazy phase of an unprecedented global challenge to transition away from fossil fuels and decarbonise our energy systems. It’s a bit like a metaphorical Wild West at the moment, with scientists, engineers and entrepreneurs constantly churning out new ideas that they claim to be the next game changing market disruptor. Keeping up with it all is proving to be quite a challenge, and no doubt there are technologies that I’ve missed out in this video too, so as always, if you’ve got news about any of those, or if you’ve got views about the viability of Néolithe’s technology, then why not jump down to the comments section below and leave your thought there.**

**That’s it for this week though. Thanks, as always to our Patreon supporters, who help me keep the channel completely independent and prevent ads and sponsorship messages bothering you during the videos. And an extra special thank you to the folks whose names are scrolling up the screen beside me here, all of whom celebrated an anniversary of Patreon support in August.**

**If you’d like to get involved with all that, then why not head over to Patreon dot com forward slash just have a think to find out about all the exclusive stuff you can get stuck into there.**

**And you can hugely support me right here on YouTube absolutely for free by subscribing and hitting that like button. It’s dead easy to do that. You just need to click down there or on that icon there.**

**As always, thanks very much for watching! Have a great week, and remember to just have a think. See you next week.**