



COLLABORATION FOR CHANGE

Case Study: Engineered Rock

Embodied CO2e reduction
(tCO2e)

299,635.5

CATEGORY

PRODUCT	SYSTEM	PROJECT	CONCEPT
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SUPPLY CHAIN

MANUFACTURING	PROCESSING	TRANSPORTATION	CONSTRUCTION
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REGION

WA	NT	SA	QLD
NSW	ACT	VIC	TAS

Profile

Organisation: Nu-Rock Technology

Website: <http://nu-rock.com>

About: The Nu-Rock process involves on-site conversion of large volumes of waste into building materials



Section 1: Opportunity

The Nu-Rock Process turns industrial wastes like Coal Ash into 100% sustainable building products that use no virgin materials and 0 portland cement. The unique process creates an Engineered Rock product that has a 98.42% energy saving which equates to a CO2 reduction of 1.1307 tonnes per 1 tonne of Engineered Rock product used instead of a traditional product like cement or clay .

Section 2: Solution

Nu-Rock aims to have production facilities on every industrial waste repository in NSW over the next 10 years. That will be 60 Production facilities processing 250,000 tonnes of waste each, totaling a total carbon abatement of 17,978,130 tonnes per year.

This process will also prevent the millions of tonnes of industrial waste going into ash dams and other waste repositories while simultaneously recovering the close to 1.5 billion tonnes of waste already in dry repositories and wet dams.

The by-product from this process is a building product the is 100% sustainable and cost effective.



Section 3: Lessons

When producing a Green and Sustainable replacement to an existing product or process Nu-Rock has learnt that in order to have your product adopted by the end user it needs to be cost effective. Although the average person knows more about sustainability and the need to be less wasteful, it is hard to convince people to change their behaviour if it will come at a greater financial cost.

This fact motivated Nu-Rock to make our process and cost effective as possible so that is not only Morally Beneficial to use a Green Building product but it is also Financially Beneficial.

Section 4 : Impact measurement

According to the CNCF 1 kWh of coal energy produces 0.94kg of CO₂, and a Nu-Rock Plant uses close to 600kWh. A Nu-Rock Plant that produces 250,000 tons of products will produce 31 tons of material an hour:

- $600\text{kWh}/31\text{tons}=19.35 \text{ kWh per ton}$
- $19.35 \times 0.94=18.19\text{kg per ton}$

According to the International Energy Agency the average primary energy intensity for cement production ranges from 3.4 to 5.3 gigajoules per ton (GJ/t) across countries with a weighted average of 4.4 GJ/t. 1GJ is equal to 277.78kWh:

- $1222.23\text{kWh} \times 0.94\text{kg}=1148.89\text{kg per ton}$
- 18.19kg is 1.58% of 1148.89kg

Nu-Rock directly abates 98.42%

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