e² design season three — Super Use

Episode Summary

Ninety percent of building materials have the potential for reuse, yet most of these materials end up in landfills. The partners of 2012 Architecten, an architecture firm in the Netherlands, have changed their design approach to incorporate materials that would otherwise be thrown away. Rather than designing first and finding materials later, they look for materials locally that could be reused and then design with those materials in mind. These materials are not recycled in the traditional sense. They are not ground up and recreated into a new composite material. They are used exactly as they are found, which is a departure from the way architects have often thought about recycling.

In 1997, Césare Peeren and Jan Jongert founded 2012 Architecten to pursue their goal of integrating reused materials into architecture. One of their first projects was a space station that they constructed out of discarded washing machines. It soon became a traveling exhibition that caught the eye of Wytze Patijn, the Dean of the Faculty of Architecture at the University of Technology in Delft (TU Delft). He was so impressed by their creativity that he decided to buy the space station and have them convert it into an espresso bar in one of the buildings on campus. With the opening of that espresso bar, their art became architecture and reassured them that their idea of reuse could be brought to larger scale projects. They went on to design the commercial interior of a shoe shop using car windshields as shelves, waste wood as a seating area and a used supermarket conveyor belt as a moving walkway.

After the success of the shoe shop project, WORM, a group of artists who organize concerts, film screenings, workshops and other events, partnered with 2012 Architecten to design and construct the interior space of their new building. With each new project came new challenges and a refinement of their techniques. One such technique, the use of a harvest map, has proven to be an invaluable tool in finding local materials. They create a map with the construction site at its center and search for waste materials within a certain radius of the site. By locating materials that are close by, they save on transportation costs, but more importantly, they reduce the amount of greenhouse gases that are released into the atmosphere as a result of the transportation of materials.

In 2004, 2012 Architecten further challenged their boundaries by taking on a project to build an entirely new 300 sq. meter (3229 sq. foot) villa out of reused materials. They welcomed another partner to the firm, Jeroen Bergsma, and again utilized a harvest map to develop this project. When the railroad ties that they wanted to use presented a

potential health hazard, they drew on their creativity and bought a machine formerly used in the textile industry instead. Using the steel beams from this machine, they created 90% of the primary construction of the house. In the end, about 65% of the final product was built out of reused materials.

Now, the architects of 2012 are eager to stretch the boundaries once again as they develop a plan to update an entire complex of public housing structures by reusing much of what already exists there. From small-scale art projects to large-scale residences, 2012 Architecten remains committed to their philosophy of reuse with the hope that others will follow the trend they have started.

To find out more about Superuse.org, an online community of designers, architects and others who are interested in inventive ways of recycling, visit www.superuse.org

To find out more about 2012 Architecten, visit www.2012architecten.nl (in Dutch only)

To order the book Superuse, visit www.010publishers.nl

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PRE-VIEWING QUESTIONS

1) What does it mean to recycle? Are there different types of recycling?

2) Why do people recycle? Do some people and cultures recycle more than others and, if so, why do you think this is the case?

3) Can you list three items that you:
   a. always recycle.
   b. always throw away.
   c. would never throw away.

4) Do you ever donate items to charity? If so, why don't you throw them in the garbage?

5) What gives an item value? Who decides what an item's value is?

POST-VIEWING QUESTIONS

1) Looking at your own habits, do you think that you throw things in the trash that still have value? If so, make a short list of these items.

2) Can you think of any other uses for the items that you listed in question 1?

3) List some potential problems that may arise or have arisen from producing a lot of waste.

4) What can we do as individuals to try to produce less waste?

5) In the episode, Césare Peeren mentions that mankind is the only species that produces waste that isn't reused. How do other species deal with the waste that they create? Provide specific examples.

6) Do you think using materials as they are found is better or worse for the environment than using materials that have been recycled from other materials? Explain why.

7) What are some potential challenges that 2012 Architecten could face as they try to apply their reuse philosophy to larger scale projects?

NATIONAL STANDARDS FROM MCREL STANDARD

Engineering Education

Standard 9.4: Understands the steps involved in designing construction projects (e.g., planning, generating layouts, developing drawings with measurements and details of construction considering constraints, selecting materials).

Standard 14.4: Understands how societal interests, economics, ergonomics, and environmental considerations influence a solution.

Family/Consumer Sciences

Standard 4.3 - Knows methods used to conserve, preserve, and recycle resources.

Standard 9.1 - Understands how clients' needs, goals, and resources influence the creation of design plans for housing, interiors, and furnishings.

Standard 9.6 - Knows factors affecting housing construction and furniture design (e.g., architectural styles, considerations for housing site selection, effects of technology, materials, life-styles).

Science

Standard 6.2 - Knows how the amount of life an environment can support is limited by the availability of matter and energy and the ability of the ecosystem to recycle materials

Technology

Standard 4.5 - Knows that since there is no such thing as a perfect design, trade-offs of one criterion for another must occur to find an optimized solution.

Standard 4.6 - Knows that a design involves different design factors (e.g., ergonomics, maintenance and repair, environmental concerns) and design principles (e.g., flexibility, proportion, function).

Standard 6.7 - Knows that construction design is influenced by factors such as building laws and codes, style, convenience, cost, climate, and function.

Standard 6.8 - Knows different requirements for structural design (e.g., strength, maintenance, appearance) and that these structures require maintenance.