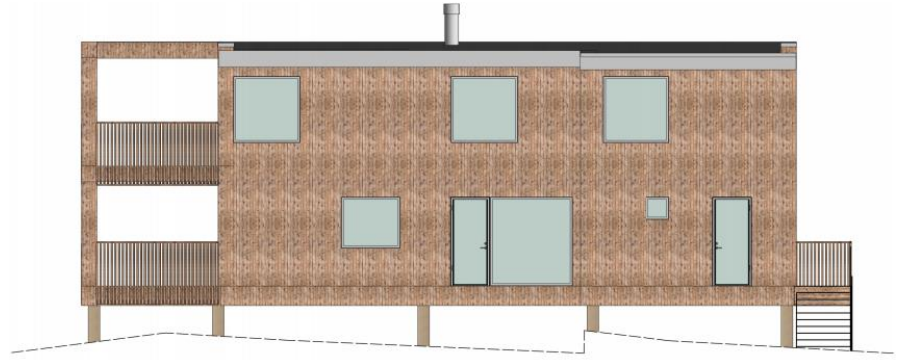


Villa Forshälla Sund, Sweden

Ylva Sandin, Karin Sandberg, Carmen Cristescu, RISE
Janina Östling, Marja Sidén, César Puás, Johan Holm
and Håvard Jegerstedt, IsoTimber Holding AB



© Erik Persson, Matilda Lindblom

Existing Baseline Design

2-floor, residential building, detached house

Offsite manufactured:

Foundation of glulam (frame and columns)

External wall panels of IsoTimber (250 mm) + CLT (100 mm)

CLT floor panels (200 mm), CLT interior wall panels (60 mm)

Roof built on site: trusses (I-joists) + roofing boards

Design Modified to DfD/R

Disassembly scenario: After 50 years of service life, the framework of the building is assumed to be deconstructed into its original planar elements, transported to another site in the same area (with the same wind and snow loads) and reassembled to an identical building. The design is modified to be improved for this scenario, thus be better adapted to Design for Deconstruction and Reuse (DfD/R).



© Gustab

Advantages to DfD/R Identified

- IsoTimber elements are robust, quick and easy to unscrew and reuse (no plastic foil nor extra insulation is used).
- Floor panels of CLT are heavy, why the joints need no glue, and are easy to unscrew and reuse.
- Lifting solutions of the panels are defined.
- Deconstruction instructions are basically reversed assembly instructions.



© Gustab

Obstacles to DfD/R Identified

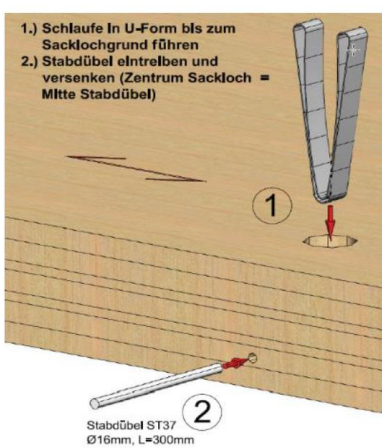
- Roofing boards are nailed to trusses (I-joists) and the boards are likely to be destroyed when deconstructed.



© Masonite Beams

Improvements to DfD/R

- Offsite manufactured roof cassettes of I-joists (preferably with wood fibre insulation), that can be deconstructed and reused.



Dowel and lifting sling

Lifting screw and hook
© Rothoblaas



Lifting eye
© IsoTimber



© IsoTimber

96,5 % of Wood Recoverable with today's design



© Gustab

100 % of Wood Recoverable after improved design (Approx 106 m3)



Project InFutUReWood is supported under the umbrella of ERA-NET Cofund ForestValue by Vinnova – Sweden's Innovation Agency, Formas – Swedish Research Council for Sustainable Development, Swedish Energy Agency, the Forestry Commissioners for the UK, the Department of Agriculture, Food and the Marine for Ireland, the Ministry of the Environment for Finland, the Federal Ministry of Food and Agriculture through the Agency for Renewable Resources for Germany, the Ministry of Science, Innovation and Universities for Spain, the Ministry of Education, Science and Sport for Slovenia. ForestValue has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 773324.

