Provisions for Greater Reuse of Steel Structures

Webinar 1
Reusing existing single-storey buildings
Thursday 7th May 2020
50% of all resources attributable to construction

Global floor area predicted to double by 2060

2°C scenario requires steel sector to reduce GHG emissions by 65% by 2050

Current consumption patterns are unsustainable
Context

• 50% of all resources attributable to construction
• Global floor area predicted to double by 2060
• 2°C scenario requires steel sector to reduce GHG emissions by 65% by 2050
• Current consumption patterns are unsustainable
During this 90-minute webinar 142,000 tonnes of CDW generated in EU-28
CDW recovery rates in EU-28 MS

EU-28 average recovery rate = 89%

WFD target of 70% recovery rate by 2020

Eurostat, 2016
Building end-of-life scenarios

Deconstruction and reuse

Demolition and crushing (downcycling)

>80% of demolition waste are mineral products
Landfill avoided but low-value recovery & backfilling
Construction sector needs to improve its resource efficiency

Waste management hierarchy

Circular economy concepts
Steel already has good recycling credentials
Steel recycling

- Versatile 3,500 different grades
- Durable and strong
- Infinitely recycled
- No loss of properties
- Magnetic properties assist recovery & sorting
- Economic value ensures recovery
- Global infrastructure for trading scrap steel
Going beyond recycling to reuse

500m tonnes pa ≈ 30% global production
> 95% structural steel is recycled
Going beyond recycling to reuse

Recycling Reuse

€1130 per tonne
≈ 5% structural steel is reused

500m tonnes pa ≈ 30% global production
> 95% structural steel is recycled
Although steel reuse does happen......

......there are many barriers in currently-configured supply chains
Demolition v Deconstruction
Recycling v Reuse

Demolition of a steel structure
Deconstruction of a steel structure
• Provisions for Greater Reuse of Steel Structures
• Jointly funded by the European Commission’s RFCS programme, Ruukki Construction, Jernkontoret, Ramboll, Peikko and project partners
• 36-month project – ending 31.05.20

• Reuse of existing and new **single-storey buildings**
• Scope includes primary, secondary structure and envelope
Why single-storey buildings?

• Represent a large proportion of the EU steelwork market
• Easiest building type to deconstruct and reuse
• Relatively short-life buildings
• Applicable to a board range of building sectors
• Existing reuse market in some sectors, e.g. agriculture
Two reuse scenarios

Reuse today

Future reuse

The challenges and the solutions for each scenario are very different
PROGRESS dissemination

• A core part of PROGRESS
• 7 formal workshops/events
  • Across 7 EU countries
• 16 additional dissemination events by partners
• Final 3 workshops cancelled
  • Netherlands, France, Belgium
• In their place, 4 free webinars organised by

PROGRESS awarded 1st prize at the Barcelona Building Construmat May 2019
| Webinar 1 | Reusing existing, single-storey steel buildings | 7\textsuperscript{th} May |
| Webinar 2 | Design of new single-storey steel buildings for reuse | 14\textsuperscript{th} May |
| Webinar 3 | Life cycle and reusability assessment of single-storey steel buildings | 21\textsuperscript{st} May |
| Webinar 4 | Overview of the EU project PROGRESS | 28\textsuperscript{th} May |
Webinar 1 - Reusing existing, single-storey steel buildings

*Pre-deconstruction audits* - Petr Hradil and Margareta Wahlstrom (VTT)

*Reusability of existing structural steel* – Ricardo Pimental (SCI)

*Reusing existing envelopes* - Kevin Janczyk (RWTH)
Provisions for Greater Reuse of Steel Structures

Webinar 1
Reusing existing single-storey buildings
Thursday 7th May 2020
Freely downloadable from SCI website
Structural steel reuse

Although we are still grappling with what the circular economy actually means and how it can be delivered in the construction sector, the underlying fundamentals are stark and simple. Unless we can uncouple economic growth from primary resource consumption, the global prognosis is unsustainable. In short, we will quickly run out of resources.

The circular economy offers significant economic benefits, particularly to those who can think outside the box. Several macro studies predict eye-watering economic benefits; for example, McKinsey predicts a net European benefit of €1.8 trillion by 2050.

Steel has excellent circular economy credentials both as a material which is strong, durable, versatile and recyclable and, as a structural framing system, which is lightweight, flexible, adaptable and reusable. See Steel and the circular economy for further information.

SCI is particularly interested in reusing, as opposed to the common practice of recycling, structural steel. Working together with the University of Cambridge, SCI has recently completed two national, Innovate UK projects exploring the barriers to more mainstream reuse, the economics of reuse and assessing the feasibility of developing a website for trading and sharing information about reclaimed structural steel. SCI is now working on two large European projects REDUCE and PROGRESS.

Although we conclude that today, steel reuse is unlikely to become mainstream without stronger drivers or incentives (legislative or economic) we believe that planning for a circular economy future is the smart and responsible thing for the steel sector to do.

Read more on these projects;

Progress - Reuse of Steel-Framed Buildings – Webinars, starting 7 May 2020

Steel reuse event 8th October 2019