Your role in precast concrete to build a sustainable society

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What is the role for business in the modern and challenging global economy?
Role for business

• To maximize profits (Friedman)?
• To maximize shareholders value?
• To be accountable to stakeholders?
• To contribute to a better world?
Stakeholder interests

- Businesses are striving to be profitable as their ultimate goal

- Nowadays stakeholders are not only concerned about profits but are more interested in company regarding various:
  - Economic
  - Environmental
  - Ethical
  - Governance, and
  - Social aspects
Corporate Social Responsibility (CSR) role

• By integrating sustainability into organization can lead to more superior performance and better competitive position as a result of
  – engaged employees
  – secured business
  – better risk management
  – satisfied customer
  – better relationship with stakeholders
  – better transparency
  – more collaborative community
  – better ability to innovate
  – etc.

Source: http://thinkersconnect.com
Ways of doing business

Quality
Performance
Price

OLD WAY

NEW WAY

Quality
Performance
Price

+

SUSTAINABILITY
Ways of doing business

OLD WAY  NEW WAY

Quality Performance Price

+  

SUPERFICIAL SUSTAINABILITY used mainly for marketing purpose

SUSTAINABILITY integrated at a core of the organization, cooperation with supply chain, stakeholders’ interests considered etc.
Sustainability at a core of your business
Sustainability KPIs of precast concrete
What is your role in precast concrete to build a sustainable society?
Your role is

• Be compliant
  – Transparent and responsible management of supply chain

• Be efficient
  – Efficient management of resources and processes

• Be innovative
  – Development of sustainable precast concrete products, solutions and services
Your role in precast concrete to build a sustainable society

- **Compliance**
  - Transparent and responsible management of supply chain

- **Efficiency**
  - Efficient management of resources and processes

- **Innovation**
  - Development of sustainable precast concrete products, solutions and services
Did you know

• About 80% of consumers are willing to pay 5% more for sustainable buildings (Source: McKinsey)

• About 80% of the customers would wait an extra-day for climate-friendly delivery of their purchases (Source: West Monroe Partners)

• Companies engaging in sustainable initiatives commonly have 20% increased revenues, 16% cost reduction, and 30% increased brand value (Source: World Economic Forum)

• Construction industry is subject to growing stakeholder expectations about the accountability, transparency and legitimacy of its operations
Concrete Sustainability Council’s (CSC) scheme

• A global responsible sourcing certification system (similar as FSC for timber products) designed to help concrete, cement and aggregate companies obtain insight in the level to which a company operates in an environmentally, socially and economically responsible way

• Key objectives of the scheme
  – Help improve concrete’s sustainable/ responsible performance
  – Improve transparency of the concrete sector
  – Receive recognition in green building rating systems
  – Get recognition in green procurement government policies
  – Improve the public opinion of both the concrete product and the sector
  – Improve the business case for responsible/ sustainable concrete

More information about CSC: www.concretesustainabilitycouncil.org/
Consolis VBI CSC certified

• Consolis VBI is the first precast manufacturer to receive CSC certification on 12\textsuperscript{th} April 2017

Source: Consolis VBI
Compliance – Where to start?

• Start collaborating with your major suppliers (cement, aggregates, steel etc.).

• Build sustainability requirements in the new and existing supplier contracts

• Measure and turn data into decision-making information

• Identify and eliminate the worst suppliers, retain the best suppliers

• Be transparent and accountable!
Compliance – Where to start?

• Work towards building credibility and image of precast concrete

• Cooperate with supply chain, consider stakeholders’ interests and integrate sustainability in your organization
  – identify KPIs, monitor, set targets, improve and communicate your sustainable initiatives and performance to customers, stakeholders and shareholders

• Transparency will improve the public opinion of the precast concrete product, your organization and the sector
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Environmental impact of construction materials

- Distribution of environmental impact between the different phases of 50-years service life of a building
Environmental impact of cement

- Production of Portland cement, the main binder for conventional concrete, accounts for about 7% of global CO$_2$-emissions, making it one of the more CO$_2$-intense industries.

Source: Intergovernmental Panel on Climate Change
Cement sector CO$_2$-emissions reduction plan

Source: IEA Cement Roadmap
Environmental impact of precast concrete

- Typical distribution of CO$_2$-emissions of precast concrete production. The example is “from cradle to factory gate” and therefore the transportation of the products has not been shown. The emission values can vary ±30% from the values presented.

![CO$_2$-emissions of precast industry](image)
Sources of concrete and steel waste in precast concrete manufacturing process

1. Losses of raw materials before mixing
2. Steel losses due to planning and designing
3. Losses in B/M
4. Un-optimised use of concrete
5. Steel losses in production stage
6. Concrete losses in casting stage
7. Concrete waste in curing stage of concrete
8. Product waste due to insufficient planning / supervision
9. Concrete and steel losses in casting stage
10. Product waste due to quality (rejected products)
Efficiency – Where to start?

- Measure your environmental footprint in your own operating facilities as well as your supply chain
- Identify your greatest environmental impacts
- Reduce your material, energy and water use and work with suppliers to reduce their own
- Reduce the waste you generate in your own operations, and divert more of it from landfills
- Implement Office Energy Policies = improve situation not only at the factories but also offices
- Collaborate with stakeholders to make progress towards your goals
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Precast concrete potential contribution to sustainability

- Precast concrete’s versatility and its inherent durability, resilience and thermal mass properties can enhance sustainability performance of a building through a potential contribution by up to 40% or higher to the overall BREEAM rating.
Huissensche ladder model – enhanced Waste hierarchy model, as a guide for sustainable innovation

Positive footprint
(energy delivering, nature improving, healthy & comfortable buildings etc.)

Limiting footprint
(low energy demand and environmental impact having buildings)

Reusing buildings
(adaptable buildings)

Reusing elements
(dismountable building elements)

Recycling
(upcycling, recycled material of higher quality and functionality)

Landfilling
(downcycling, recycled materials of lower quality and functionality)

Disposing
(removing materials without environmental impact)

Incineration
(removing materials with environmental impact)

Source: Consolis VBI
Innovation example – smart crushing

Source: www.slimbreker.nl
Innovation example – reusable hollow core slabs

HEM240+strip500x20

700 sleufsparing 80 sparing 80 sparing 700 sleufsparing

90 36 124 124 36 90

Source: Cepezed Projects
Innovation example – flexible and adaptable building space

HEA 16 - Flexibiliteit
Innovation example – cementless hollow core slabs with low environmental impact

<table>
<thead>
<tr>
<th>Global comparison</th>
<th>CO2 Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solid concrete floor</td>
<td>100</td>
</tr>
<tr>
<td>Hollow core floor (reduce raw material)</td>
<td>50</td>
</tr>
<tr>
<td>Hollow core floor VBI GreenLine (use secondary materials)</td>
<td>30</td>
</tr>
<tr>
<td>Hollow core floor GP (use of alternative binder)</td>
<td>15</td>
</tr>
</tbody>
</table>

Source: Consolis VBI
Innovation example – air based thermal active building system (TABS)

- TermoDeck® as a solution improving sustainability performance of buildings

- TermoDeck® - a low energy system for distributing
  - Heating
  - Cooling, and
  - Ventilation

...through the channels of concrete HC-slab
Innovation – Where to start?

• Define the project. Take into account sustainability requirements

• Measure and determine customer requirements (voice of the customer)

• Analyze and identify functions. Generate and select concepts

• Develop the design, test & optimize design components and completed the design

• Verify design performance and implement the design
Conclusion

• Be compliant
  – Transparent and responsible management of supply chain

• Be efficient
  – Efficient management of resources and processes

• Be innovative
  – Development of sustainable precast concrete products, solutions and services

…and then you will be able not only to improve your competitive position in the construction market but also contribute to the good image of precast concrete in general!