Development of low-carbon concrete that achieves both maximum carbon reduction and durability

In Japan, 3% of CO_2 emissions is from Concrete/Cement production

Current state of low-carbon concrete

Conventional technology and usage

- Concrete with reduced cement content
- Reuse of concrete rubble
- Use of recycled materials that have absorbed CO_2
- CO_2 curing of precast concrete products

Application

- Plain concrete
- Small sized pre-cast concrete
- Places where no deterioration expected

So, limited application

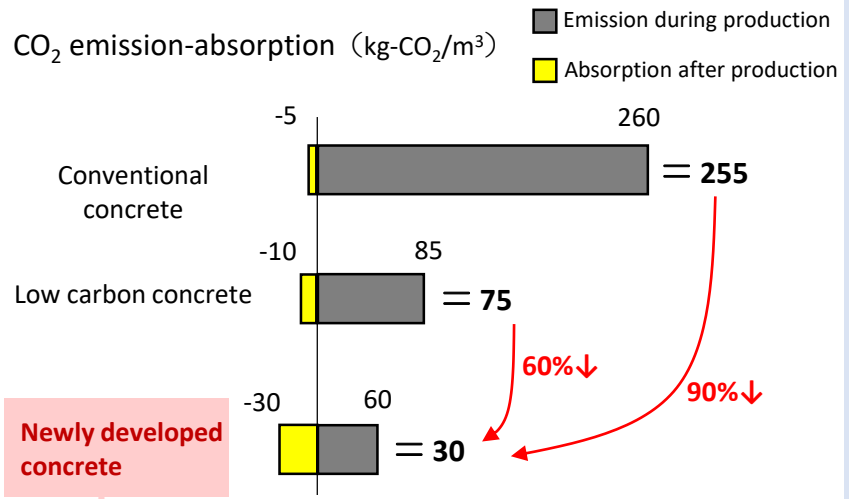
Present issues

When emphasis is placed on CO_2 reduction/absorption

- Inadequate strength (not structurally applicable)
- Durability cannot be ensured (Reinforcing bars corrode early)
- Difficult to use as ready-mixed concrete(applicable range is narrow)
- Required curing period gets longer (construction time increases)

Development of concrete that achieves both CO_2 reduction/absorption and durability

1. Introduction of a method that achieves both CO_2 reduction/absorption and durability
2. Development of a chemical admixture to achieve the goal
3. Application of the material to conventional low-carbon concrete



- Further reduction of CO_2 emissions and improvement of CO_2 capture amount
- High durability (90% reduction in corrosion rate)
- Strength enhancement (50% increase)
- Reduces drying shrinkage due to internal curing effect

It solves the problems of low-carbon concrete and can be applied to general structures.

CO_2 reduction and absorption are higher than those of conventional low-carbon concrete.

Highly durable concrete that can be applied to general structures.