

CLAIMS

1. Method for the use of a gaseous effluent (10) containing a CO₂ gas fraction and optionally a non-CO₂ gas fraction, the method comprising the steps of:
- 5 (a) at a first location:
- providing liquid nitrogen (20) at a temperature not greater than -196°C,
 - causing the gaseous effluent (10) to contact the liquid nitrogen (20) so as to capture at least part of the CO₂ present in the CO₂ gas fraction as a mixture (25, 35) of CO₂ particles and liquid nitrogen (20),
- 10 (b) conveying at least part of the mixture (25, 35) to a second location, and
- (c) at the second location, bringing the mixture (25, 35) into contact with one or more ingredients (100, 101, 102, 121) of a wet concrete (125) before and/or during and/or after the wet concrete (125) is prepared by blending the ingredients (100, 101, 102, 121) of the wet concrete (125) in a blender (120), so that
- 15 • the mixture (25, 35) extracts heat from said one or more ingredients (100, 101, 102, 121) of the wet concrete (125), and
- CO₂ from the mixture (25, 35) partially carbonates Ca-compounds present in the wet concrete (125).
- 20 2. Method according to claim 1, whereby, at the second location, the mixture (25, 35) is brought into contact with the wet concrete (125) after the blending step, preferably during agitation of the wet concrete (125).
3. Method according to claim 1 or 2, whereby the mixture (25, 35) is brought into contact
- 25 with the wet concrete (125) during agitation of the wet concrete (125) in the blender (120) or in a mixer to which the wet concrete (125) prepared in the blender (120) is transferred.
4. Method according to any one of the preceding claims, whereby the CO₂ gas fraction constitutes from 7 to 100%vol, preferably from 10 to 90%vol and more preferably from 25 to
- 30 60%vol of the gaseous effluent (10).
5. Method according to any one of the preceding claims, whereby the gaseous effluent (10) is subjected to a cooling step before it contacts the liquid nitrogen (20).

6. Method according to claim 5, whereby thermal energy is recovered from the gaseous effluent (10) during the cooling step and whereby at least part of said recovered thermal energy is used as a heat source in a heating process, as an energy source for the production of mechanical energy or as an energy source for the production of electrical energy.

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7. Method according to any one of the preceding claims, whereby the gaseous effluent (10) is caused to contact the liquid nitrogen (20) until the mixture (25, 35) presents a CO₂-particle content which is equal to or greater than a predetermined minimum CO₂-particle content.

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8. Method according to any one of the preceding claims, whereby the CO₂-particle content of the at least part of the mixture (25, 35) is adjusted before said at least part of the mixture (25, 35) is brought into contact with the wet concrete (125).

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9. Method according to any one of the preceding claims, whereby the conveying of the mixture (25, 35) includes transport of the mixture (25, 35) in a mobile cryogenic reservoir.

10. Method according to any one of the preceding claims, whereby the mixture (25, 35) is brought into contact with the one or more ingredients (100, 101, 102, 121) of the wet concrete (125) in a mixer, preferably in the blender (120) in which the wet concrete (125) is prepared and/or in a mixer to which the wet concrete (125) prepared in the blender (120) is transferred.

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11. Method according to claim 10, whereby the mixer is a rotating drum mixer of a concrete mixer truck (140).

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12. Method according to any one of the preceding claims, whereby the second location is situated:

- a site where the wet concrete (125) is prepared in the blender (120),
- at a site where the wet concrete (125) is cast, preferably a construction site,
- 30 • a site where the prepared wet concrete (125) is introduced into a mixer, preferably the rotating drum mixer of a truck (140) and/or
- at an intermediate site between a site where the wet concrete (125) is prepared and a site where the wet concrete (125) is cast.

13. Method according to any one of the preceding claims, whereby the gaseous effluent (10) comprises or consists of combustion gases.

14. Method according to any one of the preceding claims, whereby part of the liquid nitrogen (20) evaporates during step (a) and whereby the evaporated nitrogen is utilized at the first location.

15. Method according to any one of the preceding claims, whereby:

- step (a) is performed at multiple first locations,
- 10 • the mixtures (25) obtained at said multiple first locations are conveyed to a third location where said mixtures (25) are combined to form a final mixture (35) of solid- CO₂- particles and liquid nitrogen,
- the final mixture (35) is transported to a mixer in which wet concrete (125) is mixed, and
- 15 • the final mixture (35) is introduced into the mixer and brought into contact with the wet concrete (125) in the mixer, thereby causing the wet concrete (125) to be cooled and partially carbonated.