



- (51) **International Patent Classification:**
B28C 7/12 (2006.01) *B28C 7/00* (2006.01)
- (21) **International Application Number:**
PCT/US2011/064333
- (22) **International Filing Date:**
12 December 2011 (12.12.2011)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (71) **Applicant** (for all designated States except US): **VERIFI LLC** [US/US]; 9466 Meridian Way, West Chester, OH 45069 (US).
- (72) **Inventors; and**
- (75) **Inventors/Applicants** (for US only): **KOEHLER, Eric** [US/US]; 45 Garden Street Apt 1, Boston, MA 02114 (US). **ROBERTS, Mark, F.** [US/US]; 31 Bridges Lane, North Andover, MA 01845 (US).
- (74) **Agents:** **LEON, Craig K.** et al.; W.r. Grace & Co.-conn., 62 Whittemore Ave., Cambridge, MA 02140 (US).
- (81) **Designated States** (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ,

CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

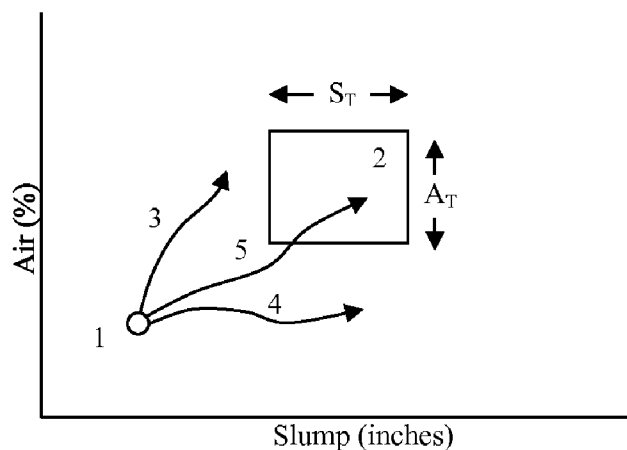
- (84) **Designated States** (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))

- (88) **Date of publication of the international search report:**
24 April 2014

(54) **Title:** MULTIVARIATE MANAGEMENT OF ENTRAINED AIR AND RHEOLOGY IN CEMENTITIOUS MIXES

**FIG. 1**

(57) **Abstract:** The invention relates to a method and system for monitoring and adjusting both air content and rheology (e.g., slump, slump flow) properties of a hydratable concrete mix contained within a concrete mixer. The system simultaneously tracks dosage of both rheology-modifying admixture (e.g., polycarboxylate polymer cement dispersant) and air control agent or "ACA" (e.g., air entraining agent) by reference to at least four nominal dose response ("NDR") curves or profiles, which at least four NDR profiles are based on the respective behaviors of each of the ACA and rheology-modifying agent on air content and rheology.