

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
28 August 2008 (28.08.2008)

PCT

(10) International Publication Number
WO 2008/103209 A1

(51) International Patent Classification:
G01N 29/22 (2006.01) *G01N 29/265* (2006.01)
G01N 29/24 (2006.01)

(74) Agent: DERRINGTON, K., Ron; Bracewell & Giuliani
LLP, 711 Louisiana Street, Suite 2300, Houston, Texas
77002 (US).

(21) International Application Number:
PCT/US2007/088642

(22) International Filing Date:
21 December 2007 (21.12.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
11/709,342 21 February 2007 (21.02.2007) US

(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, 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, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(71) Applicant (*for all designated States except US*): LOCK-
HEED MARTIN CORPORATION [US/US]; 6801
Rockledge Drive, Bethesda, Maryland 20817 (US).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): DUBOIS, Marc
[CA/US]; 312 Foxcroft Lane, Keller, Texas 76248 (US).
DRAKE, Thomas, E., Jr. [US/US]; 2530 Ryan Place
Drive, Fort Worth, Texas 76110 (US). OSTERKAMP,
Mark [US/US]; 3208 Bluebonnet Circle, Weatherford,
Texas 76087 (US).

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— with international search report

(54) Title: ARTICULATED ROBOT FOR LASER ULTRASONIC INSPECTION

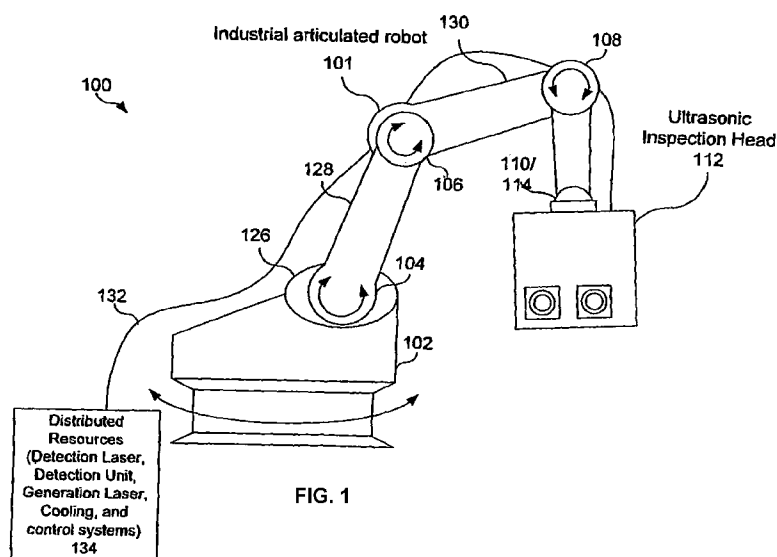


FIG. 1

(57) Abstract: An ultrasonic non-destructive evaluation (NDE) system operable to inspect target materials is provided. This ultrasonic NDE system includes an articulated robot, an ultrasound inspection head, a processing module, and a control module. The ultrasound inspection head couples to or mounts on the articulated robot. The ultrasound inspection head is operable to deliver a generation laser beam, a detection laser beam, and collect phase modulated light scattered by the target materials. The processing module processes the phase modulated light and produces information about the internal structure of the target materials. The control module directs the articulated robot to position the ultrasound inspection head according to a predetermined scan plan.

WO 2008/103209 A1