

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(10) International Publication Number
WO 2024/226297 A3

(43) International Publication Date
31 October 2024 (31.10.2024)

(51) International Patent Classification:

C22C 19/03 (2006.01) B23K 35/30 (2006.01)
B33Y 10/00 (2015.01) B33Y 30/00 (2015.01)

(21) International Application Number:

PCT/US2024/023805

(22) International Filing Date:

10 April 2024 (10.04.2024)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/461,667 25 April 2023 (25.04.2023) US

(71) Applicant: **OERLIKON METCO (US) INC.** [US/US];
1101 Prospect Ave., Westbury, New York 11590 (US).

(72) Inventors: **BRACCI, Jonathon**; 2210 Avenida Del Dia-
blo, Escondido, California 92029 (US). **CHENEY, Justin**;
1613 Shields Ave, Encinitas, California 92024 (US).
KAUFMANN, Kevin; 1508 Fig Tree Way, Oceanside, Cal-
ifornia 92056 (US).

(74) Agent: **MUELLER, Robert W.** et al.; Greenblum & Bern-
stein, P.L.C., 1950 Roland Clarke Place, Reston, Virginia
20191 (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, BN, BR, BW, BY, BZ,
CA, CH, CL, CN, CO, CR, CU, CV, CZ, DE, DJ, DK, DM,
DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG,
KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY,
MA, MD, MG, MK, MN, MU, MW, MX, MY, MZ, NA,
NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO,
RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH,
TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS,
ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, CV,
GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, SD, SL, ST,
SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ,
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, ME, MK, MT, NL, NO, PL, PT, RO, RS, SE,
SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN,
GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))
- of inventorship (Rule 4.17(iv))

Published:

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

(88) Date of publication of the international search report:

13 March 2025 (13.03.2025)

(54) Title: PRINTABLE GAMMA PRIME SUPERALLOYS

(57) Abstract: A nickel-based alloy composition for additive manufacturing and an additive manufacturing component made from the nickel-based alloy, which includes: 36 – 89 wt.% nickel; 4 – 9 wt.% aluminum; 6 – 14 wt.% cobalt; 4 – 26 wt.% chromium; 2 – 5 wt.% tantalum; and 3 – 13 wt.% tungsten. The nickel-based alloy composition provides an additive manufacturing component having a cracking density of less than 4.0 cracks/mm².

WO 2024/226297 A3