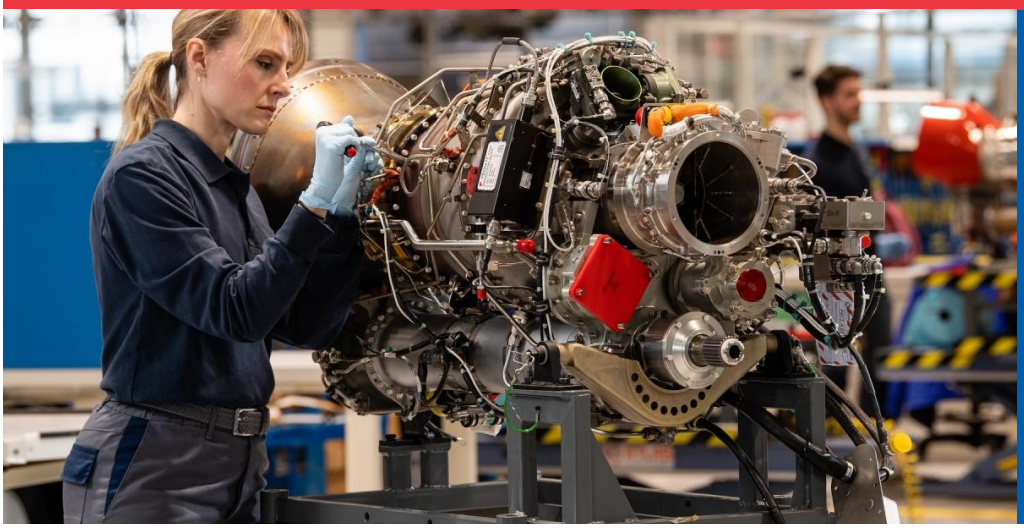
MARCH 2024

UNITED PERFORMANCE METALS

QUALITY SOLUTIONS. TRUSTED PARTNERS.

AN ONI COMPANY

THE UPM MARKET INFORMER



INSIDE THIS ISSUE

www.upmet.com
sales@upmet.com
888.282.3292

Safran Boosts Deliveries as Work on New Engines Advances

Responding to relentlessly strong demand, Safran Helicopter Engines is seeking to ramp up deliveries of its turboshafts to just above 1,000 units next year. In a briefing with reporters ahead of Heli-Expo 2024, the French company's CEO, Cédric Goubet, acknowledged this will be a tall order since output was just more than 600 engines last year and it is targeting 900 for 2024.

At the same time, Safran has begun work on a new turboshaft that could eventually replace its Arriel for single-engine helicopters. Goubet said this project is at a very early stage, with engineers still defining what level of technology will be required. "It's a versatile project and we can decide when we have reached the right level of maturity in terms of technology and also manufacturability," he explained. However, Goubet has not confirmed a specific timeline for the program to advance or which airframers have requested this initiative.

As it prepares to deliver around 10,000 helicopter engines over the next decade, Safran is also stepping up its product support capacity. According to Goubet, by next year the support network needs to have the capacity to repair 1,500 engines annually, which would represent a 50 percent increase. Taking account of engines retired from service, Safran expects to have 25,000 helicopter engines in operation by 2033. As of year-end 2023, Safran's helicopter engines had logged a combined 150 million flight hours. This tally includes 65 million hours with the Arriel family and 10 million with the Arrius 2 line. Increasing support capacity will prove challenging as, like so many aerospace manufacturers, Safran continues to face significant supply chain constraints. "We have recovery plans in place with our supplies, but the tension will remain high on the supply chain due to high demand," said Goubet.

Safran's response has been to focus on help for suppliers "who are not aware enough or advanced enough" to respond to the shortfalls in the output of parts and components. The company has also found that shortages of some raw materials are compounding the problems. The company is adding support centers in Hamburg, Germany, and Brazil. Future plans also include a maintenance, repair, and overhaul facility at Goa, India, through a partnership with Hindustan Aeronautics. Additionally, Safran is collaborating with MTU to develop a higher-power turbine engine for an as-yet-unspecified application.

Safran is closely allied with Airbus Helicopters to advance propulsion technology using its DisruptiveLab and Racer demonstrators. One project involves aerodynamic improvements, combined with a modified thermal engine and a 250-kilowatt electric motor to target a 50 percent cut in fuel burn. The other could see a pair of Aneto engines running in a so-called "eco mode," in which one engine would run idle in cruise flight to boost energy efficiency and reduce emissions. Read the dull article here.

Nickel/Cobalt & Stainless-Steel Flat Rolled Surcharges

--	Dec '23	Jan '24	Feb '24	Mar '24	Apr '24	May '24
15-5	0.8851	0.8828	0.8570	0.8493	*	*
17-4	0.8985	0.8957	0.8689	0.8610	*	*
17-7	0.9332	0.9085	0.8720	0.8644	*	*
201	0.6614	0.6608	0.6299	0.6262	*	*
301 7.0%	0.9133	0.8901	0.8536	0.8460	*	*
302/304/304L	1.0005	0.9701	0.9316	0.9234	*	*
304-8.5%	1.0378	1.0038	0.9647	0.9563	*	*
305	1.3046	1.2463	1.2031	1.1927	*	*
309	1.3495	1.2901	1.2437	1.2335	*	*
310	1.896	1.7875	1.7319	1.7177	*	*
316/316L	1.4761	1.4247	1.4454	1.4281	*	*
321	1.0616	1.0245	0.9860	0.9772	*	*
347	1.3711	1.3339	1.2954	1.2867	*	*
409/409 Mod	0.3118	0.3390	0.3157	0.3118	*	*
410/410S	0.3217	0.3487	0.3248	0.3209	*	*
430	0.3796	0.4052	0.3769	0.3733	*	*
439	0.3918	0.4170	0.3879	0.3843	*	*
263	9.0827	8.7045	7.9101	7.5289	7.4378	7.1872
276	10.7552	9.8207	9.0944	8.2179	8.2185	8.3632
A286	2.8866	2.7438	2.5129	2.3167	2.2714	2.2421
600	6.9579	6.6048	6.0518	5.5351	5.2968	5.1756
601	5.7653	5.4831	5.0475	4.6399	4.4546	4.3571
617	9.4716	9.0559	8.1737	7.6002	7.5183	7.4124
625	10.2172	9.8207	8.9962	8.3243	8.2410	8.2697
718	8.6247	8.3341	7.8114	7.3599	7.2377	7.1970
X-750	7.3173	6.9845	6.4649	5.9800	5.7573	5.6430
800	3.1618	3.0082	2.7867	2.5825	2.4995	2.4442
825	4.9676	4.7352	4.3011	3.9414	3.8727	3.8560
Alloy X	7.3057	6.9550	6.2032	5.6145	5.5787	5.6251
188	9.7249	9.3558	8.8538	9.0730	8.8891	8.2433
L-605	9.8839	9.5253	9.0231	9.4004	9.2428	8.4775

*Surcharge currently not available

Thin Gauge Stainless Steel and Nickel Alloy Surcharges

--	Dec '23	Jan '24	Feb '24	Mar '24	Apr '24	May '24
301 7%	1.0959	1.0681	1.0243	1.0152	*	*
302/304/304L	1.2007	1.1642	1.1179	1.1081	*	*
304 8.5%	1.2453	1.2046	1.1577	1.1475	*	*
305	1.5655	1.4956	1.4437	1.4313	*	*
316L	1.7712	1.7096	1.7345	1.7137	*	*
321	1.2739	1.2294	1.1832	1.1727	*	*
347	1.6453	1.6006	1.5545	1.5441	*	*
201	10.53	9.96	9.0716	8.2428	7.8586	7.6654
600	8.35	7.93	7.2622	6.6421	6.3562	6.2108
625	12.26	11.78	10.7954	9.9892	9.8893	9.9237
625LCF	12.26	11.78	10.7954	9.9892	9.8893	9.9237
718	10.35	10.00	9.3736	8.8320	8.6852	8.6365
Alloy X	8.77	8.35	7.4439	6.7374	6.6944	6.7502
X750	8.78	8.38	7.7578	7.1760	6.9087	6.7716

*Surcharge currently not available

Nickel/Cobalt & Stainless-Steel Bar Surcharges

	Sep '23	Oct '23	Nov '23	Dec '23	Jan '24	Feb '24	Mar '24
316LS/316LVM	2.88	2.77	2.43	2.19	1.83	1.83	1.84
Custom 455	1.57	1.51	1.39	1.31	1.33	1.29	1.30
Custom 465	2.19	2.12	1.94	1.83	1.85	1.83	1.84
Custom 630	1.20	1.15	1.04	0.98	1.01	0.98	0.99
CCM	12.20	9.94	10.77	10.76	10.16	12.30	12.30
625	10.78	10.36	9.40	8.62	8.69	8.84	8.86
718	8.19	7.85	7.26	6.75	6.71	6.70	6.69
718CR	8.19	7.85	7.26	6.75	6.71	6.70	6.69
A286	3.99	3.84	3.52	3.28	3.27	3.25	3.27
A2861	3.99	3.84	3.52	3.28	3.27	3.25	3.27
A2862	3.99	3.84	3.52	3.28	3.27	3.25	3.27
A2867	3.99	3.84	3.52	3.28	3.27	3.25	3.27
A286R1	3.99	3.84	3.52	3.28	3.27	3.25	3.27
A286SH	3.99	3.84	3.52	3.28	3.27	3.25	3.27
Alloy X	8.86	8.50	7.66	7.00	7.11	7.32	7.37
Wasp6	10.16	9.37	8.89	8.33	8.16	8.58	8.64
L605	12.46	10.78	11.53	11.59	10.95	12.46	12.54
321	1.83	1.75	1.58	1.46	1.47	1.43	1.44
347	1.84	1.75	1.58	1.46	1.47	1.43	1.45
Greek Ascoloy	1.46	1.45	1.36	1.32	1.34	1.32	1.33

*Surcharge currently not available

Titanium Surcharges

Form	Grade	Q1 2024 Surcharge
TI - SHEET	6AL4V	8.23
TI - PLATE	6AL4V	8.08
TI - PLATE	6AL4VE	7.28
TI - COIL	GR 2	8.70
TI - COIL	GR 3	8.70
TI - COIL	GR 4	8.70
TI - SHEET	GR 2	8.70
TI - SHEET	GR 3	8.70
TI - SHEET	GR 4	8.70
TI - BAR	6AL4V	5.45
TI - BAR	6AL4VE	5.45

Airbus Set To Start Racer High-Speed Flight Trials

Airbus Helicopters is preparing to start flight testing with its Racer high-speed rotorcraft technology demonstrator in late March. Engineers at the company's Marignane headquarters in France are now completing the installation and testing of all subsystems as they prepare to start the next phase of the program to define the configuration of a new-generation helicopter featuring rear-facing propellers in addition to a main rotor.

In 2013, Airbus achieved an unprecedented speed of 255 knots with its earlier X3 demonstrator, and now the company is looking to define what it can also deliver in terms of payload and range. "Our objective now is to get closer to an operational configuration, and also closer to what could be certified," Racer program manager Julien Guitton told reporters during a media briefing on February 13. "We want to achieve the best possible compromise between cost, environment, and performance."

Accordingly, the Racer flight trials are expected to target a top speed of 220 knots, which Airbus feels will represent the most efficient use of Racer's hybrid-electric powertrain developed by Safran. Operating at 180 knots, it is expected to burn 15 percent less fuel than a conventional helicopter at 130 knots. Using the so-called Eco-Mode, one of the two Safran Aneto-1X engines can be switched to standby during cruise flight to increase fuel savings to 30 percent.

According to Racer's chief engineer, Brice Makinadjian, Airbus and its partners have taken multiple design options to reduce drag by around 25 percent. These include a new fairing design, narrowing the fuselage while not reducing the size of the cabin, an asymmetrical tail boom, and a box wing featuring an integrated landing gear. By having two smaller wings, there should be less downwash from the rotors, making for more efficient hover performance. Airbus is also looking to achieve lower noise levels during approach and takeoff by adjusting the attitude and speed of the aircraft with preset autopilot commands. "This means we can control the trajectory of the disk blade vortex and also by deploying flaps on the wing," Makinadjian explained.

As it continues to prepare the way for a new high-speed helicopter, Airbus is aiming to achieve a high degree of system commonality with conventional aircraft in order to reduce costs. This could see it deploy the same gearbox, tail rotor, and avionics for future models. The Racer is expected to log around 200 flight hours over the course of a two-year demonstration program. The first flight will mark the end of the European Union-backed Clean-Sky 2 program that has involved 40 partners from 13 countries.

"This will be the real start of the Racer program," Guitton said. "First we will open up the envelope and explore the maximum speed, and then we will focus on payload, range, and maneuverability." Airbus is planning to demonstrate various civil and parapublic missions that could include emergency medical support. It is also in discussions over possible military applications. Read the article here.

ADDiTEC & MECHA Announce Metal Manufacturing Partnership

ADDiTEC has partnered with machining services provider MECHA to combine their respective metal additive manufacturing and precision machining capabilities.

MECHA has been delivering precision machining services to the aerospace, automotive and medical industries for more than 15 years, while ADDiTEC has made its name in additive manufacturing through the development of its multi-laser Directed Energy Deposition (LDED) technology and its acquisition of Xerox's Elem Additive Solutions business.

As the two companies come together, they are promising customers a 'comprehensive range' of manufacturing solutions, including advanced metal printing and precision machining, to address 'a variety of complex requirements with a single, integrated approach.' They will also work to optimize operations for larger production runs, while also hinting at an R&D focus on enhancing product design and performance by 'pushing the boundaries of what is achievable.' The companies have also said they will provide comprehensive support pre- and post-sale, with 'the savings generated from optimized operations' being 'directly passed on to our clients.'

"As we join forces with MECHA, Inc., we are not just forming a partnership; we are crafting a synergy of innovation and precision in advanced metal manufacturing," commented ADDiTEC founder and CEO Brian Matthews. "This collaboration allows us to combine ADDiTEC's ground-breaking technologies with MECHA's exceptional machining and metal services, promising unparalleled solutions for our clients. Together, we are shaping the future of metal manufacturing with a shared commitment to quality, efficiency, and cutting edge excellence."

Bobby Boyd, Founder and President of Mecha, Inc. added: "At MECHA, we continually push the limits of CNC machining, so we are extremely excited to take things to the next level through our partnership with ADDiTEC, a leader in advanced metal manufacturing. This strategic alignment will allow our respective customers to innovate in ways that were previously inconceivable, while experiencing an unmatched level of service and support for their cutting-edge designs. Metal manufacturing is going to evolve rapidly in the near future because of ADDiTEC's technology, and we are glad to play a role in that evolution." Read the article.

Bloom Energy Adds Variable Load Ability to its Fuel Cells

Fuel cell provider Bloom Energy has given its Energy Servers the ability to follow loads, so they can adjust to variable demand and supply in microgrids and utilities.

The 'Be Flexible' offering works on "either side of the meter", i.e. it can be used by data center providers and others on microgrids, and also by the utility, who may use fuel cells to fill gaps in generation by other sources.

Bloom claims to have more than 1GW of its solid oxide fuel cell (SOFC) power systems in use, which Bloom says are suitable for applications including AI data centers, and Bloom's systems are used at AWS and Equinix among others

SOFC systems operate at a high temperature, which gives them a slower startup time than less efficient lower-temperature PEMFC cells, but they still start up faster than alternative fuel-burning systems such as gas turbines and diesels and operate more efficiently than turbines when running at partial loads.

Given this, they can be used as "dispatchable" power.

They can be run using hydrogen but currently are more often fueled with natural gas (methane).

In Oregon, AWS aims to use methane-powered Bloom fuel cells as a primary source, a decision which Bloom has defended as less carbon intensive than fossil grid power - describing methane fuel cells as an "interim" solution towards net zero.

“We continue to innovate and solve the unique challenges created by the energy transition and the AI revolution,” said KR Sridhar, Founder, Chairman, and CEO of Bloom Energy. “The Be Flexible offering provides a solution to customers that is technically, economically, and environmentally superior to legacy alternatives such as diesel generators and gas turbines."

“The rapid response time of ‘Be Flexible,’ due to its solid state architecture, is immensely important when we consider the intense energy fluctuating demands like those from AI data centers, which we are increasingly dependent on,” said Bloom advisor Peter Gross. “Data center power demands can nowadays easily jump from 50 percent to 100 percent in a matter of seconds. A power source that can’t deliver in such a short time will trip the entire site’s power, causing costly disruptions.” Read the article here.

UPM Focus: Air Frame Industry with Rich Vanatsky

United Performance Metals serves a number of industries including but not limited to the medical, space, defense, power generation, semiconductor, and aerospace industries. Within the aerospace market, there is a segment for just the frames that are engineered for use in aircraft. UPM plays a role in the creation of these airframes by providing the unique metals required to assemble planes and rockets. This month, we decided to ask Rich Vanatsky, the Director of UPM’s Air Frame/ Helicopter business, about how our products serve this niche segment of the aerospace industry.

To understand how UPM’s core product offerings support airframe manufacturing, we asked Vanatsky about the applications of titanium within the airframe category.

He stated, “Our primary product offering for airframe customers is 6-4 titanium plate, sheet, and bar. Due to its combination of high strength and low weight, titanium is incorporated into airframe structures like wing spars. It is also found in critical mechanical systems such as landing gear. Large twin aisle aircraft increasingly use composite aerostructures. Titanium "mates" better with composites than aluminum, so newer models of their aircraft category are driving larger consumption of titanium products. Due to extreme performance requirements, military aircraft also consume significant quantities of titanium as well.” Clearly, titanium plays an integral role in the airframe segment and UPM supplies a number of grades including CP-2, CP-3, CP-4, Ti-6AL-4v, and Ti-6AL-4V ELI.

Focusing on the services that UPM provides relevant to the airframe category, Vanatsky shed light on the importance of our cutting capabilities. “Many customers take advantage of UPM's metal processing capabilities. We utilize plate saws to cut rectangular pieces and waterjets to cut non-rectangle shapes of plate products. Our shears cut rectangular pieces of sheet metal and our bar saws cut custom segment lengths of bar. Our lasers can also process large volumes of nested custom-shaped pieces of flat product. These cut pieces can eliminate the need for customers to have their own cutting equipment and speed up cycle time since they can go directly into production. For some customers, we ship small lots in JIT fashion which reduces their inventory and space required for raw material storage.” The airframe segment is going to be key for the aerospace industry throughout the coming decade and as a supplier, UPM will keep its product offerings aligned with the needs of airframe players. Visit our website to learn more about our product offerings and services.