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www.upmet.com
sales@upmet.com
888.282.3292

US Supersonic Jet Soars to Record 25,040 Feet, Fuels Speedy Travel Dreams

Boom Supersonic is taking significant steps toward bringing commercial supersonic travel back to the skies. The company's XB-1 demonstrator aircraft recently completed its eighth flight, setting a new altitude record and matching its top speed. This milestone is part of Boom's ongoing effort to reintroduce supersonic flights, a concept that faded after the Concorde's final flight in 2003 due to high costs and noise concerns.

The XB-1's eighth flight took place on November 16. During this flight, the aircraft reached an impressive altitude of 25,040 feet (7,632 meters), its highest yet. The flight lasted 54 minutes, during which the aircraft reached a top speed of Mach 0.82, tying its previous speed record. Boom Supersonic's plans include a few more subsonic flights before the aircraft attempts to break the sound barrier. The company aims to reach Mach 1, the speed of sound, which is around 767 miles per hour (1,234 km/h).

Earlier on November 5, XB-1 completed its seventh subsonic test flight. The flight tested flutter envelope expansion and cockpit pressure, reaching a new top speed of Mach 0.82 (499 knots). The team also tested the flutter excitation system (FES) at speeds up to Mach 0.8 to ensure stable performance at transonic speeds.
Supersonic speeds produce a sonic boom—a loud, thunderous noise caused by breaking the sound barrier. While supersonic flights were once standard, the sonic booms created by such speeds led the Federal Aviation Administration (FAA) to ban civil supersonic flights over land in 1973.

Boom Supersonic's work on the XB-1 is closely aligned with NASA's efforts to reduce the impact of sonic booms.
NASA is developing the X-59 supersonic aircraft, which is designed to create a much quieter sonic boom, referred to as a "sonic thump." The X-59's unique shape—a long, sleek design with a narrow wingspan—helps minimize noise. NASA's goal is for the X-59's sonic boom to sound like the closing of a car door, a far less disruptive noise compared to the traditional sonic boom. Once the X-59 is tested in flight, NASA will fly it over several U.S. cities to measure how the sonic thump affects people on the ground. If the test results show that the sonic thump does not disturb daily life, the FAA may reconsider its rules about supersonic travel over land. However, any regulatory changes are unlikely before 2027. Please read the full article here.

Nickel/Cobalt & Stainless-Steel Flat Rolled Surcharges

--	Aug '24	Sept '24	Oct '24	Nov '24	Dec '24	Jan '25	Feb '25
15-5	0.8851	0.8477	0.8573	0.9018	0.8631	*	*
17-4	0.8976	0.8599	0.8696	0.9145	0.8758	*	*
17-7	0.8844	0.8502	0.8588	0.9075	0.8558	*	*
201	0.6435	0.6271	0.6304	0.6588	0.6312	*	*
301 7.0%	0.8619	0.8292	0.8374	0.8847	0.8354	*	*
302/304/304L	0.9453	0.9079	0.9173	0.9700	0.9136	*	*
304-8.5%	0.9805	0.9409	0.9509	1.0060	0.9461	*	*
305	1.2336	1.1776	1.1917	1.2650	1.1804	*	*
309	1.2791	1.2231	1.2372	1.3111	1.2636	*	*
310	1.7984	1.7097	1.7320	1.8420	1.7452	*	*
316/316L	1.5340	1.4536	1.4681	1.5377	1.4706	*	*
321	1.0025	0.9605	0.9711	1.0286	0.9652	*	*
347	1.3121	1.2701	1.2807	1.3382	1.2748	*	*
409/409 Mod	0.2872	0.2872	0.2872	0.2975	0.2975	*	*
410/410S	0.2972	0.2972	0.2972	0.3077	0.3448	*	*
430	0.3556	0.3556	0.3556	0.3668	0.3668	*	*
439	0.3683	0.3683	0.3683	0.3796	0.3796	*	*
263	7.7369	8.1174	7.4431	7.0858	6.8385	6.5253	6.7060
276	9.0886	9.9294	9.5647	9.1005	8.7629	8.8223	9.1071
A286	2.4877	2.7088	2.4501	2.2944	2.2537	2.2435	2.3476
600	6.0009	6.5626	5.7464	5.0647	5.2362	5.1826	5.4655
601	4.9957	5.4508	4.8029	4.4458	4.3988	4.3564	4.5838
617	8.0628	8.6323	7.9955	7.5783	7.3297	7.1742	7.4113
625	8.9518	9.6282	9.0710	8.6425	8.4413	8.4504	8.7179
718	7.7691	8.2477	7.7123	7.3737	7.2765	7.2582	7.4725
X-750	6.4162	6.9448	6.1772	5.7535	5.6978	5.6475	5.9138
800	2.7505	2.9928	2.6548	2.4714	2.4473	2.4255	2.5480
825	4.2785	4.6712	4.2831	4.0233	3.9281	3.9242	4.0926
Alloy X	6.1674	6.7538	6.3432	5.9894	5.7883	5.8009	6.0216
188	8.5847	8.3965	8.0026	7.8815	7.6273	6.8786	6.8581
L-605	8.6954	8.3402	7.9910	7.9367	7.6366	6.7280	6.6430

*Surcharge currently not available

Thin Gauge Stainless Steel and Nickel Alloy Surcharges

--	Sept '24	Oct '24	Nov '24	Dec '24	Jan '25	Feb '25
301 7%	.9950	1.0048	1.0616	1.0025	*	*
302/304/304L	1.0894	1.1007	1.1640	1.0963	*	*
304 8.5%	1.1290	1.1410	1.2072	1.0963	*	*
305	1.4131	1.4300	1.5180	1.4165	*	*
316L	1.7443	1.7617	1.8452	1.7647	*	*
321	1.1525	1.1652	1.2343	1.1583	*	*
347	1.5240	1.5367	1.6058	1.5298	*	*
201	9.8935	8.5862	7.8636	7.7684	7.6826	8.1289
600	7.8751	6.8957	6.3546	6.2835	6.2191	6.5586
625	11.5539	10.8853	10.3711	10.1296	10.1405	10.4615
625LCF	11.5539	10.8853	10.3711	10.1296	10.1405	10.4615
718	9.8972	9.2548	8.8485	8.7319	8.7099	8.9671
Alloy X	9.7410	7.6118	8.5030	6.9459	6.9610	7.2259
X750	8.3337	7.4126	6.9042	6.8373	6.7770	7.0965

*Surcharge currently not available

Nickel/Cobalt & Stainless-Steel Bar Surcharges

	Jul '24	Aug '24	Sep '24	Oct '24	Nov '24	Dec '24
316LS/316LVM	2.49	2.43	2.37	2.33	2.39	2.27
Custom 455	1.35	1.35	1.35	1.32	1.39	1.32
Custom 465	1.97	1.98	1.98	1.97	2.09	2.01
Custom 630	1.03	1.01	0.99	0.95	0.96	0.91
CCM	10.96	10.88	10.82	10.45	10.39	10.05
625	9.79	9.62	9.52	9.51	9.96	9.53
718	7.29	7.15	7.13	7.10	7.49	7.13
718CR	7.29	7.15	7.13	7.10	7.49	7.13
A286	3.55	3.50	3.50	3.48	3.68	3.50
A2861	3.55	3.50	3.50	3.48	3.68	3.50
A2862	3.55	3.50	3.50	3.48	3.68	3.50
A2867	3.55	3.50	3.50	3.48	3.68	3.50
A286R1	3.55	3.50	3.50	3.48	3.68	3.50
A286SH	3.55	3.50	3.50	3.48	3.68	3.50
Alloy X	8.14	8.03	7.91	7.91	8.27	7.94
Wasp6	8.99	8.76	8.73	8.61	8.92	8.45
L605	11.87	11.60	11.42	11.33	11.30	10.98
321	1.51	1.46	1.45	1.39	1.43	1.33
347	1.51	1.47	1.46	1.40	1.43	1.34
Greek Ascoloy	1.41	1.38	1.33	1.34	1.34	1.31

*Surcharge currently not available

Titanium Surcharges

Form	Grade	Q1 2024 Surcharge	Q2 2024 Surcharge	Q3 2024 Surcharge	Q4 2024 Surcharge
TI - SHEET	6AL4V	8.23	7.82	6.36	5.67
TI - PLATE	6AL4V	8.08	6.52	5.30	4.72
TI - PLATE	6AL4VE	7.28	4.18	3.62	3.38
TI - COIL	GR 2	8.70	8.92	8.92	8.92
TI - COIL	GR 3	8.70	8.92	8.92	8.92
TI - COIL	GR 4	8.70	8.92	8.92	8.92
TI - SHEET	GR 2	8.70	8.92	8.92	8.92
TI - SHEET	GR 3	8.70	8.92	8.92	8.92
TI - SHEET	GR 4	8.70	8.92	8.92	8.92
TI - BAR	6AL4V	5.45	8.09**	7.76**	7.35
TI - BAR	6AL4VE	5.45	8.09**	7.76**	7.35

*Surcharge currently not available
** Updated to correct processing error when first published

GE, Boeing, and NASA Will Model Concept Engine Performance

GE Aerospace is coordinating its development of an energy-efficient jet engine into research with Boeing, NASA, and Oak Ridge National Laboratory, to model its performance and evaluate the results. The U.S. Dept. of Energy awarded 840,000 supercomputing hours to the Open Fan engine research project through its INCITE program, which provides "computationally intensive" resources to independent research efforts.

An "open fan" (or "open rotor") engine involves a large, counter-rotating fan operating without a surrounding duct or nacelle, which allows a higher bypass ratio and theoretically improved fuel efficiency compared to a turbofan engine design.

GE's Open Fan is said to be the "most promising" technology developed by GE's CFM International joint venture through its Revolutionary Innovation for Sustainable Engines (RISE) technology demonstration program, the focus of which is developing advanced engine architectures, compact core, and hybrid electric systems that are compatible with 100% sustainable aviation fuel.

Last summer, the other partner in CFM, Safran Aircraft Engines, conducted wind-tunnel tests of the Open Fan design with French aerospace research agency ONERA, to demonstrate its aerodynamic and acoustic performance of Open Fan designs. The GE/Boeing/NASA team research plan is to replicate a full-size Open Fan engine as installed for a Boeing commercial jet, simulate actual effects of flight, and evaluate the engine performance using supercomputing resources made available by DOE. The researchers will have the use of the world's second- and third-fastest supercomputers – Aurora at Argonne National Laboratory, and Frontier at Oak Ridge National Laboratory – each one capable of more than a quintillion calculations per second.

"Advanced supercomputing capability is a key breakthrough enabling the revolutionary Open Fan engine design," stated Arjan Hegeman, general manager for future of flight technology at GE Aerospace. "Airplane integration is critical." GE Aerospace engineers have previously used exascale computing to model Open Fan engine components' performance and noise levels. Now, they will be able to study the engine's aerodynamics and optimize the design for additional efficiency, noise levels, and other performance benefits.

Replicating a full-size integrated engine and airplane in the design phase would be impossible without the computational power of the newest supercomputing machines. Please read the full article here.

Spirit Airlines Files for Bankruptcy Protection, Promises to Keep Flying

Spirit Airlines (Spirit), a US budget carrier, has filed for Chapter 11 bankruptcy protection after accumulating over US$2.5 billion in losses since 2020, REUTERS has reported. Despite its financial struggles, the airline has assured customers that operations will continue without disruption, including ticket bookings and loyalty programmes.

The airline announced a "restructuring support agreement" backed by a supermajority of its bondholders to reduce debt, enhance financial flexibility and invest in passenger experience. Spirit aims to emerge from this process, which it expects to complete by the first quarter of 2025, better positioned for long-term success.

The bankruptcy filing follows failed merger attempts, declining stock value, and reduced income amid higher operational expenses. To facilitate the restructuring, Spirit said that it had reached a deal with bondholders for US$350 million in equity and that noteholders will swap US$795 million for equity. An additional US$300 million debtor-in-possession funding, combined with Spirit's cash reserves, will support the airline during this period.

Ted Christie, Spirit's president and CEO, expressed optimism, highlighting the bondholders' confidence in the airline's recovery plan and the dedication of Spirit's workforce. The airline emphasized that the bankruptcy process will not affect employee or vendor wages and benefits.

While Spirit expects to be delisted from the New York Stock Exchange in the near future, it remains committed to delivering value to its customers and cited examples of other airlines successfully navigating similar bankruptcy processes. Please read the full article here.

SpaceX Launches Sixth Starship But Aborts Booster Landing

SpaceX launched its Starship vehicle on its sixth test flight Nov. 19 but called off a planned landing of the Super Heavy booster back at the launch site. The Starship/Super Heavy vehicle lifted off at 5 p.m. Eastern from SpaceX's Starbase test site at Boca Chica, Texas. Liftoff took place at the opening of a 30-minute launch window with no problems reported during the countdown. Among the guests at the launch was President-elect Donald Trump, who has maintained close ties with SpaceX Chief Executive Elon Musk since the election two weeks ago.

The Super Heavy booster, known as Booster 13, separated from the Starship upper stage about two minutes and 45 seconds after liftoff. The booster started its return to the launch site, but, a little more than a minute later, controllers announced "booster offshore divert," meaning that the booster would not return to the launch pad.

SpaceX didn't specify the condition with the booster that required it to divert. Instead, the booster made a powered "landing" in the Gulf of Mexico just offshore of the launch site, tipping over and exploding seconds later. It was at least a minor setback for SpaceX after the company was able to successfully "catch" the booster back at the launch tower on the previous launch Oct. 13. The booster, though, did successfully put the Starship upper stage, known as Ship 31, onto a suborbital trajectory. During its time in space, SpaceX briefly reignited one of the vehicle's Raptor engines, a test of that capability needed for deorbit burns on later missions. Starship then performed a reentry over the Indian Ocean. Before the flight, the company said it was changing the reentry profile, "purposefully stressing the limits of flap control" among other changes, and also was using an older version of the thermal protection system than the previous flight.

"Do not be surprised if this is not a smooth flight to splashdown today. We are intentionally looking for how far we can push and discover the vehicle's true limits as we plan for future ship return and catch," Kate Tice, one of the hosts of the SpaceX webcast, said. SpaceX plans to eventually return Starship to the launch site with a catch like that used for the Super Heavy booster.

Starship made it through reentry intact, although with some apparent damage to a flap and other parts of the thermal protection system. Please read the full article here.

UPM Focus: 2024 in Review

As 2024 comes to a close, we at United Performance Metals would like to reflect on what was another successful year, filled with growth and new opportunities. The UPM team added many new team members in our pursuit to be the world's premier specialty metals solutions center, as well as new capabilities. We tackled new challenges head on, often dealing with uneasy market climates. Reflecting on this year, several key developments made this year different than years past.

Despite the many challenges faced by the aerospace industry in 2024, UPM has been resilient. One of the major updates for our company, as highlighted by our last focus story, is the moving of our thin-gauge Portland, CT facility to Wallingford, CT. Patrick Robb, Operations Manager in Wallingford, is excited that the thin-gauge facility is fully operational, with newer, safer equipment. Check out UPM's thin-gauge capabilities here.

Another important development for UPM is the addition of metal powders to the UPM Additive Solutions array of products. Currently, UPM Additive stocks stainless steel grade 316, and nickel grades 625 and 718. The addition of powder to UPM Additive Solutions was a pivotal move, essential to our Additive Solutions team's goal to be a one-stop shop for any additive manufacturing needs. Max Sweeney and Joash Sutherland, Program Planners, are both excited for what adding powders will mean for the future of UPM Additive. Coming off of Formnext 2024, UPM Additive is poised for another successful year in 2025. To learn about Additive's offerings, please click here.

Lastly, 2024 was a year filled with tradeshows. United Performance Metals exhibited at several tradeshows that focused on the additive, medical, aerospace, and manufacturing industries. To promote our global brand as a premier specialty metals solutions center, we were present at both domestic and international shows, including Formnext, Farnborough Air Show, Space Tech, AIAC Canada, and many more. Developing relationships with customers and reaching out to those who may need our services is incredibly important. When UPM exhibits at tradeshows, you will see a smiling face in our booth waiting to greet you and discuss how we can provide solutions for your needs. As 2024 ends, we'd like to thank you for keeping up with us throughout the year. We are primed and ready for 2025. Whether in aerospace, medical, additive manufacturing, or any industry we serve, our mission remains the same: to deliver exceptional materials and solutions that help our customers achieve their goals.