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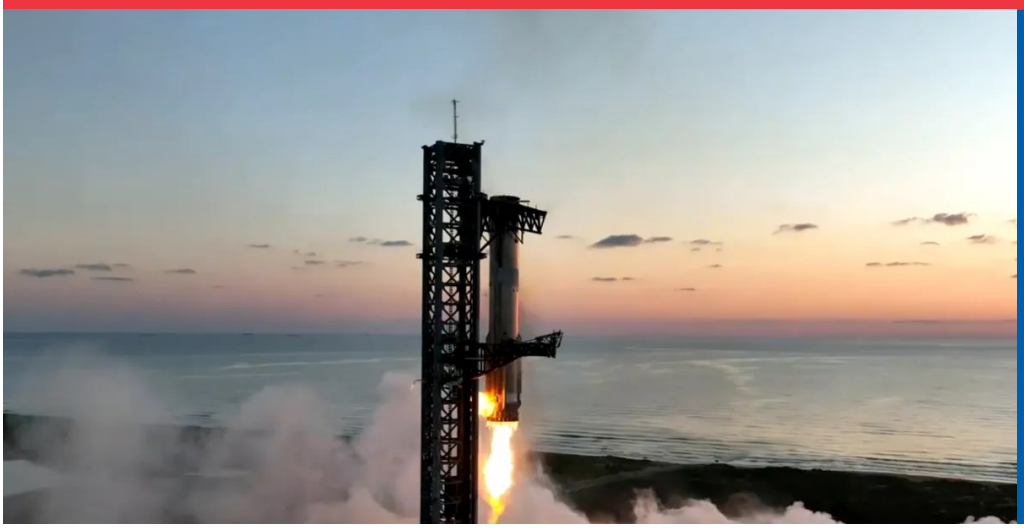

INSIDE THIS ISSUE

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SpaceX Launches Fifth Starship, Catches Super Heavy Booster

SpaceX launched its fifth Starship vehicle Oct. 13, successfully making an unprecedented “catch” of its Super Heavy booster back at the launch site. The Starship/Super Heavy vehicle lifted off from the company’s Starbase site at Boca Chica, Texas, at 8:25 a.m. Eastern on a mission called Flight 5 by SpaceX. The main upgrade for this test was an attempt by SpaceX to recover the Super Heavy booster by having it come back to the launch site, where it would be cradled by two mechanical arms, sometimes called “chopsticks,” attached to the launch tower it lifted off from. That required the booster to perform precise boost back and landing burns to guide the stage back to the launch pad.

The Super Heavy booster, known as Booster 12, achieved that feat. The booster descended over the pad and the two arms closed around the top of the booster, just below the grid fins, about seven minutes after liftoff, achieving the desired catch of the booster. Achieving the launch pad return and landing is critical to SpaceX’s long-term ambitions for rapid reflight of the vehicle. In the company’s vision, the landed booster could be rapidly turned around on the pad, with a Starship attached for its next flight within days or even hours. The success of the catch appeared to take even company leaders by surprise. “I don’t know what to say!” posted Gwynne Shotwell, president and chief operating officer of the company, on social media, attaching a video of the landing.

Before the launch, though, Bill Gerstenmaier, vice president of build and flight reliability, was optimistic about the catch attempt. “We landed with half a centimeter accuracy in the ocean” on the previous flight, he said at an Oct. 9 meeting of the National Academies’ Committee on Biological and Physical Sciences in Space, “so we think we have a reasonable chance to go back to the tower.” The Starship vehicle, Ship 30, flew on a suborbital trajectory similar to the previous flight in June, reaching a peak altitude of 212 kilometers. The vehicle appeared to survive reentry in better condition than on that previous flight; SpaceX noted it made changes to Starship’s heatshield. The vehicle made a powered ocean “landing” in the Indian Ocean nearly 66 minutes after liftoff, with the vehicle, not intended to be recovered, exploding several seconds after splashing down.

“Ship landed precisely on target!” Elon Musk, chief executive of SpaceX, posted minutes after the landing. “Second of the two objectives achieved.” The launch took place less than 24 hours after the Federal Aviation Administration issued a revised launch license for the mission, the subject of controversy over the last month after SpaceX complained it had been informed by the FAA that the updated license would not be ready until late November. The license required revisions to an environmental assessment because of changes in the flight profile, including a larger area where the interstage ring, also called a forward heat shield in FAA documents, might be dropped in the Gulf of Mexico as well as a sonic boom analysis for the returning Super Heavy booster. That environmental analysis, signed and published a few hours before the license was granted, concluded “no structural damage or significant impacts to third-party structures is anticipated” from sonic booms. “No adverse impacts to biological resources in the Gulf of Mexico are anticipated as a result of the proposed change to the forward heat shield landing location,” it stated. Read the full article here.

Nickel/Cobalt & Stainless-Steel Flat Rolled Surcharges

--	Jul '24	Aug '24	Sept '24	Oct '24	Nov '24	Dec '24	Jan '25
15-5	0.9410	0.8851	0.8477	0.8573	0.9018	*	*
17-4	0.9540	0.8976	0.8599	0.8696	0.9145	*	*
17-7	0.9570	0.8844	0.8502	0.8588	0.9075	*	*
201	0.6762	0.6435	0.6271	0.6304	0.6588	*	*
301 7.0%	0.9319	0.8619	0.8292	0.8374	0.8847	*	*
302/304/304L	1.0253	0.9453	0.9079	0.9173	0.9700	*	*
304-8.5%	1.0656	0.9805	0.9409	0.9509	1.0060	*	*
305	1.3537	1.2336	1.1776	1.1917	1.2650	*	*
309	1.3992	1.2791	1.2231	1.2372	1.3111	*	*
310	1.9885	1.7984	1.7097	1.7320	1.8420	*	*
316/316L	1.6406	1.5340	1.4536	1.4681	1.5377	*	*
321	1.0926	1.0025	0.9605	0.9711	1.0286	*	*
347	1.4022	1.3121	1.2701	1.2807	1.3382	*	*
409/409 Mod	0.2872	0.2872	0.2872	0.2872	0.2975	*	*
410/410S	0.2972	0.2972	0.2972	0.2972	0.3077	*	*
430	0.3556	0.3556	0.3556	0.3556	0.3668	*	*
439	0.3683	0.3683	0.3683	0.3683	0.3796	*	*
263	7.5222	7.7369	8.1174	7.4431	7.0858	6.8385	6.5253
276	8.8325	9.0886	9.9294	9.5647	9.1005	8.7629	8.8223
A286	2.3887	2.4877	2.7088	2.4501	2.2944	2.2537	2.2435
600	5.7004	6.0009	6.5626	5.7464	5.0647	5.2362	5.1826
601	4.7578	4.9957	5.4508	4.8029	4.4458	4.3988	4.3564
617	7.8179	8.0628	8.6323	7.9955	7.5783	7.3297	7.1742
625	8.7005	8.9518	9.6282	9.0710	8.6425	8.4413	8.4504
718	7.5559	7.7691	8.2477	7.7123	7.3737	7.2765	7.2582
X-750	6.1339	6.4162	6.9448	6.1772	5.7535	5.6978	5.6475
800	2.6283	2.7505	2.9928	2.6548	2.4714	2.4473	2.4255
825	4.1142	4.2785	4.6712	4.2831	4.0233	3.9281	3.9242
Alloy X	5.9659	6.1674	6.7538	6.3432	5.9894	5.7883	5.8009
188	8.4554	8.5847	8.3965	8.0026	7.8815	7.6273	6.8786
L-605	8.6063	8.6954	8.3402	7.9910	7.9367	7.6366	6.7280

*Surcharge currently not available

Thin Gauge Stainless Steel and Nickel Alloy Surcharges

--	Aug '24	Sept '24	Oct '24	Nov '24	Dec '24	Jan '25
301 7%	1.0342	.9950	1.0048	1.0616	*	*
302/304/304L	1.1343	1.0894	1.1007	1.1640	*	*
304 8.5%	1.1766	1.1290	1.1410	1.2072	*	*
305	1.4803	1.4131	1.4300	1.5180	*	*
316L	1.8408	1.7443	1.7617	1.8452	*	*
321	1.2029	1.1525	1.1652	1.2343	*	*
347	1.5744	1.5240	1.5367	1.6058	*	*
201	9.0187	9.8935	8.5862	7.8636	7.7684	7.6826
600	7.2011	7.8751	6.8957	6.3546	6.2835	6.2191
625	10.7422	11.5539	10.8853	10.3711	10.1296	10.1405
625LCF	10.7422	11.5539	10.8853	10.3711	10.1296	10.1405
718	9.3229	9.8972	9.2548	8.8485	8.7319	8.7099
Alloy X	7.4009	9.7410	7.6118	8.5030	6.9459	6.9610
X750	7.6994	8.3337	7.4126	6.9042	6.8373	6.7770

*Surcharge currently not available

Nickel/Cobalt & Stainless-Steel Bar Surcharges

	Jun '24	Jul '24	Aug '24	Sep '24	Oct '24	Nov '24
316LS/316LVM	2.62	2.49	2.43	2.37	2.33	2.39
Custom 455	1.48	1.35	1.35	1.35	1.32	1.39
Custom 465	2.11	1.97	1.98	1.98	1.97	2.09
Custom 630	1.11	1.03	1.01	0.99	0.95	0.96
CCM	11.04	10.96	10.88	10.82	10.45	10.39
625	10.39	9.79	9.62	9.52	9.51	9.96
718	7.89	7.29	7.15	7.13	7.10	7.49
718CR	7.89	7.29	7.15	7.13	7.10	7.49
A286	3.86	3.55	3.50	3.50	3.48	3.68
A2861	3.86	3.55	3.50	3.50	3.48	3.68
A2862	3.86	3.55	3.50	3.50	3.48	3.68
A2867	3.86	3.55	3.50	3.50	3.48	3.68
A286R1	3.86	3.55	3.50	3.50	3.48	3.68
A286SH	3.86	3.55	3.50	3.50	3.48	3.68
Alloy X	8.56	8.14	8.03	7.91	7.91	8.27
Wasp6	9.66	8.99	8.76	8.73	8.61	8.92
L605	11.84	11.87	11.60	11.42	11.33	11.30
321	1.66	1.51	1.46	1.45	1.39	1.43
347	1.66	1.51	1.47	1.46	1.40	1.43
Greek Ascoloy	1.39	1.41	1.38	1.33	1.34	1.34

*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

Boeing CEO Promises 'Fundamental' Culture Shift as Strike Vote Begins

The new boss of Boeing has pledged to "fundamentally" transform the culture inside the beleaguered aerospace giant, as its quarterly losses swelled to almost $6bn amid a sweeping strike. As thousands of workers vote on a new contract on Wednesday, raising the prospect of an end to the crippling industrial action which began almost six weeks ago, Boeing revealed the extent of the damage of a dire year on its business.

Core operating losses at the US firm rose to $5.99bn in the three months leading up to 30 September, up from $1.09bn in the same period last year. Revenues slipped 1% to $17.8bn. Kelly Ortberg, Boeing's CEO, outlined three key challenges it faces after high-profile safety crises and operational troubles: trust in the company has "eroded", it has too much debt, and "serious lapses" in performance have disappointed customers, he said.

About 33,000 Boeing workers in Washington and Oregon went on strike last month, halting production of the company's 737 Max, 767 and 777 jets amid a standoff over pay. A proposed deal – including a 35% wage increase – has been put to a vote, sparking hope that an end is in sight. The vote comes amid a tough year for Boeing. January's cabin panel blowout during a flight of a brand new Max jet sparked a fresh crisis surrounding the safety and quality of its planes, as the group scrambled to tackle the concerns of regulators, airlines and passengers.

The company's defense business has also been under pressure, and a mission involving its Starliner spacecraft – which landed back on Earth in September without the two astronauts it carried to the International Space Station – raised questions about Boeing's troubled space business. "This is a big ship that will take some time to turn, but when it does, it has the capacity to be great again," Ortberg told Boeing's employees and shareholders on Wednesday. While pointing to potential opportunities for the firm, with a vast backlog of orders, he made clear that navigating its current woes would require a vast overhaul.

Executives need to be "closely integrated" with what is happening on the ground, he suggested. "We need to be on the factory floors, in the back shops and in our engineering labs," he wrote in a memo. "We need to know what's going on, not only with our products, but with our people. "And most importantly, we need to prevent the festering of issues and work better together to identify, fix, and understand root cause." As Boeing continues to grapple with heightened scrutiny, Ortberg invited workers and investors to judge him by the results of his measures, rather than his intentions, vowing to be "relentless" in shifting the Boeing culture "through action, not just words on a page". Please read the whole article here.

Northrop Aims to Double GMLRS Rocket-Motor Output

Northrop Grumman is preparing to pump out 14,000 rocket motors per year, roughly doubling production as the Pentagon works to replace weapons sent to Ukraine and rebuild stockpiles against future wars. Over the last four years, the defense giant delivered 5,000 to 6,000 solid rocket motors per year to power Lockheed Martin's Guided Multiple Launch Rocket System. But in the last year or two, demand is pushing Northrop to get to 10,000, potentially 14,000, motors per year, said Gordon LoPresti, senior director of propulsion systems and controls at Northrop.

"There's more work to be done to get to 14,000, but we've had excess capacity versus the 6,000 that we've been delivering, so we're already starting to be able to move up that curve and have a great partnership with both the U.S. government, our partners, and our primes, to be able to allow us to do that," LoPresti said on the sidelines of the AUSA conference.

Northrop builds solid rocket motors at facilities in West Virginia and Maryland, which concentrate on medium, tactical-sized solid rocket motors, and in Utah, which focuses on larger motors, like for the future Sentinel ICBM. Over the last six years, Northrop has spent a billion dollars to boost production capability at the three sites.

"With that six-year investment, we've been able to triple the capacity at the combination of the West Virginia and Maryland sites, so primarily for the tactical rocket motors, and we're on track, within the next couple of years, to be doubling the capacity at our Utah sites for the much larger items that we build," LoPresti said. Beyond Northrop's infrastructure, execs say they're investing in the entire supply chain to ensure smaller suppliers can keep up as the company increases its production cadence. Industry executives have previously pointed to gaps in sub-tier suppliers' ability to provide critical components, like cases, nozzles, and igniters . Please read the full article here.

GE Aerospace's Struggle with Supply Constraints Hits Jet Engine Deliveries

Global GE Aerospace said on Tuesday it was still wrestling with supply-chain constraints that have led to a decline in jet engine deliveries and are weighing on its revenue, sending its shares down 8%. The company said the constraints have impacted the shipments of engines for both narrowbody and widebody jets, leading to a decline in total engine deliveries in the September quarter from a year ago. The comments overshadowed an upgrade to its full-year profit outlook. Robert Stallard, an analyst with Vertical Research Partners, said the earnings report shows sales growth has eased in both commercial and defense businesses.

GE Aerospace now expects deliveries of LEAP engines, which power Airbus and Boeing narrowbody aircraft, to decline 10% this year from a year ago. In July, the company anticipated the deliveries to be flat to up 5% this year. CEO Larry Culp said the company's efforts to address supply-chain constraints have improved material output from the previous quarter, but added there was more work to do. "We have very strong demand across the industry," Culp said in an interview. "Both the airlines as they utilize existing fleets, (and) the air framers as they work to help the airlines expand those same fleets are pulling on us and others for more."

Fewer engine deliveries will likely compound the headache for airlines, which are spending billions on repairs to keep flying older, less fuel-efficient jets due to the shortage of newer aircraft. Airbus was compelled to lower its full-year jet delivery targets in June, blaming delays in deliveries of LEAP engines. Culp said the company has "a lot of work to do to keep pace" with the European plane maker's plan to raise output of its best-selling A320neo family to 75 jets a month.

He said upgrades to high-pressure turbine blades in LEAP-1A engines, which are used by Airbus, will help in that endeavor. The upgraded blades are expected to be certified "in a matter of weeks," Culp said. GE Aerospace said a strike by factory workers at Boeing has not had a "significant" impact thus far on its revenue, earnings and cash flows. The company has started shipping its 9X engines for the U.S. planemaker's new jet 777X. While Boeing has delayed the plane by a year, GE Aerospace said it expects to increase the deliveries for 9X engines next year. Culp, however, said the ramp-up rate would depend on Boeing's needs. Read the article here.

UPM Focus: Wallingford, CT Precision Re-Rolling Mill

United Performance Metals has long been committed to developing solutions for customers, including those outside our traditional capabilities. Recently, the company has taken yet another important stride in our journey to become the world's premier metals service center. In the past two years, UPM has moved its precision rerolling mill operations from Portland, CT to Wallingford, CT, a move spearheaded by our Thin Gauge General Manager Patrick Robb, to better serve our customers in need of thin gauge material. Prior to joining UPM in 2022, Robb worked at Ulbrich for 32 years, 15 of which were spent as the Director of Quality and Engineering. His experience at his former organization has poised Robb to lead UPM's Thin Gauge efforts. Our feature this month examines the ins and outs of precision re-rolling and what Robb and the UPM Wallingford team do!

Now, what exactly is precision rerolling? Precision rerolling is a specialized process in metal manufacturing where metal strips or coils are passed through a series of rolling mills to achieve extremely tight tolerances and specific mechanical properties. This process is essential for producing high-quality, uniform metal products used in various demanding applications. "Reroll mills provide a product and service that integrated mills can't. These mills can produce material at tolerances that are tighter, meaning they have more precise thicknesses, widths, and tensile properties," Robb said.

At the rerolling mill in Wallingford, Robb mentioned three distinct processes that are conducted: Cold Rolling, Annealing, and Slitting. "Cold Rolling is a work hardening process used to change the structure of the material being rolled. It strengthens the metal, improves corrosion resistance, surface finish, and dimensional tolerances. If the material needs to be made thinner but can no longer be rolled, we anneal it by putting it into our furnace and heating it to temperatures up to 2200 °F. Once the microstructure of the material is reset by annealing, we can roll the material again and make it even thinner. Lastly, depending on customer specifications, we can slit the material using circular knives, which is often done to separate wide strips of material into narrow strips," said Robb. Material handled by our Wallingford rerolling mill includes a number of stainless steel grades, nickel, and cobalt alloys.

When asked about the move from Portland to Wallingford, Robb was enthusiastic about the move and the new machinery. The primary industries that UPM Wallingford serves include automotive, aerospace, and medical. If you'd like to learn how UPM's precision rerolling mill could be a solution for you, please click here.