



Weekly Precious Metals News Articles: January 7, 2022

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Below is a cross section of relevant news article to the world of Precious Metals:

Markets, Supply & Demand, Investment, and Industrial Applications.

Printable PDF version attached. Enjoy-

Gold

- **Gold, silver hit hard by rally in USDX, higher U.S. Treasury yields**
 - Gold and silver futures prices are sharply lower and near daily lows in midday U.S. dealings on this first trading day of 2022. Bearish daily elements that include a solidly higher U.S. dollar index sharply rising U.S. Treasury yields today are negatives for the precious metals. Also, mostly higher stock indexes Monday suggest still-scant trader and investor risk aversion in the marketplace at present—and that's bearish for the safe-haven metals. February gold futures were last down \$29.60 at \$1,799.00 and March Comex silver was last down \$0.487 at \$22.87 an ounce.
<https://www.kitco.com/news/2022-01-03/Gold-silver-hit-hard-by-rally-in-USDX-higher-U-S-Treasury-yields.html?>
- **Minutes reveal interest rate hikes are coming sooner and at a faster velocity**
 - In an interview with MarketWatch, Brien Lundin, editor of Gold Newsletter said that “The Fed minutes were hawkish, showing greater concerns that inflation would be persistent and generally indicating an accelerated schedule for rate hikes. Thus, they were bearish for gold, as confirmed by the immediate market reaction in the gold price.”
 - The price decline in multiple financial asset sectors such as stocks, gold, and silver reacted quickly as the statement revealed a more hawkish Federal Reserve. The new addendum showed a major change in their monetary policy.
<https://www.kitco.com/commentaries/2022-01-05/Minutes-reveal-interest-rate-hikes-are-coming-sooner-and-at-a-faster-velocity.html>
- **U.S. Mint sees strongest gold coin sales in 12 years, sells 1.25 million ounces in 2021**
 - Despite gold's uninspiring performance in 2021, the precious metal saw an impressive wave of physical demand throughout the year. Updated sales data released from the U.S. Mint on Monday showed demand for physical gold hitting its highest level since 2009. The U.S. Mint said that in 2021 it sold more than 1.25 million ounces of gold in various denominations of its American Eagle gold coins, up more than 48% from last year.
<https://www.kitco.com/news/2022-01-04/U-S-Mint-sees-strongest-gold-coin-sales-in-12-years-sells-1-25-million-ounces-in-2021.html>
- **Gold Prices Start 2022 Down \$20 as Traders Bet on Rate Rises, Strong Commodities, Roaring Stocks**
 - "An unwinding in ultra-accommodative central bank policy will be most outright bearish for gold and silver prices over the course of 2022," reckons the annual outlook from US investment bank and major bullion market-maker J.P.Morgan.

- "[Yet] commodities are on pace to deliver the strongest year of returns since the early 2000s," it adds, pointing to "a constructive economic outlook, depleted inventory levels and supply still struggling to respond to resurgent demand" for energy, base metals and agricultural resources. <https://www.bullionvault.com/gold-news/gold-price-2022-01042022>

Semiconductor Related Articles (impacting Precious Metals electronics):

- **Chip executives see no short-term fix for shortage**
 - Most firms at a tech/auto forum did not see any improvement in the chip supply and demand balance before the middle of this year. <https://www.taipeitimes.com/News/biz/archives/2022/01/07/2003770882>
- **Global semiconductor industry forecasts for 2022**
 - Terry Tsao, global marketing officer and president of SEMI Taiwan, said in Semicon Taiwan on December 28 that investments related to compound semiconductor wafer manufacturing is expected to grow 20% to reach a historical high at US\$7 billion in 2021, and is anticipated to grow further to US\$8.5 billion in 2022.
 - World Semiconductor Trade Statistics (WSTS) also has predicted that the global semiconductor market is projected to grow by 8.8 percent in 2022, to US\$ 601 billion, driven by double-digit growth of the sensors and logic category. All regions and all product categories are expected to continue positive growth. <https://www.digitimes.com/news/a20211229VL205.html>
- **Chip sales are set to grow nearly 10% in 2022 under a riskier backdrop**
 - Chipmakers have been clear winners in the pandemic era, and the momentum in the semiconductor space is set to remain strong going into 2022. Semiconductor sales are expected to grow by another 9% and cross \$600 billion for the first time in 2022.
 - Chipmakers are set to face risk such as demand normalization after a two-year boom in hardware sales, as well as an increasing frequency of "unusually adverse climatic events." <https://www.cnbc.com/2022/01/03/chip-sales-are-set-to-grow-nearly-10percent-in-2022-under-a-riskier-backdrop-report.html>
- **Global Semiconductor Sales Increase 23.5% Year-to-Year in November; Industry Establishes Annual Record for Number of Semiconductors Sold**
 - The SIA announced global semiconductor industry sales were \$49.7 billion in the month of November 2021, +23.5% over the November 2020 and +1.5% than the October 2021. The cumulative annual total of semiconductors sold through November 2021 reached 1.05 trillion (units), which is the industry's highest-ever annual total.
- **Japan Has Big Plans For Chips**
 - The U.S. & China are spending billions on chip manufacturing, but don't forget about Japan. <https://www.bloomberg.com/news/newsletters/2022-01-04/japan-has-big-plans-for-chips>
- **Taiwan's chip industry emerges as a battlefield in US-China showdown**
 - The country dominates production of chips used in almost all civilian and military technologies. That leaves the US and Chinese economies reliant on plants that would be in the line of fire in an attack on Taiwan. The vulnerability is stoking alarm in Washington <https://www.taipeitimes.com/News/editorials/archives/2022/01/01/2003770517>

Silver

- **The first trading day of 2022 results in strong declines in both gold and silver**
 - The combination of a strong performance in U.S. equities, U.S. dollar strength and rising interest rates vis-à-vis U.S. debt instruments pressured the precious metals lower across the board. Palladium had the largest percentage drawdown giving up 4.45% or \$85.10, with the most active futures contract currently fixed at \$1827. This puts the differential between gold and palladium

approximately \$26 apart. Silver lost 1.85% in trading today or \$0.43 taking the most active March Comex futures contract to \$22.92. Platinum also sustained a loss just over a full percentage point with the most active Comex contract currently fixed at \$954.90 a decline of 1.17%.

<https://www.kitco.com/commentaries/2022-01-03/The-first-trading-day-of-2022-results-in-strong-declines-in-both-gold-and-silver.html?>

- **Silver demand reaches six-year high**
 - ALL key areas of silver demand are expected to have risen in 2021 and hit a new record of 1.029 billion ounces, according to a Silver Institute projection.
<https://www.miningnews.net/research/news/1424057/silver-demand-reaches-six-year-high>
- **US developers added nearly 10 GW of utility-scale PV in first 10 months of 2021**
 - US solar developers built almost 10 GW of new utility-scale solar in the United States in the first 10 months of last year, which is a record for that time frame.
 - The 10 GW of new utility-scale solar reported by FERC for the first 10 months of 2021 is the most ever added in the United States in a 10-month period and is considerably higher than the 6.516 GW added during the same time period in 2020, or the 3.758 GW added in 2019.
<https://www.pv-magazine.com/2022/01/06/us-developers-added-nearly-10-gw-of-utility-scale-pv-in-first-10-months-of-2021/>
- **Brazil tops 13GW of installed PV capacity**
 - The country installed around 3GW of new PV systems in the fourth quarter of 2021 alone. Around 8.4GW of the current PV capacity is represented by solar installations not exceeding 5MW in size, and operating under net metering.
<https://www.pv-magazine.com/2022/01/06/brazil-tops-13gw-of-installed-pv-capacity/>
- **Higher PV module prices may point to stable demand and more sustainable pricing trends**
 - Sharply rising PV module prices were one of the most notable developments in global solar markets in 2021. And while it dampened PV installations, with some projects delayed or canceled, the higher prices may point to a future where robust and stable demand leads to more sustainable pricing trends. *Matt: All time module lows of \$0.21/watt are projected to reach \$0.36/watt in Q4'21.*
<https://www.pv-magazine.com/2022/01/06/brazil-tops-13gw-of-installed-pv-capacity/>

Precious Metals Mining:

- **Zimbabwe makes inroads towards US\$12bn mining sector**
 - The Government of Zimbabwe and private sector players in the mining industry are resolute in their commitments towards achieving the US\$12 billion by 2023.
 - \$4 billion gold, \$3 billion platinum; \$1 billion diamonds; \$1 billion coal; \$1 billion chrome; ferrochrome and carbon steel, \$0.5 billion lithium, and \$1,5 billion from other minerals.
<https://www.thezimbabwemail.com/business/zimbabwe-makes-inroads-towards-us12bn-mining-sector/>
- **Gold streaming deal floats \$240M to Marathon mine developer**
 - Generation Mining strikes financing agreement with Wheaton Precious Metals for Marathon mine construction cash
<https://www.northernontariobusiness.com/industry-news/mining/gold-streaming-deal-floats-240m-to-marathon-mine-developer-4915946>
- **Gold Mining Bull: Top News Of 2021**
 - The miner underperformance doesn't come as much of a surprise: miners are leveraged to the metal, and every 1% gain or loss in the metal's value tends to lead to a 3% to 4% gain or loss in the mining shares. However, things are looking bright for gold miners entering 2022. Gold prices are trading at \$1,800/oz, well above the industry's all-in costs average (\$1,100/oz), and M&A is heating up with more than \$30 billion M&A activity in 2021 (and that momentum should continue in 2022).
<https://seekingalpha.com/article/4478140-gold-mining-bull-top-news-of-2021>

E-Waste & Precious Metals Recycle Related:

- **Royal Mint Announces Plans to Extract Precious Metals from Discarded Devices at Scale**
 - With Excir's approach, metals and other reusable materials can be distilled from e-waste devices at room temperature. Because of that, a Royal Mint spokeswoman said that the UK plans to use the Excir extraction method at a Royal Mint site in South Wales instead of having to ship e-waste off to European-based smelters. In light of recent complications to trade and other industrial service pipelines between Britain and Europe, this feature seems particularly attractive to British leaders looking for ways to streamline economic initiatives and lessen the burden of Brexit on their economy.
<https://www.usgoldbureau.com/news/royal-mint-extract-precious-metals>
- **High-silver lead concentrate set to diverge from standard-grade material: 2022 preview**
 - Silvery lead concentrate is expected to remain sought-after in 2022 with growing interest in the recovery of precious and minor metals from the smelting of lead, while its low-silver peers could face very different market fundamentals, multiple industry sources told Fastmarkets.
<https://www.metalbulletin.com/Article/4021694/Precious-metals/High-silver-lead-concentrate-set-to-diverge-from-standard-grade-material-2022-preview.html>
- **San Jose: Authorities announce arrests in large-scale catalytic converter theft operation**
 - Fifteen people were arrested on suspicion of crimes encompassing grand theft, receiving stolen property, possessing illegal weapons, and assault with a deadly weapon, according to San Jose California police. Most of those arrested are San Jose residents. Fourteen of those people had been charged as of Monday afternoon, prosecutors said.
 - Campbell resident Robert Charles Frank, 52, faced the most severe charges following an undercover investigation that led to the discovery of more than 1,500 catalytic converters, many bearing saw marks from presumably being cut out of cars, at his business, Green Metal Recycling in San Jose.
<https://www.msn.com/en-us/news/crime/san-jose-authorities-announce-arrests-in-large-scale-catalytic-converter-theft-operation/ar-AARMzYO?ocid=BingNewsSearch>
- **Recycle PV Solar and Solaris team up on PV recycling initiative**
 - With Solaris providing the logistics and supply chain expertise, Recycle PV Solar ramps up its efforts to tackle the problem of decommissioned solar panels in the U.S.
<https://pv-magazine-usa.com/2022/01/06/recycle-pv-solar-and-solaris-team-up-on-pv-recycling-initiative/>
- **The Economic Benefits Of Auto Recycling**
 - Edmund Schwenk, Metallurgist/CEO of PGM Recovery Systems, Inc., a US-based, automotive precious metals experts, provides an overview of the benefits that auto recycling can bring economically with a focus on these recycling processes of the current top four countries.
<https://autorecyclingworld.com/the-economic-benefits-of-auto-recycling/>

Platinum

- **California's heavy-duty omnibus regulation: Updates to emission standards, testing requirements, and compliance procedures**
 - The Omnibus regulation updates NOx and PM emission limits for heavy-duty vehicles starting in MY 2024 and updates them again for MY 2027 and 2031, ultimately leading to a 90% reduction in the NOx limit. In conjunction with these updates, in-use on-road testing protocols and evaluation are significantly revised to better simulate real-world conditions.
<https://theicct.org/publications/california-us-hdv-omnibus-reg-jan22>
- **Platinum catalyst may be the key to reducing methane emissions**
 - Researchers at Iowa State University, Purdue University and Johns Hopkins University have found and tested a catalyst technology that appears to be safe and efficient to keep methane out of the atmosphere and make use of the greenhouse gas.

- US-based researchers developed a catalyst that consists of one or two layers of platinum, each layer just an atom thick, deposited on two-dimensional metal carbide structures called “MXenes.” In this case, the structures are made from carbon, molybdenum and titanium.
<https://www.mining.com/platinum-catalyst-may-be-the-key-to-reducing-methane-emissions/>

Fuel Cells/Hydrogen Economy Related Articles:

- **No, Hyundai is not ending its love affair with hydrogen or ICEs**
 - An article by Korean news outlet Chosun Biz claimed that Hyundai had suspended R&D in 3rd generation hydrogen fuel cells due to technical problems and a lack of marketability.
 - That’s apparently not true; an unnamed Hyundai Motor official issued a statement today to the Korea Times refuting the claim: The H₂ FCEV project has not been halted but rather delayed, as it encountered some difficulties during R&D, but Hyundai has been and will continue to develop H₂ FCEVs.
 - The H₂ news was hot on the heels of the claim that Hyundai was closing down its Internal Combustion Engine R&D and moving the 12,000-odd staff to electric vehicle departments. Senior Group Manager at Hyundai Motor America, Michael Stewart, said: “Hyundai Motor Group can confirm that it is not halting the development of its engines following recent media speculation. The Group is dedicated to providing a strong portfolio of powertrains to global customers, including a combination of highly efficient engines and zero-emissions electric motors.”
<https://thenextweb.com/news/hyundai-is-not-ending-its-mission-to-make-hydrogen-fuel-cells-a-thing>
- **Nikola Motors to Pay \$125 million settlement**
 - Electric and fuel cell vehicle company Nikola Motors has agreed to pay the \$125 million demanded by the Security and Exchange Commission (SEC) to settle the charges it faced for defrauding its investors with a promotional video.
<https://www.hydrogenfuelnews.com/nikola-motors-news/8550600/>
- **Green Hydrogen: Drop In Bucket Or Big Splash?**
 - The company plans to have the proposed “Sinopec Xinjiang Kuqa Green Hydrogen Pilot Project” up and running by 2023, which will add 20,000 tons of annual output to the small but growing supply of sustainable hydrogen in the global economy.
<https://cleantechnica.com/2022/01/02/its-a-green-hydrogen-drop-in-the-bucket-but-it-could-still-make-a-splash/>
- **China Yuchai launches China’s first operating hydrogen engine for commercial vehicles**
 - China Yuchai International, a leading manufacturer and distributor of engines for on- and off-road applications in China through its main operating subsidiary, Guangxi Yuchai Machinery Company Limited (GYMCL), announced that the company’s YCK05 hydrogen-powered engine achieved stable ignition and operation in a recent demonstration at the Beijing Institute of Technology.
<https://www.greencarcongress.com/2022/01/20220102-yuchai.html>
- **Chile energy goal aims to rival China in green hydrogen**
 - In China, Sinopec announced that it was building a massive green hydrogen facility that would produce about 20,000 tons of renewable H₂ per year. That said, even before the ink from the deals in China had dried, Chile was already announcing its own new project called H₂ Magallanes. That project dwarfs the Chinese project, as it is slated to produce 880,000 tons per year in the South American country.
https://www.hydrogenfuelnews.com/green-hydrogen-h2-magallanes/8550698/?awt_a=1jpsU&awt_l=LvQic&awt_m=goZMD2kyLu5DIsU
- **Johnson Matthey launches HyCOgen, an enabling technology to efficiently convert CO₂ and green hydrogen into sustainable aviation fuel**

- HyCOgen, Johnson Matthey's Reverse Water Gas Shift technology, is a catalysed process to convert green hydrogen and CO₂ into carbon monoxide (CO), which is combined with additional hydrogen to form synthesis gas (syngas), a crucial building block in the manufacture of fuels and chemicals. The integration with the FT CANS technology provides an end to end, optimised and highly scalable process that turns over 95% of the CO₂ into high quality synthetic crude oil. This synthetic crude oil can be further upgraded into sustainable drop-in fuel products including aviation fuels, renewable diesel and naphtha.
- The scalability of the integrated HyCOgen/FT CANS solution enables cost-effective deployment across a wide range of project sizes fed by H₂ from a single electrolyser, through to world-scale with multiple large electrolyser modules.
<https://matthey.com/en/news/2022/hycogen>
- **Toyota's Fuel Cell EV Mirai Outsold Battery EVs By Most Brands In 2021**
 - In 2021 Toyota reported strong growth of its green-powertrain-equipped vehicles. Toyota reports that among its 583,697 green powertrain-equipped vehicles it sold in 2021 Mirai FCEV deliveries accounted for 2,229 units. That's a growth rate of over 400% in a year when most manufacturers' total deliveries dropped drastically
<https://www.torquenews.com/1083/toyota-s-fuel-cell-ev-mirai-outsold-battery-evs-nearly-all-brands-2021>

Palladium

- **Tiny palladium particles facilitate hydrogen storage**
 - The Hamburg Research Center German Electron Synchrotron has developed the basis H₂ storage in storage in tiny precious metal particles of palladium. It has long been known that this material sucks in hydrogen like a sponge, says Stierle, who adds: "However, until now it has been a problem to get the hydrogen out of the material again." Therefore, his team tried it with palladium particles only about 1.2 nanometers in. These tiny creatures were stabilized by a core made from the rare precious metal iridium. In addition, the researchers fixed them on a graphene foundation, an extremely thin layer of carbon. "We can anchor the palladium particles on graphene at intervals of just two and a half nanometers," says Stierle. "The result is a regular, periodic structure."
<https://marketresearchtelecast.com/tiny-palladium-particles-facilitate-hydrogen-storage/237382/>
- **Viewpoint: Chip Shortage To Pressure PGM Market In 2022**
 - Weak automotive demand, fuelled by the shortage in semiconductors, is likely to keep the pressure on PGM prices through 2022, as worries over uptake in catalytic converters continues to mount.
 - PGM prices in the second half of 2021 fell quickly before flatlining in November and December as the effects of the chip shortage on passenger vehicle production worsened. On 1 October-10 December, platinum prices fell by 2pc to \$954/toz from \$972/toz, while palladium prices dropped to \$1,813/toz from \$1,904/toz, with rhodium prices following a similar trajectory.
 - *Matt: Rh back up to \$18,000/Toz, Pt mounting a 20-day recovery, and Pd \$1966. Multiple reports of auto factories back at near full production. Not clear chip shortage is having the same impact as '21.*
<http://www.publicnow.com/view/C10731B24EA24A7BBD0F3901A7AF88D179F6FDEA>
- **China Daily: Hydrogen to play bigger role in green transition**
 - Hydrogen is expected to play a much larger role in China's decarbonization, especially in industries like steelmaking and aviation, where there are few clean energy alternatives, analysts said.
<http://www.chinadaily.com.cn/a/202201/05/WS61d4f445a310cdd39bc7f1e7.html>

PGM Minor Metals (Rhodium, Iridium, Ruthenium, Osmium)

- **Ruthenium: KR Awards AIP for Two Green Ammonia-fueled Vessels**

- The Korean Register (KR) awarded approval in principle to two green ammonia-fueled ships at KR's Seoul branch office on December 15, 2021. One of the ships is a 60,000m³ ammonia-fueled ammonia carrier and the other is a 38,000m³ ammonia carrier/bunkering ship, developed by Korea Shipbuilding & Offshore Engineering, Hyundai Heavy Industries and Hyundai Mipo Dockyard.
<https://www.marinelink.com/news/kr-awards-aip-two-green-ammoniafueled-493192>

Clean Energy General News

- **EU drafts plan to label gas and nuclear investments as green**
 - European Commission drawing up green investment rules
 - Draft proposal labels nuclear, some gas plants as green
 - Countries disagree on the fuels' green credentials
 - EU advisors said gas not compatible with climate goals
<https://www.reuters.com/markets/commodities/eu-drafts-plan-label-gas-nuclear-investments-green-2022-01-01/>
- **EU recognises green value of natural gas**
 - Natural gas is set to have a prominent role in the energy transition plans of a number of EU members including Germany, which is phasing out nuclear and coal in favour of gas and renewables, and Poland, which is looking to break its heavy dependence on coal. The EC's proposed changes to taxonomy will be negotiated by member states and the European Parliament.
<https://gaspipelines.com/eu-recognises-green-value-of-natural-gas-483>
- **Liquid air tech for long-duration, large scale storage in China**
 - Finland-headquartered Sumitomo SHI FW has entered a collaboration with China's Shanghai Power Equipment Research Institute to evaluate the feasibility of long-duration energy storage using liquefied air energy storage technology.
<https://www.pv-magazine.com/2022/01/06/liquid-air-tech-for-long-duration-large-scale-storage-in-china/>

BEV / LiB Battery Market News

- **Can a Tiny Territory in the South Pacific Power Tesla's Ambitions?**
 - *Matt: This NY Times piece is a deep dive into the ESG issues facing turning around this troubled Nickel Pig Iron asset using High Pressure Acid Leach processes correctly and managing the tailing appropriately. Next door in Papua New Genia and Indonesia, Chinese owned Ni mining interest are not trying very hard to manage environmental damage from similar mines. But Elon aims higher.*
<https://www.nytimes.com/2021/12/30/world/asia/tesla-batteries-nickel-new-caledonia.html>
- **China, world's largest EV market, to reduce subsidy on new energy vehicles**
 - China will cut subsidies on new energy vehicles (NEVs), such as electric cars, by 30% in 2022 and withdraw them all together at the end of the year, the Finance Ministry said on its website on Friday.
 - The ministry had said in April 2020 that NEV subsidies would be cut from 2020 to 2022 by 10%, 20% and 30%, respectively.
<https://auto.hindustantimes.com/auto/news/china-will-reduce-new-energy-vehicle-subsidies-by-30-this-year-41641024051565.html>
- **S. Korea's Battery Giants Forced to Increase Prices Due to Price Hike of Raw Materials from China**
https://www.theepochtimes.com/south-koreas-battery-giants-forced-to-increase-prices-due-to-price-hike-of-raw-materials-from-china_4188167.html
- **Li-Cycle To Recycle Battery Materials From LGES And Supply LG Chem And LG Energy Solution With 20,000 Tonnes Of Nickel Over 10 Years**
 - Upon the execution of the definitive agreement, Li-Cycle, through its end-product off-take partner for the Rochester Hub, Traxys North America LLC, will sell 20,000 tonnes of nickel contained in nickel sulphate produced by Li-Cycle to LGC and LGES over 10 years, beginning in 2023. Additionally, LGES and Li-Cycle intend to cooperate on recycling nickel-bearing lithium-ion battery scrap and certain

other lithium-ion battery materials to create a closed-loop ecosystem. Li-Cycle estimates that the amount of nickel that LGC and LGES plan to procure from Li-Cycle will be enough to produce lithium-ion batteries to power approximately 300,000 high-performing EVs.

<https://autorecyclingworld.com/li-cycle-to-recycle-battery-materials-from-lges-and-supply-lg-chem-and-lg-energy-solution-with-20000-tonnes-of-nickel-over-10-years/>

- **Japanese researchers find formula for fast-charging lithium-ion batteries**
 - A bio-based anode material for ultrafast battery charging. Poly (benzimidazole), the precursor for the proposed anode material, can be derived from biological processes and processed easily to create fast-charging lithium-ion batteries.
<https://www.mining.com/japanese-researchers-find-formula-for-fast-charging-lithium-ion-batteries/>
- **Tesla Model S Goes 752 Miles with a Prototype Battery from a Michigan Startup**
 - The original Tesla battery had a capacity of 103.9 kilowatt-hours, while the prototype ONE battery that replaced it in the same space has 207.3 kWh. CEO Ijaz confirmed to C/D that ONE used "a single pack retrofitted in the same space as the original battery." So it's far more energy-dense, but delivered consumption (in miles per kWh) roughly equal to that of the original battery.
 - *Matt: Typical NCM chemistry is 75kWh. Lower LFP uses more w/lower energy density. But 207kWh for a passenger BEV is huge. Perhaps not the great news the article touts.*
<https://www.caranddriver.com/news/a38668912/750-mile-ev-battery-michigan-startup-our-next-energy/>
- **Caterpillar unveils an all-electric 26-ton excavator with a giant 300 kWh battery pack**
 - Caterpillar, along with Pon Equipment, has unveiled an all-electric 26-ton excavator with a giant 300 kWh battery pack in an effort to electrify construction equipment. They built a prototype in Gjelleråsen, Norway for construction company Veidekke who plan to use 8 of them.
 - It is equipped with a giant 300 kWh battery pack, which they design to withstand a lot of rough movements. The result is a fairly heavy pack at 3.4 tons.
<https://electrek.co/2019/01/29/caterpillar-electric-excavator-giant-battery-pack/>
- **How high could lithium prices go?**
 - So, to put that in plain numbers, that's SpodCon prices of over US\$5000/t and BG lithium carbonate prices of over US\$60/kg in this cycle. That's compared to SpodCon prices now of US\$2360/t, China spot BG LC prices of US\$38.8/kg and contract prices around US\$20-25/kg. So, that's still quite a big increase from here, for all those cautioning that the lithium event is over.
<https://www.kitco.com/commentaries/2022-01-05/How-high-could-lithium-prices-go.html>

Regards –