

Noctiluca S.A.

FV: PLN 189.08

Update

Rating: N/A

On December 16, Noctiluca debuted on the main market of the Warsaw Stock Exchange with a valuation of PLN 129.4m (PLN 81.8 per share). We believe the company is very close to sign its first major joint development project (JDP) with an Asian client. While in our view the client specializes in inkjet printing (IJP) technology, the potential contract will open the door to further collaboration in other areas. Noctiluca's strategy of developing materials for both IJP and physical vapor deposition (PVD) techniques appears to be well-positioned for success. Moreover, we expect the signing of another JDP in 2025E. Given the increasingly positive outlook for OLEDs, especially printed OLEDs — where Noctiluca is a pioneer in materials — we have maintained our valuation of Noctiluca at PLN 189.08 per share.

Noctiluca's pipeline is progressing more slowly than anticipated due to the limited capacities of subcontractors, including Fraunhofer IAP, ITRI, and Kyung Hee University. This delay has directly impacted the Q3/24 results, which fell significantly short of expectations. On the positive side, the company optimized its costs at the end of Q3, resulting in a reduction of the monthly cash burn from PLN 650k to PLN 500k. For 2024E, we now forecast revenues of PLN 1.55m (previously PLN 3.23m), EBIT of PLN -6.24m (previously PLN -6.06m), and a net loss of PLN -6.48m (previously PLN -6.23m). Considering its current cash position and available credit lines, Noctiluca has sufficient resources to sustain operations for the next 12 months, even assuming no sales are generated during this period and no share issuance is conducted.

The OLED industry continues to thrive, as two Korean giants — LG and Samsung, the world's leading AMOLED panel producers — are either selling or closing their LCD factories to focus exclusively on OLED production. OLED technology has become the dominant technology for smartphones and is predicted to overtake LCD in TVs and monitors. Additionally, OLEDs have potential applications in various other industries, such as healthcare, automotive, and document security.

Company profile

Noctiluca S.A. is a Polish deep-tech material science company. The firm develops innovative materials for the OLED industry.

| | |
|---------------------|-----------------------------|
| Date of publication | 16 December 2024 / 11:00 am |
| Website | www.noctiluca.eu |
| Sector | Material Science |
| Country | Poland |
| ISIN | PLNCTLC00018 |
| Reuters | NCL.WA |
| Bloomberg | NCL.PW |

Share information

| | |
|-------------------------|--------------------|
| Last price | 81.80 |
| Number of shares (m) | 1.58 |
| Market cap. (PLNm) | 129.37 |
| Market cap. (EURm) | 30.28 |
| 52-weeks range | PLN 128 / PLN 75.1 |
| Average volume (shares) | 324 |

Performance

| | |
|----------|---------|
| 4-weeks | 2.25% |
| 13-weeks | -5.65% |
| 26-weeks | -16.19% |
| 52-weeks | -21.95% |
| YTD | -30.09% |

Shareholder structure

| | |
|---------------------------------|--------|
| Synthex Technologies Sp. z o.o | 32.15% |
| Mariusz Bosiak (CEO) | 6.32% |
| Polski Instytut Badań i Rozwoju | 6.13% |
| ASI ValueTech Seed | 6.13% |
| Free float | 49.27% |

Financial calendar

| | |
|---------------------------|-------------------|
| 2024 annual report (exp.) | 16 February, 2025 |
|---------------------------|-------------------|

Analyst

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| in PLNm | 2020 | 2021 | 2022 | 2023 | 2024E | 2025E |
|-------------------|---------|---------|----------|----------|----------|---------|
| Total revenue | 0.67 | 0.56 | 1.03 | 0.75 | 1.55 | 4.24 |
| EBITDA | -1.33 | -2.03 | -2.39 | -3.77 | -5.30 | -4.25 |
| EBIT | -1.35 | -2.34 | -2.81 | -5.17 | -6.24 | -4.99 |
| Net income / loss | -1.40 | -2.37 | -2.85 | -5.12 | -6.48 | -5.26 |
| EPS | -1.07 | -1.61 | -1.93 | -3.23 | -4.10 | -3.33 |
| DPS | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Dividend yield | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| ROE | -50.89% | -49.09% | -144.07% | -154.78% | 748.18% | -76.33% |
| Net gearing | -92.85% | -84.05% | -45.89% | -61.52% | -174.12% | -38.90% |
| EV/Sales | n.a | n.a | 125.57x | 172.05x | 83.70x | 30.60x |
| EV/EBITDA | n.a | n.a | neg | neg | neg | neg |
| P/E | n.a | n.a | neg | neg | neg | neg |

Results in 9M/2024

Revenues and Profitability

In 9M/2024, Noctiluca generated total revenues incl. change of inventories and manufactured products for own use of PLN 1.00m (+213.1% y-o-y). Net sales reached PLN 0.93m (+192.9% y-o-y), out of which PLN 744k came from sales of materials (proprietary and non-proprietary) and PLN 184k from R&D services. Operating expenses (OPEX) increased to PLN 6.57m (+31.4% y-o-y), resulting in a negative EBIT of PLN -4.99m (9M/23: PLN -3.99m) and net loss of PLN -5.14m (PLN -3.95m). Regarding costs, the company conducted a cost optimization in September 2024, suspending non-core projects. This should result in decreased expenditures for third-parties services, which were the largest OPEX in 9M/24 of PLN 3.03m (+57.8% y-o-y). Sales have been lower than we expected, due to bottlenecks in the material development process, that lies on the cooperation with NCL co-partners. However, after the next share issue, which we expect in H1/25E, the problem should be solved as the company wants to conduct certain tests on its own, thus becoming less reliant on third-party services.

Recently, Noctiluca has developed a groundbreaking new material, NCEIL-4, for the electron-injection layer (EIL) that integrates seamlessly into the OLED stack. Devices incorporating NCEIL-4 demonstrate up to 15 times the lifetime of those using the conventional electron-injection material, Liq. This breakthrough opens the door to a new class of products that can significantly enhance OLED performance and durability. Beyond its application as an EIL, NCEIL-4 can also be utilized to improve the electron transport layer (ETL), which represents the largest revenue share among OLED materials in certain panels.

Noctiluca is effectively advancing its strategic objectives by expanding into new industries. In Q3/24, the company initiated a collaborative project with a European gaming hardware producer and began exploring a potential partnership with an Austrian institute as a contract chemical research organization (cCRO). This initiative focuses on the application of its materials in the automotive sector.

| in PLNm | 9M/2024 | 9M/2023 | y-o-y change |
|--------------------------|----------------|-----------------|--------------|
| Net sales | 0.93 | 0.32 | 192.9% |
| Total revenue | 1.00 | 0.32 | 213.1% |
| Operating costs | -6.57 | -5.00 | 31.4% |
| EBITDA | -4.16 | -3.07 | 35.7% |
| <i>EBITDA margin</i> | <i>-418.1%</i> | <i>-965.1%</i> | |
| EBIT | -4.99 | -3.99 | 25.1% |
| <i>EBIT margin</i> | <i>-501.6%</i> | <i>-1255.3%</i> | |
| Net income / loss | -5.14 | -3.95 | 30.0% |
| <i>Net margin</i> | <i>-516.1%</i> | <i>-1243.0%</i> | |

Source: East Value Research GmbH, Noctiluca S.A.

| in PLNm | Q1/23 | Q2/23 | Q3/23 | Q4/23 | 2023 | Q1/24 | Q2/24 | Q3/24 | Q4/24E | 2024E |
|----------------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Total revenue | 0.001 | 0.04 | 0.28 | 0.44 | 0.75 | 0.31 | 0.34 | 0.35 | 0.55 | 1.55 |
| <i>y-o-y change</i> | -99.6% | -72.5% | -54.4% | -2680.2% | -27.0% | 24340.3% | 786.0% | 26.6% | 27.3% | 105.6% |
| EBITDA | -1.08 | -1.23 | -0.76 | -0.70 | -3.77 | -1.33 | -1.36 | -1.47 | -1.14 | -5.30 |
| <i>EBITDA margin</i> | -86400.0% | -3234.2% | -272.0% | -160.8% | -499.8% | -436.6% | -403.7% | -417.7% | -204.7% | -342.2% |
| EBIT | -1.18 | -1.57 | -1.24 | -1.18 | -5.17 | -1.81 | -1.60 | -1.59 | -1.24 | -6.24 |
| <i>EBIT margin</i> | -94720.0% | -4134.2% | -442.7% | -270.5% | -685.5% | -592.8% | -473.8% | -451.1% | -223.8% | -402.6% |
| Net income | -1.19 | -1.55 | -1.22 | -1.17 | -5.12 | -1.81 | -1.65 | -1.68 | -1.34 | -6.48 |
| <i>Net margin</i> | -94880.0% | -4078.9% | -435.5% | -267.4% | -678.5% | -591.2% | -490.8% | -475.3% | -242.0% | -418.0% |

Source: East Value Research GmbH, Noctiluca S.A.

Balance sheet and Cash flow

At the end of September 2024, Noctiluca had positive equity of PLN 472k (ratio: 19% compared to 73.5% in Q3/23). The company carried out a share issue with its venture partner Rubicon Partners (24,000 shares at PLN 96, resulting in a gross cash flow of PLN 2.30m). The new shares were registered in November and the share capital is now divided between 1,581,500 shares, with the largest shareholder being Synthex Technologies (32.15%).

At the end of September 2024, Noctiluca's largest asset position was cash of PLN 756k (-77.1% y-o-y), followed by fixed assets of PLN 744k (-21.4%), while short-term receivables reached PLN 584k (+1.9%).

Liabilities consisted of current liabilities of PLN 351k (+2.9% y-o-y) and accruals of PLN 399k (-68.7%). Additionally, the company had long-term loans of PLN 1.12m.

In 9M/24, Noctiluca reported an operating cash flow of PLN -4.63m compared to PLN -3.68m in 9M/23. Investing cash flow equaled PLN -49k (9M/23: -354k), while cash flow from financing amounted to PLN 3.4m (PLN 6.42m) thanks to new loans of PLN 1m and PLN 2.3m (PLN 6.44m) from a share issue.

Changes to our forecasts

Revenues and profitability

According to Omdia Q2/2024 update on OLED materials, the market is expected to reach 2.06bn (+21% y-o-y) in 2024E and USD 2.6bn by 2028E. The growth is attributable to demand from Apple's latest iPad models and increased materials consumption of Chinese manufacturers.

We have reduced our estimates for NCL's sales in 2024E, as our previous projections were out of reach. Despite significantly lower revenue predictions, the levels of EBIT and net income are almost unchanged, thanks to cost optimization conducted at the end of Q3/2024. NCL reduced its monthly cash expenses from PLN 650k to c. PLN 500k as it decided to suspend some of the unnecessary projects and focus on core R&D projects that are crucial for the company. In 2024, R&D related expenses contributed to c. 40% of total operating costs.

OLED technology is growing and slowly becoming the leading technology in displays, but also thanks to the wide range of applications many other OLED devices/products are currently being tested. One such application may be Inuru's OLED packaging solution. For Noctiluca, we now forecast 2024E revenues of PLN 1.55m (prev. PLN 3.23), EBITDA of PLN -5.30m (PLN -4.16m) and a net loss of PLN -6.48m (PLN -6.23m). For 2025E, we predict that NCL will reach PLN 4.24m (exp. +173.5% y-o-y) in sales, resulting in a net loss of PLN -5.26m.

| in PLNm | 2024E | | 2025E | | |
|--------------------------|----------------|----------------|----------------|-----|-----------------------------------|
| | new | old | new | old | |
| Net sales | 1.55 | 3.23 | 4.24 | | |
| EBITDA | -5.30 | -4.16 | -4.25 | | |
| <i>EBITDA margin</i> | <i>-342.2%</i> | <i>-128.8%</i> | <i>-100.3%</i> | | No estimations in previous update |
| EBIT | -6.24 | -6.06 | -4.99 | | |
| <i>EBIT margin</i> | <i>-402.6%</i> | <i>-187.6%</i> | <i>-117.8%</i> | | |
| Net income / loss | -6.48 | -6.23 | -5.26 | | |
| <i>Net margin</i> | <i>-418.0%</i> | <i>-192.9%</i> | <i>-124.1%</i> | | |

Source: East Value Research GmbH

Below are our updated sales forecasts for 2024E and 2025E.

Revenue projections for 2024E

| Revenue Source | Est. Annual revenue per contract (in USDm) | Est. Annual revenue per contract (in PLNm) | Quantity | Total in 2024E (PLNm) | Notes |
|--------------------------------------|--------------------------------------------|--------------------------------------------|----------|-----------------------|------------------------------------------------------------------------------------|
| Inuru | 0.25 | 1.00 | 0.20 | 0.20 | Sales of proprietary high performance materials (applications: marketing, signage) |
| MTA contract (major) | 0.10 | 0.40 | 1.80 | 0.72 | Sales of proprietary high performance materials for testing |
| MTA contract (minor) | 0.05 | 0.20 | 0.80 | 0.16 | |
| Total from own material sales | | | | 1.08 | |
| Custom Synthesis & cCRO | | | | 0.47 | Chemical CRO for Inkbit (USA), sales of non-proprietary materials |
| Total Revenues | | | | 1.55 | |

Source: East Value Research GmbH

Revenue projections for 2025E

| Revenue Source | Est. Annual revenue per contract (in USDm) | Est. Annual revenue per contract (in PLNm) | Quantity | Total in 2025E (PLNm) | Notes |
|------------------------------------------|--------------------------------------------|--------------------------------------------|----------|-----------------------|----------------------------------------------------------------------------------------------|
| Supplier contract (Inuru, Swiss partner) | 0.25 | 1.00 | 0.70 | 0.70 | Sales of proprietary high performance materials (applications: marketing, workwear, watches) |
| JDP contract (major) | 0.80 | 3.20 | 0.20 | 0.64 | Sales of proprietary high performance materials for largest display companies |
| JDP contract (minor) | 0.50 | 2.00 | 0.20 | 0.40 | Sales of proprietary high performance materials for novel and mid-market companies |
| MTA contract (major) | 0.10 | 0.40 | 2.20 | 0.88 | Sales of proprietary high performance materials for testing |
| MTA contract (minor) | 0.05 | 0.20 | 1.40 | 0.28 | |
| Total from own material sales | | | | 2.90 | |
| Custom Synthesis & cCRO | | | | 1.34 | Chemical CRO for various business partners, sales of non-proprietary materials |
| Total Revenues | | | | 4.24 | |

Source: East Value Research GmbH

In 2025E, the company is expected sign a supplier contract with the world's largest producer of watches from Switzerland. NCL also expects to sign multiple JDP contracts next year as presented in the commercialization table below. However, postponements often happen and the beginning of an JDP does not immediately lead to high cash flow for NCL.

After discussions with NCL's management, we believe that the early stage of the JDP contract may not generate any sales. Similarly, in case of MTAs not all contracts are generating cash flows, which has led us to revise our 2024E estimates downward compared to previous projections.

NCL's management has emphasized that revenues are not the primary focus in the early stages. Such companies as Noctiluca build value through the commercialization of new families of compounds and the number of new discoveries through patent applications. In the long term, the goal is to make the business partner dependent on own high-performance materials, leading to rapid revenue growth at a high operating margin. These two key factors are priorities highlighted in NCL's strategy for 2024/25E.

Commercialization process of proprietary materials by producers

| | Current Status | 2025 | Likelihood of JDP/cCRO | Earliest possible revenue | Note |
|------------------------|---------------------------|----------------|------------------------|---------------------------|-------------------------------------------------------------------------------------|
| 1 Inuru | Orders in progress | | 100% | | New factory opened in 2024 by Inuru. |
| 2 LG Display | MTA | JDP | 80% | 2024 | New MTA contract (Advanced testing) in 2024. |
| 3 Switzerland | NDA | Implementation | 80% | 2024 | Tests on the production line with the company's own materials in Q4 2024. |
| 4 USA | MTA | JDP | 40% | 2024/25 | |
| 5 Taiwan | JDP | Implementation | 100% | 2024 | |
| 6 Taiwan | MTA | JDP | 20% | 2025 | |
| 7 Juhua (TCL & Tianma) | MTA | JDP | 75% | 2024 | JDP contract expected as early as Q4/2024. |
| 8 Korea | NDA/MTA | JDP | 65% | 2025 | |
| 9 USA | | MTA | 25% | 2025 | |
| 10 USA | NDA | JDP | 40% | 2025 | |
| 11 China | NDA | MTA/JDP | 45% | 2025 | |
| 12 France | | JDP | 40% | 2025 | MTA contract expected in Q4/2024. |
| 13 Taiwan | MTA | JDP | 40% | 2024 | |
| 14 USA | First order completed | | 80% | 2024 | Manufacturer of monochromatic OLED panels. Framework agreement expected in Q4/2024. |
| 15 China | NDA | MTA/JDP | 20% | 2024 | |
| 16 Taiwan | MTA | JDP | 30% | 2025 | |
| 17 From Europe | First order completed | JDP | 50% | 2024 | Framework agreement expected in Q4/2024. |

Source: East Value Research GmbH, Noctiluca S.A.

Above, we present the progress in the commercialization of proprietary materials. Negative events (delays or reduced probability) are marked in orange, while positive events are marked in green.

Regarding material transfer agreements (MTA), in 9M/24 the company acquired a new client from Taiwan — one of the world's largest OLED panels producers — and is expected to enter a similar contract with a partner from China.

Liquidity & financing

Until it reaches break-even point, Noctiluca will be financed by its largest shareholders: Synthex Technologies and the venture builder Rubicon Partners. With Synthex, the firm has a loan agreement of up to PLN 2m (not used), plus PLN 3m conditional (not used) and a credit line of up to PLN 3m (PLN 0.7m used so far). With Rubicon, NCL has a loan agreement of up to PLN 6m (PLN 1.12m used so far).

The official Noctiluca prospectus created for transfer to the main market states that the company has enough funds to operate in the upcoming 12 months. However, as the company wants to gain institutional investors, we believe that it will conduct another share issue (149,000 shares) at the end of H1/25E.

With the delays from its subcontractors and suspension of some projects, resulting in decreased revenues for Q3/2024, we now predict that Noctiluca will reach the monthly break-even on EBITDA level at the end of 2025E. The company runs on a monthly budget of PLN 500k (without one-offs), which should increase in 2025E, but not significantly.

Strategic expansion and upcoming share issue objectives

Noctiluca's primary strategic objective is to develop and produce advanced chemical compounds for next-generation products. Achieving this goal requires moving beyond addressing isolated material challenges to solving systemic issues through the development and implementation of cohesive groups of chemical compounds that work synergistically.

Currently, Noctiluca is operating at full capacity in the initial R&D phases of discovering new materials. To address this challenge, the company aims to establish itself as a leading OLED hub in Europe. This strategy involves collaborating with top-tier European research institutions to accelerate material discovery. Through formal agreements, Noctiluca has already partnered with two Polish, two French, and one Austrian research institute. These collaborations provide a new source of intellectual property (IP) for the company. After initial testing by Noctiluca, promising materials will be further examined by its global partners and potentially commercialized in cooperation with the inventors.

The second main obstacle Noctiluca faces is the fact that the building and testing of OLED stacks/panels, which is currently delegated to its partners (Kyung Hee University, ITRI, Fraunhofer IAP), lies beyond its direct control. While the company has expanded its portfolio of business partners, the risk of significant delays remains high, as its partners also have limited capabilities. To address this, Noctiluca has decided to bring the majority of its processes in-house. The company has started investing in equipment dedicated to diode/panel development and testing, while also expanding its Polish team to acquire the necessary skills for these tasks. Once this strategy is fully implemented, the company will be able to conduct screen tests on its own materials more quickly and efficiently, sending only the best materials for further examination by its strategic partners.

These improvements in product development should lead to a faster expansion of Noctiluca's materials IP portfolio, the execution of a larger number of projects, and a significant increase in the company's value proposition. To achieve this, Noctiluca will require additional funds, which it plans to raise through an upcoming share issue.

How could a large joint development project impact NCL?

For Noctiluca, a Joint Development Partnership (JDP) agreement represents a formal step toward advancing and testing the company's materials in collaboration with a partner. This phase involves both parties working together on a specific project to achieve mutual benefits, such as the development of new technologies, products, or processes. The agreement outlines detailed terms regarding the division of intellectual property (IP) rights and revenue sharing. Additionally, a JDP may take the form of a chemical Contract Research Organization (cCRO) arrangement, in which Noctiluca conducts research and development (R&D) activities on behalf of the client. It is important to note that, as a developer of novel TADF-based emitters, Noctiluca's involvement in a JDP indicates that the partner recognizes the company's materials as sufficiently advanced and promising for eventual commercialization.

While potential contracts with Chinese and Korean enterprises could lead to significant opportunities in the future, the most critical partnership at present is the JDP with a Swiss watchmaker. OLED watches are simpler to manufacture compared to displays, which increases the likelihood of earlier commercialization. If successful, these watches would become the first mass-produced product incorporating Noctiluca's materials, providing a landmark demonstration of the stability and reliability. This achievement would strengthen Noctiluca's credibility with other partners. By H1/25E, the company plans to begin production of such OLED watches with its Swiss partner and potentially sign a supplier contract.

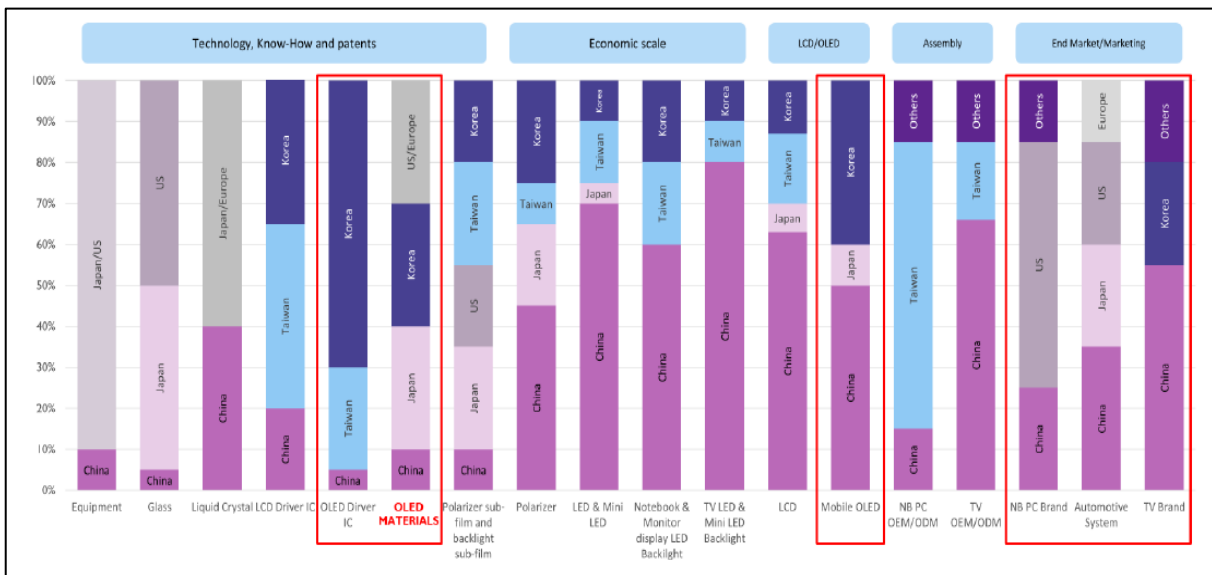
The cCRO model is equally valuable, as it enables Noctiluca to conduct research on new materials tailored to the specific needs of its business partners. This approach ensures that the research directly addresses industry challenges while allowing Noctiluca to gain deeper insights into its clients' requirements. Moreover, in a cCRO arrangement, the R&D costs are typically covered by the partner, reducing financial risk for the company. Noctiluca's portfolio includes partnerships with foreign companies that lack in-house chemistry teams or expertise in inkjet printing (IJP) technologies. This creates long-term opportunities for Noctiluca to serve as an independent research unit for these businesses in a cCRO capacity. Notably, IJP technology requires significantly lower capital investment in production capacity compared to traditional display manufacturing, making it easier for smaller companies to enter the market. These companies often seek turnkey solutions, such as host-emitters and ready-to-print inks, which Noctiluca already provides.

As a European company, Noctiluca is particularly important for its partners in Korea, China and Taiwan. In the world of advanced materials, Japan is by far the leader, holding about 50% of global patents, followed by the EU and the US, each with around 15% share. While China had virtually no patents at the beginning of the century, it has significantly increased its patent output; however, its share remains low at around 5%. (Source: The 2023 EU Industrial R&D Investment Scoreboard).

Noctiluca’s management highlights the intensifying competition between China and South Korea in the OLED market. In the OLED materials segment, South Korea maintains a strong leadership position with a substantial 30% market share, significantly outpacing China, which accounts for only 10%. To close this gap, China is aggressively working to build a self-sufficient materials supply chain. As an independent European player, Noctiluca stands out as a strategic partner for Chinese firms, offering access to advanced materials that are currently beyond China’s capabilities. At the same time, South Korea is determined to protect its competitive edge. If Chinese manufacturers gain access to the latest OLED materials, it could significantly challenge South Korea’s dominance in the advanced OLED panel market.

The success of Noctiluca’s innovative materials positions the company as an attractive prospect for strategic investment or acquisition by South Korean players, potentially reshaping the competitive dynamics of the OLED materials industry.

OLED market segmentation



Source: Noctiluca S.A.

Valuation

The valuation is based on a comparison of Noctiluca with other companies developing innovative materials for the OLED industry. We have valued Noctiluca using a comparable companies' methodology, which has been divided into two categories: Valuation based on funding rounds of peers – Cynora, CredoXys, beeOLED (50%) and valuation based on a qualitative comparison to the market leader – Kyulux (50%).

We have refrained from using income-based valuation methods, given the challenge of forecasting the anticipated economic benefits generated by the company in the future. The TADF technology is gradually advancing, but due to several uncertain factors with many beyond Noctiluca's direct control we have decided to use comparable companies' valuation. The value of Noctiluca is closely tied to how it is valued by OLED panel manufacturers.

Valuation based on funding rounds of peers

| Date | Company name | Total Raised (in USDm) | Stake % | Pre-money valuation (in USDm) | Post-money valuation (in USDm) | Notes |
|----------------|--------------|------------------------|---------|-------------------------------|--------------------------------|--------------|
| 2011 | Cynora | 4.28 | 52% | 3.97 | 8.25 | Series A |
| 2017 | Cynora | 29.83 | 24% | 95.66 | 125.49 | Series B |
| 2019 | Cynora | 25 | 15% | 142.85 | 167.85 | Series C |
| 02/2022 | CREDOXYS | 1.38 | 16% | 7.19 | 8.57 | Seed round |
| 08/2023 | beeOLED | 14.43 | 39% | 22.44 | 36.87 | Series A |
| 11/2023 | CREDOXYS | Undisclosed | 18% | n.a | n.a | Pre-Series A |
| Average | | | | 54.42 | 69.41 | |

Source: German national court registry, company's websites, CapitalIQ, East Value Research GmbH

To use this valuation method, we have utilized German national court registry, and public announcements. Details are provided above.

First, we have examined past M&A transactions in the OLED materials industry. Due to the innovative technology Noctiluca is developing there is just one past transaction that closely resembles what Noctiluca is doing: The acquisition of Cynora by Samsung for USD 300m in 2022, whereby some industry experts suggest that the price for Cynora's IP was USD 100-200m.

In 2016, Cynora started a Joint Development Project (JDP) with LG Display and in 2018 had a next-generation blue OLED emitter with EQE 20% (today's standard >30%) and expected commercialization plans in 2020. In 2019, Cynora was valued at USD 167.85m and the company hired a new CEO to help with the commercialization of its next-gen blue emitter but in the end failed to do so. In 2020, it indeed introduced its first commercial product - a blue emitter - but from older generation. As due to rising operational costs - in 2021, it generated a net loss of EUR 19.2m with over 100 employees - Cynora was seeking different ways to become solvent, the close cooperation with Samsung turned out to be a lifesaver for its investors. In 2022, Samsung acquired the research company for about USD 300m, but effectively was seeking only its IP, as the company was liquidated shortly afterwards.

When it comes to funding a technology material company, it is important to distinguish investments made by financial investors (mostly VCs), and strategic investors (OLED manufacturers). Strategic investors such as LG or Samsung might value companies much more because of synergies and the possibility to fully utilize the potential of the material company's developed projects.

New start-ups have also joined the race to create a next generation deep-blue OLED emitter and other innovative materials for the OLED industry. CREDOXYS that was established in 2021 in Dresden completed its first funding round in that year, receiving funds from the German government, among others. In 2023, the company completed its pre-series A round with various VC funds for an undisclosed amount. beeOLED, which is also based in Dresden and was founded in 2020, has recently raised USD 14.4m resulting in a post-money valuation of USD 36.9m. As of now, beeOLED solely focuses on developing a next-generation deep-blue emitter. In an interview, its CEO stated that the company's emitters would be tested by business partners in 2024E and there were still 3-4 years until its emitters would be fully commercialized. For comparison: Noctiluca's own emitters have been tested by leading display manufacturers at least since 2022.

We believe that all the high-performance materials (including deep blue emitters) from the above-mentioned companies are at a similar technological level to Noctiluca. As beeOLED is further away from commercializing its emitters, Noctiluca should currently be valued more. Cynora was valued at c. USD 96m a year after starting its JDP with LG Display. NCL plans to establish a JDP with LG Display in 2025E. What differentiates Noctiluca from its competitors and is positive in our view, is the diversification of its business partners. Additionally, the aforementioned three German companies solely focus on developing a particular material (2 of them focus only on the deep-blue next-gen OLED emitter), while Noctiluca is developing materials for various layers of the OLED stack. Other than that, Noctiluca develops business relationships not only with the market leaders, but also with smaller players, helping them not only with R&D, but also with the development of their products. Having analyzed the development phases of Noctiluca's competitors excluding the market leader, we have valued Noctiluca at an equity value of USD 70m.

Valuation based on a comparison to the market leader

In addition, we have analyzed how Noctiluca compares with the leader in next-generation OLED materials, Kyulux. Our valuation is based on four key factors: team (20% weight), products (20%), commercialization process (10%), and intellectual property (50%).

Although Noctiluca has successfully expanded into markets other than display, its relative valuation is based on a comparison with Kyulux, which specializes in emitters for displays. This fact explains why we focus on analyzing NCL's progress in relation to the display industry.

Team

Kyulux: In its management, Kyulux has a highly experienced team specializing in OLED development/materials. Additionally, its founder Mr. Adachi is the inventor of an OLED TADF device with multiple patents and innovative materials discovered and is widely regarded as the top researcher in OLED technology. Kyulux has a R&D centre in Boston, close to the Massachusetts Institute of Technology, and thus has access to the best technical graduates in the world. As of the end of October 2024, the company has 100 employees.

Noctiluca: The Torun-based company has a relatively young team, but its management consists of experienced scientists and VC managers, who facilitate the commercialization of its materials. In addition, NCL has very experienced and renowned advisors, including Prof. Kwon, a former chief researcher at Samsung SDI and dr Kim, ex Quality Control lead at LG Chem. Additionally, by working with the world's leading research centres, NCL's team is able to gain valuable know-how and practical experience. As of November 2024, the company cooperates with 38 individuals.

Comment: Comparing workforces enables us to assess the potential of future endeavors on both the research and commercialization side. Kyulux has a much larger and more experienced team and much more research resources. Even though the academic contributions of Kyulux' team are significantly greater, NCL has managed to establish partnerships with researchers from world's leading research centres such as: Karlsruhe Institute of Technology, ITRI, and Fraunhofer IAP, to bridge the research gap. Nevertheless, both companies differ quite significantly in this regard.

Update: The company, acting as an OLED hub, has received first materials from research centers from across Europe, thus facilitating the materials discovery process. As per latest investors call, the company welcomed, its first Korean full-time employee in Poland. With the plan to increase its competencies in product engineering and device physics, NCL has shortened other Korean aspiring chemists for relocation. However, the process is lengthy due to visa processing which on average takes a year.

Products

Kyulux: The Japanese company is a pioneer in TADF technology and has one of the best emitter systems currently available. In November 2024, the firm has entered an alliance agreement with Nippon Soda (Japan) to establish a mass production system for OLED materials.

Noctiluca: NCL's management is of the opinion that its emitters are as good as those of its competitors or even better. The company wants to be the supplier of materials for the entire emission layer, which will consist of two hosts, a sensiliser (TADF) and an MR-TADF emitter. In contrast to Kyulux, the company works in both PVD – which is the current market standard for big displays - and IJP technology. The construction of a market-ready OLED display using the company's materials is planned for 2025E with its Swiss partner.

Comment: Regarding technological advancement of materials, we do not observe significant differences when it comes to the next-gen products offered by both companies. Kyulux has struggled with developing an efficient deep-blue emitter, while Noctiluca, despite a later start, has closed the technological gap to Kyulux quite quickly. The key difference is that Kyulux is partly owned by Samsung and LG, and its organic materials are much closer to being used in the end devices of these companies, thus covering the majority of the OLED materials market, especially in the largest submarkets (smartphones, TVs). However, the large dependence on the Korean giants also has disadvantages as it excludes other players from using Kyulux' technology.

Update: Noctiluca actively expands its number of business numbers, entering new markets. NCL has established preliminary business contacts with companies from gaming hardware and automotive industries. Initially, targeting the emissive layer of OLED, the firm has invented a new material for EIL layer, thus it is reliable to believe that the company will eventually cover the whole spectrum of OLED materials.

Commercialization

Kyulux: The Japanese company was the first in the world to start commercial shipping of TADF materials in 2020. In 2023, it achieved full-scale commercialization of green material systems and is supposed to achieve the same in 2024E for red and blue material systems. The firm expects to achieve full-scale mass production from 2025E.

Noctiluca: NCL reported the first commercial sales of its own red and green emitters in 2023. In Q3/2024, Inuru launched a limited-edition Coca-Cola bottle in Brazil, which is likely using NCL's emitters. In addition, NCL signed a separate new agreement with Inuru to jointly commercialize a compound for use in OLED devices.

Comment: The company has several MTA contracts with the world's largest display companies and is expected to convert several of these contracts into JDPs in the upcoming year. On the other hand, Kyulux already established its base of business partners many years ago. The display market leaders LG and Samsung even invested in Kyulux in 2016. Currently, the Japanese company is leading the race for commercialization of the highly demanded deep-blue next-gen OLED emitter (expected in 2025E), however is dependent on the two Korean giants.

Update: NCL has changed a little bit its strategy with regard to commercialization. The company prefers, to build long-lasting valuable partnerships with industrial leaders. Such approach leads to minimal financial gains in the nearest future but builds potential for materials dependency. As per the company's commercialization table, the company plans to commence with a significant number of JDP contracts in 2025E.

Intellectual property

Kyulux: The firm has a unique IP portfolio thanks to being a spin-off from Kyushu University and having close ties with it. In 2023, the company appeared in Kikkei Business's Top 40 patent value growth ranking. Currently, the entity has about 150 patented families of chemical compounds.

Noctiluca: The Polish company currently has 7 patent applications (including one granted) and plans to fill one more patent application in 2024E. In the coming years, it plans to patent an average of 10 families of chemical compounds in order to close the gap with its competitors. NCL has developed over 1,200 chemical compounds, out of which c. 30% are patented.

Comment: We would like to emphasize that comparing the number of patents is a wrong approach, as one patent might carry the majority of the company's total IP value, while others might be without practical use in the industry and as a consequence worthless from the market perspective. For valuation more important is the number of commercialized patent families.

There are transactions in the OLED market between companies concerning solely IP. Noctiluca has a significantly lower number of patents than its competitors. NCL's management explained us that it is not a priority for them, but after observing the OLED transaction market we have concluded that patents are what carries value and therefore are important for valuing developers of OLED emitters. The effective value of a patent and the potential it provides for entering a joint development project is determined by the industry player. NCL's IP strategy is to carry out as many joint projects as possible with commercial partners in order to obtain joint IP, rather than filing a large number of patents. Because of this approach, NCL delays the filling of patents, but is able to save a lot of money and is closer to the final commercialization of its innovations. Moreover, its competitors do not get access to its R&D results too early.

Update: We have maintained our valuation assumption for this factor. Noctiluca continues to expand its IP portfolio, as we had expected. In Q3/2024, the company filled an patent application for the use of quinoline derivatives as an electron-injecting or electron-transporting layer (EIL and ETL) layers that are present in OLED technology not exclusively.

Factor Valuation

| Factor | Weight | % of Kyulux |
|-----------------------|--------|-------------|
| Team | 20% | 25% |
| Products | 20% | 60% |
| Commercialization | 10% | 20% |
| Intellectual property | 50% | 20% |
| Weighted Average | | 29% |

Source: East Value Research GmbH

In summary, we have maintained our valuation for each factor. Kyulux is currently valued at c. USD 275m. We have concluded that Noctiluca currently represents about 29% of Kyulux potential, which results in a valuation of USD 79.75m.

Valuation Summary

| Type | Value | Weight |
|--------------------------------------|----------------|---------------|
| Market Leader Valuation | 79.75 | 50% |
| Funding Valuation | 70.00 | 50% |
| Fair Value (in USDm) | 74.88 | 100% |
| PLN-USD | 4.07 | |
| Fair Value (in PLNm) | 304.74 | |
| No of shares | 1.58 | |
| Fair Value per share (in PLN) | 189.08* | |

Source: East Value Research GmbH

*Based on our methodology, which weighs both methods equally by 50%, we derive a fair equity value for Noctiluca of PLN 304.74m, which results in per share valuation of PLN 192.69, but we have adjusted the FV to the previous update value per share of PLN 189.08, to highlight that we are maintaining our recommendation.

Profit and loss statement

| in PLNm | 2020 | 2021 | 2022 | 2023 | 2024E | 2025E |
|-----------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Total revenues | 0.67 | 0.56 | 1.03 | 0.75 | 1.55 | 4.24 |
| CoGS | -2.00 | -2.76 | -3.53 | -4.70 | -6.50 | -7.56 |
| Gross profit | -1.33 | -2.19 | -2.50 | -3.95 | -4.95 | -3.32 |
| Other operating income | 0.03 | 0.34 | 0.41 | 1.04 | 0.62 | 0.30 |
| Administrative expenses | -0.03 | -0.17 | -0.29 | -0.84 | -0.93 | -1.18 |
| Other operating expenses | 0.00 | 0.00 | -0.01 | -0.03 | -0.04 | -0.05 |
| EBITDA | -1.33 | -2.03 | -2.39 | -3.77 | -5.30 | -4.25 |
| Depreciation & amortization | -0.02 | -0.31 | -0.42 | -1.40 | -0.94 | -0.74 |
| EBIT | -1.35 | -2.34 | -2.81 | -5.17 | -6.24 | -4.99 |
| Net financial results | -0.05 | -0.03 | -0.04 | 0.05 | -0.24 | -0.27 |
| EBT | -1.40 | -2.37 | -2.85 | -5.12 | -6.48 | -5.26 |
| Income taxes | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Minority interests | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Net income / loss | -1.40 | -2.37 | -2.85 | -5.12 | -6.48 | -5.26 |
| EPS | -1.07 | -1.61 | -1.93 | -3.23 | -4.10 | -3.33 |
| DPS | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Share in total sales | | | | | | |
| Total revenues | 100.00 % | 100.00 % | 100.00 % | 100.00 % | 100.00 % | 100.00 % |
| CoGS | -296.74 % | -489.19 % | -341.73 % | -623.31 % | -419.59 % | -178.37 % |
| Gross profit | -196.74 % | -389.19 % | -241.73 % | -523.31 % | -319.59 % | -78.37 % |
| Other operating income | 3.86 % | 60.40 % | 39.61 % | 137.91 % | 39.81 % | 7.08 % |
| Administrative expenses | -3.77 % | -30.39 % | -28.17 % | -111.08 % | -59.82 % | -27.82 % |
| Other operating expenses | -0.07 % | -0.12 % | -1.15 % | -3.33 % | -2.58 % | -1.18 % |
| EBITDA | -196.72 % | -359.30 % | -231.43 % | -499.81 % | -342.19 % | -100.29 % |
| Depreciation & amortization | -3.66 % | -55.51 % | -40.71 % | -185.67 % | -60.40 % | -17.50 % |
| EBIT | -200.39 % | -414.81 % | -272.14 % | -685.48 % | -402.59 % | -117.79 % |
| Net financial results | -6.69 % | -5.57 % | -4.12 % | 6.98 % | -15.42 % | -6.32 % |
| EBT | -207.07 % | -420.38 % | -276.26 % | -678.50 % | -418.01 % | -124.11 % |
| Income taxes | 0.00 % | 0.00 % | 0.00 % | 0.00 % | 0.00 % | 0.00 % |
| Minority interests | 0.00 % | 0.00 % | 0.00 % | 0.00 % | 0.00 % | 0.00 % |
| Net income / loss | -207.07 % | -420.38 % | -276.26 % | -678.50 % | -418.01 % | -124.11 % |

Balance sheet

| in PLNm | 2020 | 2021 | 2022 | 2023 | 2024E | 2025E |
|------------------------------------------|-------------|-------------|-------------|-------------|--------------|-------------|
| Cash and cash equivalents | 3.34 | 4.08 | 0.91 | 2.03 | 0.75 | 2.68 |
| Other financial assets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Inventories | 0.05 | 0.00 | 0.00 | 0.00 | 0.10 | 0.15 |
| Trade accounts and notes receivables | 0.84 | 0.10 | 0.16 | 0.78 | 0.59 | 1.91 |
| Purchased receivables at amortised costs | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Other current assets | 0.02 | 0.58 | 1.42 | 0.02 | 0.00 | 0.00 |
| Assets-held-for-sales | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Current assets | 4.25 | 4.76 | 2.49 | 2.84 | 1.45 | 4.74 |
| Property, plant and equipment | 0.00 | 0.87 | 0.71 | 0.90 | 0.71 | 2.59 |
| Other intangible assets | 0.96 | 0.79 | 0.59 | 0.85 | 0.19 | 0.49 |
| Goodwill | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Investments at-equity | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Other investments | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Deferred tax assets | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Non-current assets | 0.96 | 1.66 | 1.30 | 1.75 | 0.90 | 3.07 |
| Total assets | 5.22 | 6.42 | 3.79 | 4.59 | 2.34 | 7.82 |
| Trade payables | 0.99 | 0.15 | 0.19 | 0.25 | 0.46 | 0.67 |
| Short-term financial debt | 0.80 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| Other liabilities | 0.14 | 0.29 | 0.34 | 0.70 | 0.49 | 0.26 |
| Provisions | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Current liabilities | 1.93 | 0.45 | 0.53 | 0.95 | 0.95 | 0.92 |
| Long-term financial debt | 0.00 | 0.00 | 0.00 | 0.00 | 2.26 | 0.00 |
| Other long-term liabilities | 0.54 | 1.13 | 1.28 | 0.33 | 0.00 | 0.00 |
| Provisions | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Deferred tax liabilities | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Long-term liabilities | 0.54 | 1.13 | 1.28 | 0.33 | 2.26 | 0.00 |
| Total liabilities | 2.47 | 1.59 | 1.81 | 1.28 | 3.21 | 0.92 |
| Shareholders equity | 2.74 | 4.83 | 1.98 | 3.31 | -0.87 | 6.89 |
| Minority interests | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total liabilities and equity | 5.22 | 6.42 | 3.79 | 4.59 | 2.34 | 7.82 |

Cash Flow Statement

| in PLNm | 2020 | 2021 | 2022 | 2023 | 2024E | 2025E |
|-------------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Net income / loss | -1.40 | -2.37 | -2.85 | -5.12 | -6.48 | -5.26 |
| Depreciation & amortization | 0.02 | 0.31 | 0.42 | 1.40 | 0.94 | 0.74 |
| Change of working capital | 0.00 | -0.81 | -0.67 | -1.17 | -0.24 | -1.39 |
| Others | 0.04 | -0.03 | 0.04 | -0.05 | 0.14 | -0.08 |
| Net operating cash flow | -1.33 | -2.89 | -3.06 | -4.94 | -5.65 | -5.99 |
| Cash flow from investing | -0.01 | -0.08 | -0.05 | -0.35 | -0.07 | -2.50 |
| Free cash flow | -1.33 | -2.97 | -3.12 | -5.28 | -5.72 | -8.49 |
| Cash flow from financing | 4.46 | 3.70 | -0.05 | 6.42 | 4.44 | 10.42 |
| Change of cash | 3.13 | 0.73 | -3.16 | 1.12 | -1.28 | 1.93 |
| Cash at the beginning of the period | 0.22 | 3.34 | 4.08 | 0.91 | 2.03 | 0.75 |
| Cash at the end of the period | 3.34 | 4.08 | 0.91 | 2.03 | 0.75 | 2.68 |

Financial ratios

| Fiscal year | 2020 | 2021 | 2022 | 2023 | 2024E | 2025E |
|------------------------------------------------|----------|----------|----------|----------|----------|----------|
| Profitability and balance sheet quality | | | | | | |
| Gross margin | -196.74% | -389.19% | -241.73% | -523.31% | -319.59% | -78.37% |
| EBITDA margin | -196.72% | -359.30% | -231.43% | -499.81% | -342.19% | -100.29% |
| EBIT margin | -200.39% | -414.81% | -272.14% | -685.48% | -402.59% | -117.79% |
| Net margin | -207.07% | -420.38% | -276.26% | -678.50% | -418.01% | -124.11% |
| Return on equity (ROE) | -50.89% | -49.09% | -144.07% | -154.78% | 748.18% | -76.33% |
| Return on assets (ROA) | -26.78% | -36.96% | -75.33% | -111.48% | -276.48% | -67.31% |
| Return on capital employed (ROCE) | -39.48% | -37.58% | -79.52% | -121.54% | -357.78% | -71.93% |
| Economic Value Added (in PLNm) | -1.75 | -3.07 | -3.22 | -5.66 | -6.44 | -5.80 |
| Net debt (in PLNm) | -2.55 | -4.06 | -0.91 | -2.03 | 1.51 | -2.68 |
| Net gearing | -92.85% | -84.05% | -45.89% | -61.52% | -174.12% | -38.90% |
| Equity ratio | 52.62% | 75.30% | 52.29% | 72.02% | -36.95% | 88.18% |
| Current ratio | 2.37 | 25.22 | 9.85 | 8.43 | 2.41 | 5.43 |
| Quick ratio | 2.33 | 22.15 | 4.24 | 8.36 | 2.25 | 5.26 |
| Net interest cover | -29.97 | -74.57 | -66.12 | 98.26 | -26.11 | -18.63 |
| Net debt/EBITDA | 1.92 | 2.00 | 0.38 | 0.54 | -0.28 | 0.63 |
| Tangible BVPS | 1.13 | 2.56 | 0.88 | 1.55 | 0.76 | 4.05 |
| Capex/Sales | 0.95% | 13.30% | 19.60% | 57.47% | 5.16% | 58.96% |
| Working capital/Sales | 364.52% | 810.47% | 216.83% | 331.68% | 54.70% | 91.27% |
| Cash Conversion Cycle (in days) | 135 | 38 | 30 | 352 | 112 | 130 |
| Trading multiples | | | | | | |
| EV/Sales | n.a | n.a | 125.57 | 172.05 | 83.70 | 30.60 |
| EV/EBITDA | n.a | n.a | -54.26 | -34.42 | -24.46 | -30.51 |
| EV/EBIT | n.a | n.a | -46.14 | -25.10 | -20.79 | -25.98 |
| P/Tangible BVPS | n.a | n.a | 92.8x | 52.7x | 107.0x | 20.2x |
| P/E | n.a | n.a | -42.3x | -25.3x | -20.0x | -24.6x |
| P/FCF | n.a | n.a | -41.5x | -24.5x | -22.6x | -15.2x |

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