Nanexa's Atomic Shell Game: How ALD Tech Landed A Novo Deal Worth Up To €1.165bn

Oct 28 2026 • By Dr. Phalguni Deswal

Nanexa's CEO said PharmaShell's ALD-coated particles could stretch GLP-1 dosing to monthly or quarterly, but its semaglutide data are rat-based and simulated. Novo's license, worth up to €1.165bn, and a Forge Nano scale-up deal frame what comes next, including combination-product questions.

When David Westberg describes the technology at the heart of Nanexa, he is open about how unusual it is for the pharmaceutical field. "It is a disruptive technology for the pharma field, definitely so," the CEO told *Medtech Insight* of PharmaShell, the company's proprietary drug-delivery platform. "What we have done is to use the technology that is more widely used in the semiconductor industry."

On Sept. 24, Nanexa announced that Novo Nordisk had taken a global exclusive license to PharmaShell for certain peptide drugs across up to five development programs in obesity, type 2 diabetes and other cardiometabolic conditions. Nanexa is eligible for up to €1.165bn ($1.295bn), including €615m in upfront and development and regulatory milestones, with the rest tied to sales milestones. Neither company has disclosed the upfront portion, and Nanexa's shares more than doubled in early trading.

For medtech, the deal is as much about the injection format as the molecule. Novo's weekly obesity and diabetes injectables have fueled demand for pens and autoinjectors—Becton Dickinson (BD) raised its full-year guidance in August citing momentum in GLP-1 drug delivery — and a depot that stretches dosing from weekly to monthly or quarterly would, in principle, cut injections per patient from 52 a year to 12 or four.

Nanexa starts with a spray-dried peptide or, for a small molecule, a milled particle, normally between 5 and 10 microns in diameter. In a reactor, atomic layer deposition (ALD) deposits an ultrathin layer of inorganic oxide — aluminum zinc oxide — onto every primary particle, not merely onto agglomerates. "We will add maybe 10 to 30 nanometers in thickness on each and every particle," Westberg said. The active pharmaceutical ingredient (API) stays in a solid state inside the shell.

https://insights.citeline.com/medtech-insight/leadership/interviews/nanexas-atomic-shell-game-how-ald-tech-landed-a-novo-deal-worth-up-to-1165bn-SYH2HIEA55EUTCDI65DDKAR5HI/
© Norstella 2026. All rights reserved. Unauthorized reproduction prohibited. Exported by Simon Josefsson

Key Takeaways

- PharmaShell coats individual drug particles with a 10–30nm inorganic shell using ALD; Westberg said it enables 80–90% drug load, needles as thin as 30 gauge, room-temperature storage and gamma terminal sterilization.
- The Novo agreement, worth up to €1.165bn with €615m in upfront and development/regulatory milestones, targets monthly and quarterly dosing, but the public semaglutide data come from rat studies and human-dosing simulations.
- A syringe- or cartridge-filled PharmaShell suspension would sit close to what FDA lists as a single-entity combination product, though Westberg did not discuss device plans; Nanexa plans to install larger-scale ALD tooling with Forge Nano ahead of Phase III supply.



David Westberg, Nanexa CEO (Nanexa)

© Norstella 2026. All rights reserved. Unauthorized reproduction prohibited. Exported by Simon Josefsson

Before injection, the coated particles are suspended in a nonaqueous medium so the shell does not start to dissolve, which lets Nanexa make “ready to use suspensions already in the plants” and fill syringes or cartridges, Westberg said. Once injected subcutaneously, the coating dissolves “very, very slowly” into aluminum and zinc ions that enter the plasma. Both are already in the body, and the amount added is “almost so that we cannot measure it,” he said, though clinical studies showed a slight, temporary increase. As the shell opens up, the solid API dissolves. “And that forms, as we have seen it, a very steady state plasma level,” he said. He said the release can be tuned to last a week, a month or three months depending on the indication.

The tunability of that release is the platform’s central selling point. By adjusting the ratio of zinc oxide to aluminum oxide, the coating thickness, other process parameters and the initial particle size of the API, Nanexa can aim for once-monthly or once-quarterly administration. “It’s quite actually quite easy for us to control the release,” Westberg added.

Westberg said PharmaShell compares favorably with polymer-based microspheres, starting with release control: “no burst or very limited burst,” even for highly soluble biologics. He said the most tangible advantage is drug load. Nanexa’s formulations are normally 80–90% API, compared with “maybe 20 to 30 percent” for others, enabling a dose in a very low volume. “Injection volume wise, we beat, I think, all the other different formulations for long acting,” he said. The particles can be administered through needles “as thin as 30 gauge”—comparable to insulin needles—whereas for polymer-based formulations, he said, “I would think maybe 23 to 27.”

Stability is the other selling point. Peptides such as semaglutide can be stored at room temperature when encapsulated, Westberg said, letting manufacturers “skip cold chain logistics.” He also said Nanexa has “proven that we can actually skip” aseptic manufacturing, which he said is used for biologics, and use gamma-radiation terminal sterilization instead, “without… degrading the peptides.” If that holds at commercial scale, he added, cost-of-goods savings could be considerable.

Because Nanexa describes filling the suspension into syringes or cartridges, a commercial product would sit close to what the US Food and Drug Administration lists as a typical single-entity combination product: a drug in a prefilled syringe, implying device-side review alongside the formulation. Westberg did not discuss specific device plans.

Against half-life extension approaches such as prodrugs, Westberg drew a regulatory distinction. “We don’t interfere, we don’t make any… covalent bonds to the active molecule,” he said. “The active molecule stays the same.” Linking something to a molecule, he said, creates “a new chemical entity” needing a far more thorough safety program. Novo is not alone in chasing depot formats: Eli Lilly licensed Camurus’s FluidCrystal platform in a deal worth up to $870m.

The Road To Novo

© Norstella 2026. All rights reserved. Unauthorized reproduction prohibited. Exported by Simon Josefsson

After two internal oncology programs, Nanexa began evaluating a third project in 2022, and its analysis pointed toward GLP-1 receptor agonists, where poor adherence and the nausea that accompanies frequent dosing suggested a need for longer-acting formulations. “We started that in September ’22,” Westberg said. “And in October ’22, we had two very big companies calling us.” One was Novo Nordisk. Within three months, Novo had signed an agreement to test the technology.

Westberg said Novo has worked with PharmaShell “off and on” since, while Nanexa’s own technology improved: Early liraglutide clinical work showed “a slightly too high peak.” He put the turning point at “early ’26 or the winter ’25, ’26,” when Nanexa “came up with the very, very good release data from our formulations, and then that increased the interest from Novo.” After “a lot of number crunching,” the deal was signed.

A crucial caveat remains: The semaglutide data Nanexa has discussed publicly come from rat studies, not human trials. Westberg characterized the once-monthly and once-quarterly projections as simulations, using methods from the literature to translate rat data to human repeated dosing. “We don’t have clinical data of our own in that sense, no,” he said, adding that other studies are ongoing but that he cannot discuss them because of the Novo agreement. For liraglutide, Nanexa has run a clinical study that, the company said, showed controlled exposure for up to 36 days after one injection. Novo will lead global development; the companies have not named the drugs involved.

The Novo deal is the largest validation of PharmaShell, but not the first. In December 2025, Nanexa signed a license and option agreement with Moderna covering up to five undisclosed compounds, with $3m up front and up to $500m in potential milestones. Moderna licensed PharmaShell for one compound and holds options on four more, exercisable after preclinical evaluation. Westberg was tight-lipped on the content: “I can’t go into exactly what that is,” he said, adding that room-temperature storage is “one component” of such a collaboration, “not maybe the focus.” He said he is also in talks with “stakeholders in the vaccine area” about room-temperature storage. “That is a huge need,” he said.

Westberg also sees an opening in monoclonal antibodies, where viscosity is the limiting factor. Concentrated antibody solutions “gel and tangle,” he explained, becoming too viscous to inject, which typically caps concentrations at about 150–200mg/mL. Because a PharmaShell-coated antibody behaves like “an inorganic sort of inorganic suspension,” he said Nanexa can “easily go up to more like a double of that.” Whether talks with companies seeking longer dosing intervals lead to deals is unclear: “Maybe. I really don’t know.”

Building The Manufacturing Engine

On Sept. 22, two days before the Novo announcement, Nanexa and US-based Forge Nano announced a joint development agreement to develop large-scale, GMP-compliant ALD manufacturing equipment for PharmaShell. The pairing is “1 + 1 becomes 3,” Westberg said: Forge Nano, whose ALD experience is “mostly in the battery system,” is “really keen on the tool building,”

© Norstella 2026. All rights reserved. Unauthorized reproduction prohibited. Exported by Simon Josefsson

while Nanexa knows pharmaceutical requirements such as “GMP cleaning, you know, sterilization, all that.”

Westberg described a staged build-out. Nanexa will install a Forge Nano tool with a larger capacity than its current batch size. The new agreement aims at a commercial-scale tool for installation at Nanexa’s facility in Sweden, giving the company control over scale-up to supply Phase III and pivotal stability studies, he said, with “yet another tenfold scale” for launch. “We’re trying to build that so it is in place already before it is needed,” he said.

Nanexa is also planning new internal projects. Westberg said the company is “in the middle of planning for starting one or two or maybe even 3 internal projects” and will “most probably” decide which programs “first quarter next year or so.” The aim is to take them beyond “just one phase one study” into “repeated PK and also maybe a phase two study.” He would not say which areas.

On partnering, Westberg said Nanexa has “a few in parallel feasibility studies ongoing,” including work in pain treatment, though he gave no details, and cautioned that big companies “have slow decision making.” He said Nanexa could add “maybe” two more license agreements within 12–24 months, though “it’s hard to tell.” Some milestones under the Novo and Moderna agreements will be made public, he said. “It’s a very exciting future.”

© Norstella 2026. All rights reserved. Unauthorized reproduction prohibited. Exported by Simon Josefsson