NRG CASE STUDY

Making *3D* the Default

In 2013–14 a Korean dental X-ray maker rebuilt its CT line around low dose and aimed 3D at the ordinary dental practice. Its filings through June 2026 show what came of that choice and what Vatech now has to defend.

KOSDAQ 043150 · Vatech

Low-dose Green CBCT unveiled	3D share of parent-company sales, FY2025	Consolidated revenue, FY2025	Exports, share of FY2025 revenue
IDS 2013	62.2%	₩426.4bn	92.6%

Evidence base: Vatech Annual Report FY2025 and Half-Year Report 2026 (DART), with the Half-Year Report 2025 and DART financial statements for FY2019–FY2024; dated research-house market estimates; trade press 2009–2026; FDA and competitor filings. NRG network bench as of 2026-09-30.

Nathan Research Group · Seoul, 2026-09-30

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HOW TO READ THIS CASE

The subject is one company decision, told against its market. Company financials appear only as evidence of what the decision did. Management intent is cited to what the company said, or marked as NRG's reading. Product-mix figures are on a parent-company (separate) basis, which includes sales to Vatech's own subsidiaries. Bracketed numbers refer to the Source Register at the end.

Case Summary

THE DECISION IN BRIEF

In 2013 Vatech relaunched its cone-beam CT (CBCT) line around low radiation dose. The Green platform was unveiled at IDS 2013[1], and in September 2014 the PaX-i3D Smart added a mid-tier 2D and 3D hybrid[2]. The launch followed a dose backlash: between 2010 and 2012 a US press investigation[3], European (SEDENTEXCT) guidelines[4] and the American Dental Association[5] had all raised concerns about CBCT dose.

Vatech then tiered the line from an entry model to a large-field flagship and built its own route to market. By FY2025, 3D was 62.2% of parent-company sales and exports were 92.6% of revenue[2]. Gross margin held, but selling and administrative costs grew faster than gross profit (§4).

3D share of parent sales	Consolidated revenue	Operating margin	3D sales, H1 2026
62.2%	**₩426.4bn**	**12.8%**	**−8.9%**
FY2025, separate basis	FY2025; 7.8% a year since FY2019	FY2025; 15.7% in H1 2026	parent basis, vs H1 2025; 2D +24.6%

THE QUESTION THIS CASE LEAVES OPEN

On NRG's reading, Vatech helped make CBCT a routine purchase for general practices, most visibly in Korea (§4). It now has to keep that category from becoming a price-led commodity, and to show that software can sell its machines as low dose once did. Its "Leap 2029" plan, announced on 2026-09-29, points to AI and software[6].

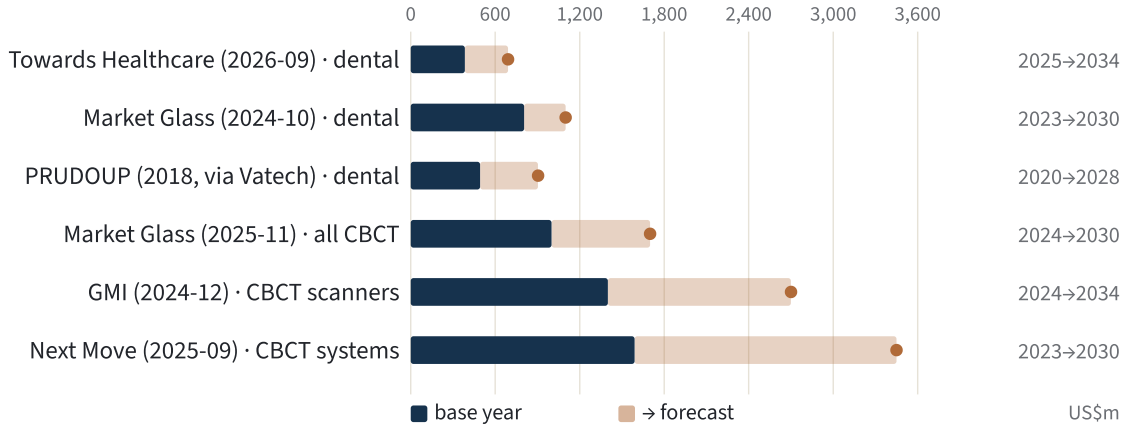
1 The Situation

Dental imaging in the early 2010s had three device families: intraoral X-ray for a few teeth, panoramic units for the whole jaw in 2D, and cone-beam CT, which adds a 3D volume for implants, orthodontics and root canals[2]. In 2005 Vatech launched what it calls the world's first unit to take CT, panoramic and cephalometric images on one machine[2].

The market was moving from film to digital. One estimate Vatech later cited had digital dental X-ray growing 8.8% a year from 2015 to 2020 while analogue shrank[7].

NRG found no CBCT market sizing from before 2013; today's estimates give the scale, and they differ about fourfold. Dental-only estimates run from US$384m for 2025[8] to US$805m for 2023[9], and all-CBCT estimates from US$1.0bn for 2024[10] to US$1.59bn for 2023[11]. Scope and base year explain part of the gap; one house puts dental at 69.2% of CBCT scanner sales in 2024[12]. The rest is disagreement between houses.

Exhibit 1 · **Today's CBCT estimates differ about fourfold, and houses disagree even within one scope**



Source: Towards Healthcare (2026-09); Market Glass (2024-10; 2025-11); PRUDOUP (2018) via Vatech IR (2021-10); Global Market Insights (2024-12); Next Move Strategy Consulting (2025-09).

In November 2010 a US newspaper investigation said cone-beam CT "emits significantly more radiation than conventional methods"[3]. European (SEDENTEXCT) guidelines followed in 2011[4], and in August 2012 the American Dental Association told dentists to justify each scan and use "the lowest combination of tube output and scan time"[5].

Incumbents and a challenger

European, US and Japanese groups led dental 3D, and Chinese makers were starting to register their own units[13] (Exhibit 2). Sirona won a patent injunction against Vatech in 2012[14].

Vatech's Picasso Trio 3-in-1 was FDA-cleared in 2007[15], and a US dealer agreement with Benco followed in November 2009[16]. By late 2011 Vatech America counted more than 1,000 US installations[15]. The detectors came from Rayence, in which Vatech has held a stake since 2011[2]. In 2014 Vatech described itself as No. 5 in the world and No. 1 in Korea, with products in about 7,000 Korean clinics[17].

Exhibit 2 · **Who sold dental 3D, c. 2011–2012**

Company	Base	Position at the time
Planmeca	Finland	No. 1 in China's dental CT market, 2012 (per Vatech)
Sirona	Germany	Won a Mannheim injunction against a Vatech 2D feature, March 2012
KaVo / i-CAT (Danaher)	US, Germany	Sold more than 100 CBCT units in China, 2011
Carestream (ex-Kodak); J. Morita	US; Japan	Established dental imaging incumbents
Hefei Meyer	China	First domestic dental CBCT registration in China, 2012
Vatech	**Korea**	**No. 2 in China (20–25%, about 1,300 CT units in 2012); 10% of US 3D, over 30% in Canada (Dec 2011; company statements)**

Source: Medical Times (2013-08-19)[18]; DrBicuspid (2011-12-26; 2012-03-28; 2012-06-20[19]); South China International Dental Expo catalogue (2026); Vatech IR (2021-10). Company statements as reported.

In NRG's view, dose had by then become both a buyer's objection and a matter of professional guidance for any maker whose growth depended on selling 3D into ordinary practices.

2 The Decision

The PaX-i3D Green was unveiled at IDS 2013, with Korean sales from May. Vatech made dose the headline: at launch it claimed up to 75% lower dose than its earlier models, no more than 30 µSv for an 8×8 cm scan, and a 5.9-second scan against about 20 seconds for typical units[1].

It paired a high-sensitivity detector from Rayence with a noise-reduction algorithm to offset the image loss that low dose brings[1]. The US launch release promised 3D images "at a lower dose than the 2D images"[20]. The company says the Green went on to enter the US, France and Germany, and that its 5.9-second scan "drew market attention to diagnostic dose"[2].

The second half of the decision came in September 2014. The PaX-i3D Smart captured 2D and 3D images in one acquisition, and the company lists it among its mid-tier launches[2]. It gave clinics that bought panoramic units a 3D option one tier down.

NRG reads the two launches as one decision: Vatech would sell CBCT as a general-practice purchase and turn dose from the objection into the reason to buy. The filings are consistent with that reading, though no document from 2013 states it in those words.

Exhibit 3 · The decision followed the dose debate, 2005–2014



Source: Vatech Annual Report FY2025; The New York Times (2010-11); DrBicuspid (2011-09; 2011-12; 2012-08); Medical Times (2013-05). Clay: the 2013–2014 decision; teal: the dose debate.

> **IN THE COMPANY'S WORDS, 2013**
>
> "Dose and image quality move together; lowering dose while raising image quality is impossible without technological innovation." Oh Se-hong, then chief executive, at the Korean launch of the PaX-i3D Green, May 2013 (translated)[1].

In its FY2025 Annual Report Vatech still calls 3D equipment high-end, with high demand in the US and Europe, and expects demand in advanced countries to keep rising "as health and environmental issues come to the fore"[2].

Exhibit 4 sets out three options open in 2013. Vatech took the third, aimed at general practice, where 3D had further to go. As late as 2018, a survey of South Carolina dentists found CBCT on site at 24% of general dentists against 67% of specialists[21]. With 157 respondents in one state, the survey is too small to size that gap, though it does show its direction.

Exhibit 4 · Three ways to play 3D in 2013 (NRG reading)

Option	What it would have meant	Evidence the option was live
A. Stay a 2D volume maker	Protect the lead in Korea; lower R&D risk; exposed as 2D prices fell	Company says price-sensitive emerging markets buy a high share of 2D panoramic units
B. Premium large-field CT for specialists	Compete with i-CAT, Planmeca and Sirona at the top; small unit volumes	Incumbents' positions (Exhibit 2); US adoption led by specialists
C. Low-dose all-in-one CBCT for general practice (chosen)	**Turn dose into a feature; sell 3D where 2D was bought; tier the line later**	**Green (2013); Smart (2014); later A9 and Smart X tiers (Exhibit 5)**

Source: NRG analysis of Vatech Annual Report FY2025 and Vatech IR (2021-10); McKitrick, MUSC (2018). The options are NRG's framing.

3 The Execution

Over the next decade Vatech turned two launches into a tiered line (Exhibit 5). The tiers came out of separate development projects, and the filings describe the entry-level A9 as a cost-competitive model and make no dose claim for it[2][22]. Green X 21 took the line into large-field imaging after a 137-day FDA review[23] and launched first in North America[2].

The mid-tier Smart X sold in Korea was launched overseas as Green X 12[2], so the brand that carried the low-dose claim now also covers a mid-tier product. Vatech describes the 2026 Green X Plus as a cost-optimised successor to the X platform[22]. Green models were already 52% of 3D sales in the second quarter of 2018, by the company's account in press reports[24].

Exhibit 5 · The CBCT ladder, 2013–2026: tiers by price and field of view

Year	Model	Tier	What it added
2013	**PaX-i3D Green**	**Low-dose flagship**	**5.9-second scan; low dose**
2014	**PaX-i3D Smart**	**Mid-tier hybrid**	**2D and 3D in one acquisition**
2016	Green 16	Premium	CT-sensor panoramic; stitched field of view
2020	Green X	Premium	Endodontic-grade resolution; full-skull field of view
2021	A9	Entry	Cost-competitive platform model
2023	Smart X / Green X 12	Mid-tier	Up to five ultra-high-resolution regions per scan
2025	Green X 21	Large field	21×19 cm field of view; FDA-cleared 2025-02-14; North America first
2026	Green X Plus	Cost-optimised X successor	Unveiled May 2026

Source: Vatech Annual Report FY2025; Half-Year Report 2026; US FDA 510(k) K243081 (2025-02); Edaily (2026-09-12)[25]; Medipana (2026-09-25).

Building the route to market

Vatech built its route to market in stages, from a dealer agreement in 2009 to a Henry Schein distribution deal in 2023[26] and full ownership of its US distributor in 2025 (Exhibit 6). The stated purpose of the 2025 buyout was "responsible management in line with the expansion of Vatech America's business"[2].

At home the company moved from non-exclusive dealers toward direct sales, and it treats service as part of the product: "the longer a unit sits idle, the bigger the hit to the dentist's trust and revenue"[2]. A software layer followed. Vatech integrated Pearl's "Second Opinion" AI in March 2025[27] and launched the Clever One diagnostic platform that May[2]; the 2026 Half-Year Report says Clever One strengthens "customer lock-in"[22].

Exhibit 6 · Route to market, 2009–2026: from a dealer deal to owned distribution

Date	Move	Scope
2009-11	Benco, non-exclusive US distribution	Access to more than 30,000 US customers
2017-02-03	51.1% of Vatech America acquired	US distributor consolidated
2023-08-09	Henry Schein distribution agreement	North America: CT, panoramic, portable X-ray, sensors, software
2025-03	Vatech MCIS America set up	New US entity
2025-06-25	Remaining 48.87% of Vatech America bought	₩18.2bn, from largest shareholder Vatech Ewoo Holdings; now 100%
FY2023 → H1 2026	Consolidated subsidiaries 20 → 22 → 26 → 27	New since 2024: Kazakhstan, UAE, Armenia, Türkiye, Kyrgyzstan, Colombia, Poland

Source: DrBicuspid (2009-11-18); Dental Products Report (2023-08-09); Vatech Annual Report FY2025; Half-Year Report 2026.

Salaries rose to ₩62.4bn and commissions to ₩19.9bn in FY2025, from ₩56.5bn and ₩18.1bn a year earlier[2]. Part of that rise may be the cost of a wider sales network, though salaries are company-wide and the company itself points to inflation-driven costs (§4).

Rivals and the supplier

Competitors moved on price and in the entry tier (Exhibit 7)[28]. Dentsply Sirona's annual report calls imaging "a key point of entry" to its digital workflow[29]. On that wording, the company treats CBCT as a gateway to other sales.

Chinese and Korean makers added installations and approvals[13][30]. Vatech's own filing describes competition in Asia and emerging markets as "centred on low-cost equipment", with global companies "expanding entry models alongside premium ones"[2].

Exhibit 7 · How rivals and the supplier moved, 2024–2026

Company	Move	When
Dentsply Sirona	Relaunched Orthophos SL (2D/3D) in Europe "at lower price points"; cited "competitive pressure"	Q1 2024
Envista (i-CAT, DEXIS)	Claims "a leading position in 3D imaging"	FY2024
Hefei Meyer (China)	More than 20,000 CBCT units installed worldwide (company claim)	2026
Dentium (Korea)	Digital-dentistry sales, including CBCT, ₩3.0bn → ₩19.8bn	H1 2025 → H1 2026
Genoray (Korea)	CBCT approvals in Japan (June) and China (July)	2026
Rayence (supplier)	Vatech's purchases ₩49.0bn → ₩36.6bn; reported sensor purchase price −46.3%	FY2024 → FY2025

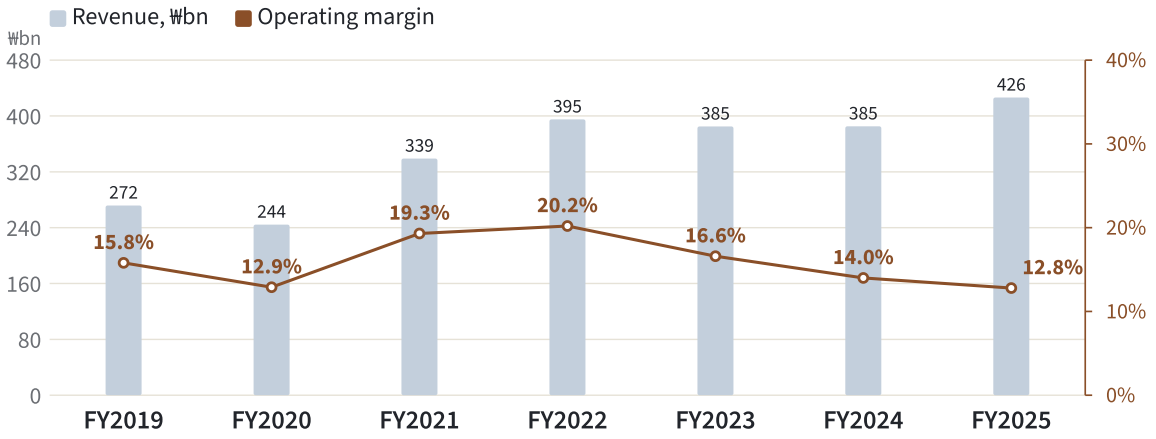
Source: Dentsply Sirona Q1 2024 call (2024-05-02); Envista Form 10-K FY2024[31]; South China International Dental Expo catalogue (2026); Medipana (2026-09-25); Vatech Annual Report FY2025.

Purchases from Rayence fell from ₩49.0bn in FY2024 to ₩36.6bn in FY2025, a year in which Vatech reported a 46.3% fall in its sensor purchase price[2]. They rose 38.1% to ₩25.1bn in the first half of 2026[22]. Rayence supplied the detector for the 2013 Green[1]. It is now an associate, 30.28% owned by Vatech, which still calls itself the only dental imaging company that holds and directly produces detector technology[2]. How much that link matters today is open (§6).

4 The Outcome

Revenue held near ₩385bn in FY2023 and FY2024[32][33] and rose 10.7% in FY2025, to a record[2]. Operating margin went the other way over the same years, from its FY2022 peak of 20.2%[34] to 12.8% in FY2025[2] (Exhibit 8).

Exhibit 8 · Revenue grew 7.8% a year while operating margin peaked in FY2022 (consolidated)

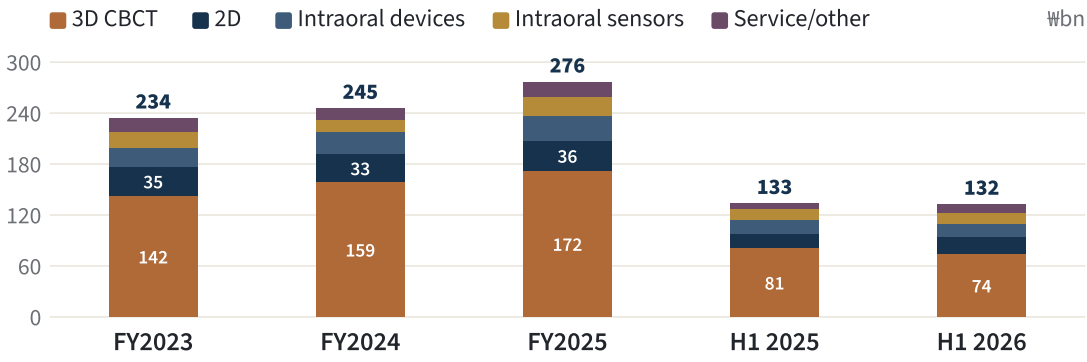


Source: Vatech Annual Reports FY2021–FY2025 (consolidated; FY2019–FY2020 as comparatives).

Vatech describes itself as No. 1 in the global dental CT market by units[2][35]. NRG found no third-party share figure that would test the claim, and the company discloses no CBCT-only unit volumes. It does report capacity use for panoramic and CT units combined: 88.8% in FY2025[2] and 98.1% in H1 2026[22].

3D sales reached ₩171.9bn in FY2025, Vatech's largest product line on the parent-company basis[2]. The filings used give product mix only from FY2023 and consolidated results only from FY2019, so they cannot show the years just after the decision. Press figures fill part of the gap, on a basis that may differ: 3D was 63% of revenue in the second quarter of 2018[24], and FY2017 revenue was ₩218.8bn, 81% of it overseas[36].

Exhibit 9 · 3D is three-fifths of parent-company sales, and it fell in H1 2026



Source: Vatech Annual Report FY2025; Half-Year Reports 2025 and 2026 (separate basis). Half-year bars cover six months.

Gross margin has stayed above 50% since FY2022[34][2]. Selling and administrative costs rose from 29.5% of revenue in FY2021[37] to 39.0% in FY2025[2], faster than gross profit, so operating margin fell (Exhibit 10). The company blames FY2025 pressure on inflation-driven costs[2]; press coverage adds spending on AI and software[38].

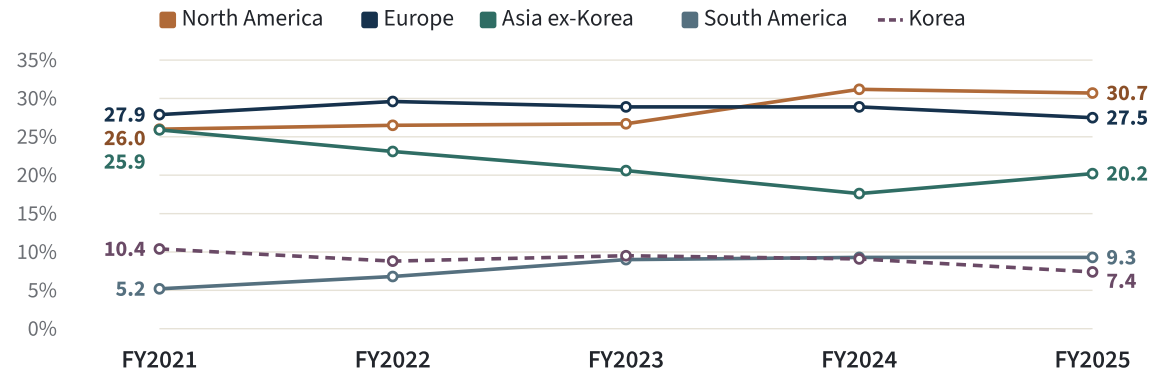
Exhibit 10 · Where the margin went: gross margin held while SG&A rose (% of revenue)

Period	Gross margin	SG&A	Operating margin
FY2019	47.0	31.2	15.8
FY2020	46.4	33.5	12.9
FY2021	48.9	29.5	19.3
FY2022	51.9	31.8	20.2
FY2023	53.3	36.7	16.6
FY2024	53.0	39.0	14.0
FY2025	**51.9**	**39.0**	**12.8**
H1 2026	54.4	38.8	15.7

Source: Vatech Annual Reports FY2021–FY2025; Half-Year Report 2026 (consolidated).

Exports were 92.6% of FY2025 revenue[2]. Exhibit 11 splits the filing's Asia region into Korea and Asia ex-Korea; on that basis North America led in FY2024 and FY2025[2]. In H1 2026 Europe moved back ahead, at 31.3% of revenue against North America's 29.1%[22].

Exhibit 11 · North America led by FY2024 and Korea shrank (share of consolidated revenue)



Source: Vatech Annual Report FY2025 (consolidated). The filing's Asia region is split into Korea and Asia ex-Korea (NRG arithmetic); Middle East and Oceania/Africa not shown.

Korea had at least 16,841 CBCT units in dental clinics and hospitals in 2023, counting only devices with an identifiable make and model[39]. That is about 0.9 for each of its 18,738 dental clinics in 2022[2], with hospital units in the count. Vatech's domestic revenue fell 13.6% from FY2023 to FY2025, and the company calls the home market "mature"[2]. Fewer than 30% of Korean CBCT units output dose data[39]; if dose monitoring spreads, low dose may become a baseline that every maker must meet.

In H1 2026 consolidated revenue rose 6.9% to ₩226.6bn and operating profit 17.9% to ₩35.5bn[40][22], with a 20.2% operating margin in the second quarter[22]. Parent-company 3D sales fell 8.9% while 2D rose 24.6%, the first 3D decline in the periods compared[40][22].

WHAT IS UNRESOLVED

Price: a cheaper Orthophos SL, Chinese makers with large installed bases, Korean makers' new approvals in Japan and China, and Vatech's own H1 2026 mix shift all point to price competition; unit prices are not disclosed. **Demand or timing:** parent-company sales include shipments to subsidiaries, so the 3D decline may reflect stocking. **Software:** "Leap 2029" ties imaging to AI and software but gives no revenue target, investment size or launch dates[6]. **North America:** growth slowed to 1.8% in H1 2026[22], and Henry Schein's contribution is not disclosed.

5 What Transfers

Four lessons carry beyond dental imaging. Each rests on evidence in §1–§4.

1 · Turn the objection into the specification

Dose was the case against CBCT in 2010–2012 (§1). Vatech made a dose number the headline of its 2013 launch (§2). A product facing a safety or regulatory objection can sometimes build its specification around that objection.

2 · Tier the flagship down, and guard the name

Tiering spread 3D across price points, from an entry model to a large-field flagship (§3). The risk is brand stretch: the Green name now also covers a mid-tier model abroad. A tiered line needs a rule for which tiers carry the flagship name.

3 · Owning the channel buys reach; budget for what it costs

Vatech added subsidiaries in new markets (§3), and its selling and administrative costs grew faster than gross profit (§4, Exhibit 10). The company blames inflation and the filings do not isolate channel costs, but NRG reads part of the rise as the price of reach. Budget for the channel when you price the product.

4 · Treat a saturated home market as an early warning

By 2023 Korea had nearly as many identified CBCT units as it had dental clinics in 2022, and Vatech's domestic revenue fell from FY2023 to FY2025 (§4). Whatever sold the first machine may not sell the replacement. Vatech's "Leap 2029" plan points to AI and software as what comes next (§4).

> **WHAT DOES NOT TRANSFER**
>
> Two conditions were specific to Vatech. It could draw on Rayence's detector technology when it designed the Green, and it had a dense home market in which to prove general-practice CBCT. An operator without either would have to buy or build them first.

6 The NRG View

Vatech's filings give revenue, margins and product mix. They leave out street prices and who decides a purchase, and they cannot say whether dose still sells. Exhibit 12 lists five such questions, and the Working With page describes the three bench segments.

Two of the questions bear directly on the H1 2026 decline in parent-company 3D sales. Q1 asks whether it reflects price, and Q5 whether buyers now pay for software as well as hardware; the filings cannot separate either from stocking by Vatech's own subsidiaries.

Exhibit 12 · Questions public data cannot answer, and where the answers sit

#	Question	Section	Bench segment
Q1	How far have street prices for mid-tier CBCT fallen since 2023, and which price tiers are general-practice buyers now choosing across makers?	§3, §4	Dental device makers (competitive pricing in CBCT; end-user adoption)
Q2	In US general practices, who decides a CBCT purchase: the dealer, the dental chain or the dentist? Is imaging bundled with implants, chairs or scanners?	§3	Dental device makers (bundling, distributor buyers, channel conflict)
Q3	How much did the 2013 low-dose design depend on Rayence detectors, and could a maker without in-house detectors have matched it?	§2, §3	Former Vatech-group staff (detector and manufacturing history); medical imaging majors (detector technology)
Q4	Is low dose still a buying criterion, or have FDA, CE MDR and national dose monitoring made it a baseline every maker must meet?	§1, §4	Medical imaging majors (low-dose trajectories, FDA and CE pathways); dental device makers (what buyers ask for)
Q5	Will dental buyers pay for AI reading and practice software, and why do or don't the medical imaging majors compete in dental CBCT?	§4	Dental device makers (end-user adoption); medical imaging majors (AI reading; why majors do or do not compete in dental)

Source: NRG analysis; NRG expert network bench as of 2026-09-30.

Sequencing the calls

NRG would run a short call program by segment (Exhibit 13). It starts with product history and ends by testing the synthesis against device makers' view of buyer behaviour. The device makers come before the imaging majors so that the dose and AI questions can build on what buyers are paying for.

Exhibit 13 · How NRG would sequence the calls, by segment

Step	Segment	What the calls settle	Questions
1	Former Vatech-group staff	Product-generation decisions and the manufacturing and detector side, as history	Q3
2	Dental device makers	The price ladder, channel mechanics and what buyers pay for	Q1, Q2, Q5
3	Medical imaging majors	Dose regulation, detectors and AI reading; why majors do or do not compete in dental	Q3, Q4, Q5
4	Dental device makers (return)	Test the synthesis against device makers' view of buyer behaviour	Q1, Q2, Q4

Source: NRG call-program design; NRG expert network bench as of 2026-09-30.

> **COVERAGE GAPS**
>
> The bench has no practising dentists or dental-clinic buyers, so end-user adoption questions route to the dental device makers. Former Vatech-group staff speak to history; anything after their departure is out of bounds.

Working With Nathan Research

THE BENCH BEHIND THIS CASE

The questions in Section 6 route to three segments of NRG's expert network, as of 30 September 2026.

Former Vatech-group staff

Seven former Vatech-group staff spanning senior leadership, R&D, manufacturing and overseas sales

How the company built its imaging lines and overseas distribution; the manufacturing and detector side; product-generation decisions, as history.

Dental device makers

More than a dozen former staff of dental device makers, including Osstem and Dentsply Sirona

How dental chains and distributors bundle imaging with implants and chairs; competitive pricing in CBCT and intraoral sensors; channel conflict.

Medical imaging majors

About fifty former GE HealthCare, Siemens Healthineers and Philips staff, many at director level or above

Imaging technology trajectories (low dose, detectors, AI reading); FDA and CE regulatory pathways; why majors do or do not compete in dental.

How an engagement works

1 · Scope

We turn your question set into segment profiles and a call plan.

2 · Screen

We check each expert for relevance and conflicts, and brief them on restricted topics before any call.

3 · Convene

Calls run in the order your questions need, with a written summary where useful.

Partner With Nathan Research

START THE CONVERSATION

If your team is working on dental imaging or Korean medical devices, we would welcome a conversation about the questions you need answered.

WEB	www.nathanrg.com	
EMAIL	team@nathanrg.com	General enquiries
	nathan@nathanrg.com	Nathan Choi · CEO
PHONE	+82 10 3059 3630	Nathan Choi · CEO
	+82 2 939 3630	Office · Seoul

Compliance This case is based only on public filings, named third-party research, press reports and NRG's anonymised network profiles (§6). It is not investment advice and contains no valuation, price target or recommendation. Nathan Research does not arrange calls about a company with that company's current employees, and it screens every engagement for material non-public information (MNPI).

A Appendix

Methodology

Company evidence comes from Vatech's DART filings: the Annual Report FY2025 and Half-Year Report 2026 as anchors, the Half-Year Report 2025, and DART financial-statement data for FY2019–FY2024. Consolidated figures are K-IFRS; product mix is disclosed only on a separate (parent) basis. Market sizes are dated research-house estimates, shown as ranges.

Trade press supplies dated events and management quotes; Korean quotes are NRG translations, and company claims are marked as such. NRG did not use broker research, consensus forecasts, market-price data or unverified competitor figures.

Network figures describe NRG expert profiles as of 30 September 2026, grouped by former employer type and function. Counts are floors. Individuals are not identified, and current employees of Vatech are excluded. No expert was consulted for this case; the questions in §6 are the ones NRG would put to these segments.

Source Register

[1] Medical Times (Korea), PaX-i3D Green launch report (in Korean), 2013-05-07

[2] Vatech, *Annual Report FY2025* (DART rcept_no 20260318000636, filed 2026-03-18)

[3] The New York Times, "Radiation Worries for Children in Dentists' Chairs", 2010-11-22

[4] DrBicuspid, "European group issues dental CBCT guidelines" (SEDENTEXCT), 2011-09-01

[5] DrBicuspid, "ADA releases guidelines for cone-beam CT use" (JADA 143(8):899–902), 2012-08-02

[6] Digital Chosun, Vatech "Leap 2029" (in Korean), 2026-09-30

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