

NAEOTOM Alpha

Photon-counting CT

Overview of Selected Publications



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1. General / Overview

NAEOTOM Alpha

First Clinical Photon-counting Detector CT System: Technical Evaluation.

Rajendran, K., Petersilka, M., Henning, A., Shanblatt, E.R., Schmidt, B., Flohr, T.G., Ferrero, A., Baffour, F., Diehn, F.E., Yu, L., Rajiah, P., Fletcher, J.G., Leng, S., McCollough, C.H. (2022). Radiology, 303(1), 130-138. <https://doi.org/10.1148/radiol.212579>

NAEOTOM Alpha

Standardization and Quantitative Imaging With Photon-Counting Detector CT.

McCollough C., Rajendran, K., Leng, S. (2023). 00(00). Investigative Radiology. <https://doi.org/10.1097/RLI.0000000000000948>

NAEOTOM Alpha

Photon-Counting Detector CT : Early Clinical Experience Review.

Sartoretti, T., Wildberger, J., Flohr, T., Alkadhi, H. (2023). British Journal of Radiology. <https://doi.org/10.1259/bjr.20220544>

NAEOTOM Alpha

Photon-Counting Computed Tomography – Basic Principles , Potenzial Benefits, and Initial Clinical Experience.

Stein, T., Rau, A., Russe, M.F., Arnold, P., Faby, S., Ulzheimer, S., Weis, M., Froelich, M.F., Overhoff, D., Horger, M., Hagen, F., Bongers, M., Nikolaou, K., Schönberg, S.O., Bamberg, F., Weiβ, J., & Stein, T. (2023). RöFo. <https://doi.org/10.1055/a-2018-3396>

NAEOTOM Alpha

Seeing More with Less: Clinical Benefits of Photon-counting Detector CT.

Nehra, A.K., Rajendran, K., Baffour, F.I., Mileto, A., Rajiah, P.S., Horst, K.K., Inoue, A., Johnson, T.F., Diehn, F.E., Glazebrook, K.N., Thorne, J.E., Weber, N.M., Shanblatt, E.R., Gong, H., Yu, L., Leng, S., McCollough, C.H., & Fletcher, J.G. (2023). Radiographics : A Review Publication of the Radiological Society of North America, Inc, 43(5), e220158. <https://doi.org/10.1148/rg.220158>

NAEOTOM Alpha

Clinical applications of photon counting detector CT.

McCollough, C.H., Rajendran, K., Baffour, F.I., Diehn, F.E., Ferrero, A., Glazebrook, K.N., Horst, K.K., Johnson, T.F., Leng, S., Mileto, A., Rajiah, P.S., Schmidt, B., Yu, L., Flohr, T.G., & Fletcher, J.G. (2023). European Radiology. <https://doi.org/10.1007/s00330-023-09596-y>

NAEOTOM Alpha

The technical development of photon-counting detector CT.

McCollough, C.H., Rajendran, K., Leng, S., Yu, L., Fletcher, J.G., Stierstorfer, K., & Flohr, T.G. (2023). European Radiology. <https://doi.org/10.1007/s00330-023-09545-9>

NAEOTOM Alpha

Photon-counting CT : Review of initial clinical results.

Bie, J., Van Der, Straten, M., Van, Booij, R., Bos, D., Dijkshoorn, M.L., Hirsch, A., Sharma, S.P., Oei, E.H.G., & Budde, R.P.J. (2023). European Journal of Radiology, 163(April), 110829. <https://doi.org/10.1016/j.ejrad.2023.110829>

NAEOTOM Alpha

Technical Basics and Clinical Benefits of Photon-Counting CT.

Flohr, T., & Schmidt, B. (2023).

European Journal of Radiology 163 (2023) 110829 <https://doi.org/10.1097/RLI.0000000000000980>

NAEOTOM Alpha

Photon Counting Computed Tomography–Applications.

Lofino, L., & Marin, D. (2023).

Radiologic Clinics of North America. <https://doi.org/10.1016/j.rcl.2023.06.004>

NAEOTOM Alpha

Reduction of beam hardening artifact in photon-counting computed tomography: Using low-energy threshold polyenergetic reconstruction.

McGuire, A.M., Smith, C.D., Chamberlin, J.H., Maisuria, D., Tóth, A., Schoepf, U.J., O'Doherty, J., Munden, R.F., Burt, J., Baruah, D., & Kabakus, I.M. (2023).

Journal of Cardiovascular Computed Tomography, July, 3–4. <https://doi.org/10.1016/j.jcct.2023.08.007>

2. Dose / IQ

NAEOTOM Alpha

Low-dose CT of the abdomen: Initial experience on a novel photon-counting detector CT and comparison with energy-integrating detector CT.

Decker, J. A., Bette, S., Lubina, N., Rippel, K., Braun, F., Risch, F., Woźnicki, P., Wollny, C., Scheurig-Muenkler, C., Kroencke, T. J., Schwarz, F. (2022).

European Journal of Radiology, 148, 110181. <https://doi.org/10.1016/j.ejrad.2022.110181>

NAEOTOM Alpha

Quantum Iterative Reconstruction for Abdominal Photon-counting Detector CT Improves Image Quality.

Sartoretti, T., Landsmann, A., Nakhostin, D., Eberhard, M., Roeren, C., Mergen, V., Higashigaito, K., Raupach, R., Alkadhi, H., Euler, A. (2022).

Radiology, 303(2), 339-348. <https://doi.org/10.1148/radiol.211931>

NAEOTOM Alpha

Iterative metal artifact reduction on a clinical photon counting system –Technical possibilities and reconstruction selection for optimal results dependent on the metal scenario.

Anhaus, J., Schmidt, S., Killermann, P., Mahnken, A., Hofmann, C. (2022).

Journal of Physics in Medicine and Biology, 2(1), 0-31. <https://doi.org/10.1088/1361-6560/ac71f0>

NAEOTOM Alpha

Clinical Low Dose Photon Counting CT for the Detection of Urolithiasis: Evaluation of Image Quality and Radiation Dose.

Niehoff, J. H., Carmichael, A. F., Woeltjen, M. M., Boriesosdick, J., Lopez Schmidt, I., Michael, A. E., Große Hokamp, N., Piechota, H., Borggrefe Jan, J., & Kroeger, J. R. (2022).

Tomography, 8(4), 1666–1675. <https://doi.org/10.3390/tomography8040138>

3. Cardiovascular

NAEOTOM Alpha

Tube voltage-independent coronary calcium scoring on a first-generation dual-source photon-counting CT-a proof-of-principle phantom study.

Mergen, V., Higashigaito, K., Allmendinger, T., Manka, R., Euler, A., Alkadhi, H., Eberhard, M. (2021).

International Journal of Cardiovascular Imaging, 38(4), 905-912. <https://doi.org/10.1007/s10554-021-02466-y>

NAEOTOM Alpha

Coronary Calcium Scoring with First Generation Dual-Source Photon-Counting CT-First Evidence from Phantom and In-Vivo Scans.

Eberhard, M., Mergen, V., Higashigaito, K., Allmendinger, T., Manka, R., Flohr, T., Schmidt, B., Euler, A., Alkadhi, H. (2021). Diagnostics, 11(9), 1708. <https://doi.org/10.3390/diagnostics11091708>

NAEOTOM Alpha

High-Pitch Photon-Counting Detector Computed Tomography Angiography of the Aorta: Intraindividual Comparison to Energy-Integrating Detector Computed Tomography at Equal Radiation Dose.

Euler, A., Higashigaito, K., Mergen, V., Sartoretti, T., Zanini, B., Schmidt, B., Flohr, T. G., Ulzheimer, S., Eberhard, M., Alkadhi, H. (2021).

Investigative Radiology, 57(2), 115-121. <https://doi.org/10.1097/RLI.0000000000000816>

NAEOTOM Alpha

Photon-Counting Detector CT-Based Vascular Calcium Removal Algorithm: Assessment Using a Cardiac Motion Phantom.

Allmendinger, T., Nowak, T., Flohr, T., Klotz, E., Hagebauer, J., Alkadhi, H., Schmidt, B. (2022).

Investigative Radiology, 57(6), 399-405. <https://doi.org/10.1097/RLI.0000000000000853>

NAEOTOM Alpha

Extracellular volume quantification with cardiac late enhancement scanning using dual-source photon-counting detector CT.

Mergen, V., Sartoretti, T., Klotz, E., Schmidt, B., Jungblut, L., Higashigaito, K., Manka, R., Euler, A., Kasel, A., Eberhard, M., Alkadhi, H. (2021).

Investigative Radiology, 57(6), 406-411. <https://doi.org/10.1097/RLI.0000000000000851>

NAEOTOM Alpha

Epicardial Adipose Tissue Attenuation and Fat Attenuation Index: Phantom Study and In-Vivo Measurements With Photon-Counting CT.

Mergen, V., Ried, E., Allmendinger, T., Sartoretti, T., Higashigaito, K., Manka, R., Euler, A., Alkadhi, H., Eberhard, M. (2022).

American Journal of Roentgenology, 218(5), 822-829. <https://doi.org/10.2214/AJR.21.26930>

NAEOTOM Alpha

Dose Reduction in Coronary Artery Calcium Scoring Using Mono-Energetic Images from Reduced Tube Voltage Dual-Source Photon-Counting CT Data: A Dynamic Phantom Study.

van der Werf, N. R., van Gent, M., Booij, R., Bos, D., van der Lugt, A., Budde, R. P. J., Greuter, M. J. W., van Straten, M. (2021). Diagnostics, 11(12), 2192. <https://doi.org/10.3390/diagnostics11122192>

NAEOTOM Alpha

Coronary calcium scores on dual-source photon-counting computed tomography: an adapted Agatston methodology aimed at radiation dose reduction.

van der Werf, N. R., Greuter, M. J. W., Booij, R., van der Lugt, A., Budde, R. P. J., van Straten, M. (2022). European Radiology. <https://doi.org/10.1007/s00330-022-08642-5>

NAEOTOM Alpha

Coronary CTA-based Calcium Scoring: In-Vitro and In-Vivo Validation of a Novel Virtual Non-Iodine Reconstruction Algorithm on a Clinical, First Generation Photon Counting-Detector System.

Emrich, T., Aquino, G., Schoepf, U. J., Braun, F. M., Woznicki, P., Decker, J. A., O'Doherty, J., Brandt, V., Allmendinger, T., Nowak, T., Schmidt, B., Flohr, T., Kroencke, T. J., Scheurig-Muenkler, C., Varga-Szemes, A., Schwarz, F. (2022). Investigative Radiology, 00(00), 1–8. <https://doi.org/10.1097/RLI.0000000000000868>

NAEOTOM Alpha

Improved assessment of coronary artery luminal stenosis with heavy calcifications using high-resolution photon-counting detector CT.

Koons, E., Van Meter, P., Rajendran, K., Yu, L., McCollough, C. H., Leng, S. (2022). Physics of Medical Imaging, SPIE Event. <https://doi.org/10.1117/12.2613019>

NAEOTOM Alpha

Comparison Study of Myocardial Radiomics Feature Properties on Energy-Integrating and Photon-Counting Detector CT.

Ayx, I., Tharmaseelan, H., Hertel, A., Nörenberg, D., Overhoff, D., Rotkopf, L. T., Riffel, P., Schoenberg, S. O., Froelich, M. F. (2022). Diagnostics, 12(5), 1294. <https://doi.org/10.3390/diagnostics12051294>

NAEOTOM Alpha

Ultra-High-Resolution Coronary CT Angiography With Photon-Counting Detector CT.

Mergen, V., Sartoretti, T., Baer-Beck, M., Schmidt, B., Petersilka, M., Wildberger, J. E., Euler, A., Eberhard, M., Alkadhi, H. (2022). Investigative Radiology, Publish Ahead of Print (00), 8–12. <https://doi.org/10.1097/rli.0000000000000897>

NAEOTOM Alpha

First in-human quantitative plaque characterization with ultra-high resolution coronary photon-counting CT angiography.

Mergen, V., Eberhard, M., Manka, R., Euler, A., Alkadhi, H. (2022).

Frontiers in Cardiovascular Medicine, 9. <https://doi.org/10.3389/fcvm.2022.981012>

NAEOTOM Alpha

Coronary Artery Calcium Evaluation Using New Generation Photon-counting Computed Tomography Yields Lower Radiation Dose Compared With Standard Computed Tomography.

Schwartz, F. R., Daubert, M. A., Molvin, L., Ramirez-Giraldo, J. C., Samei, E., Marin, D., Tailor, T. D. (2022). Journal of Thoracic Imaging, 00(00). <https://doi.org/10.1097/RTI.0000000000000685>

NAEOTOM Alpha

Plaque composition on ultra-high-resolution coronary computed tomography angiography with optical coherence tomography correlation.

Emrich, T., Hell, M. (2022).

European Heart Journal. <https://doi.org/10.1093/euroheartj/ehac560>

NAEOTOM Alpha

High Temporal Resolution Dual-Source Photon-Counting CT for Coronary Artery Disease: Initial Multicenter Clinical Experience.

Soschynski, M., Hagen, F., Baumann, S., Hagar, M. T., Weiss, J., Krauss, T., Schlett, C. L., von zur Mühlen, C., Bamberg, F., Nikolaou, K., Greulich, S., Froelich, M. F., Riffel, P., Overhoff, D., Papavassiliou, T., Schoenberg, S. O., Faby, S., Ulzheimer, S., Ayx, I., Krumm, P. (2022).

Journal of Clinical Medicine 11(20). <https://doi.org/10.3390/jcm11206003>

NAEOTOM Alpha

Reduced Iodinated Contrast Media Administration in Coronary CT Angiography on a Clinical Photon-Counting Detector CT System.

Emrich, T., O'Doherty, J., Schoepf, U. J., Suranyi, P., Aquino, G., Kloechner, R., Halfmann, M. C., Allmendinger, T., Schmidt, B., Flohr, T., Varga-Szemes, A. (2022).

Investigative Radiology 58(2). <https://doi.org/10.1097/RLI.0000000000000911>

NAEOTOM Alpha

Current role of coronary calcium in younger population and future prospects with photon counting technology.

Cademartiri, F., & Maurovich-Horvat, P. (2022).

European Heart Journal. Cardiovascular Imaging, 24(1), 25–26. <https://doi.org/10.1093/ehjci/jeac214>

NAEOTOM Alpha

High-pitch, high temporal resolution, multi-energy cardiac imaging on a dual-source photon-counting-detector CT.

Ahmed, Z., Campeau, D., Gong, H., Rajendran, K., Rajiah, P., McCollough, C., & Leng, S. (2022).

Medical Physics. <https://doi.org/10.1002/mp.16124>

NAEOTOM Alpha

Stent imaging on a clinical dual-source photon-counting detector CT system—impact of luminal attenuation and sharp kernels on lumen visibility.

Decker, J. A., O'Doherty, J., Schoepf, U. J., Todoran, T. M., Aquino, G. J., Brandt, V., Baruah, D., Fink, N., Zsarnoczay, E., Flohr, T., Schmidt, B., Allmendinger, T., Risch, F., Varga-Szemes, A., & Emrich, T. (2022).

European Radiology. <https://doi.org/10.1007/s00330-022-09283-4>

NAEOTOM Alpha

Assessment of epicardial adipose tissue on virtual non-contrast images derived from photon-counting detector coronary CTA datasets.

Risch, F., Schwarz, F., Braun, F., Bette, S., Becker, J., Scheurig-Muenkler, C., Kroencke, T. J., & Decker, J. A. (2022).

European Radiology. <https://doi.org/10.1007/s00330-022-09257-6>

NAEOTOM Alpha

Influence of local aortic calcification on periaortic adipose tissue radiomics texture features—a primary analysis on PCCT.

Tharmaseelan, H., Froelich, M. F., Nörenberg, D., Overhoff, D., Rotkopf, L. T., Riffel, P., Schoenberg, S. O., & Ayx, I. (2022).

International Journal of Cardiovascular Imaging, 38(11), 2459–2467. <https://doi.org/10.1007/s10554-022-02656-2>

NAEOTOM Alpha

Photon- counting detector coronary CT angiography : impact of virtual monoenergetic imaging and iterative reconstruction on image quality.

Sartoretti, T., McDermott, M. , Mergen, V., Euler, A., Schmidt, B., Jost, G., Wildberger, J.E., Alkadhi, A. (2022)

British Institute of Radiology. April 2022. <https://doi.org/10.1259/bjr.20220466>

NAEOTOM Alpha

Intra-individual comparison of coronary calcium scoring between photon counting detector- and energy integrating detector-CT : Effects on risk reclassification.

Wolf, E. V., Halfmann, M. C., Schoepf, U. J., Zsarnoczay, E., Fink, N., Iii, J. P. G., Aquino, G. J., Willemink, M. J., Doherty, J. O., Hell, M. M., Suranyi, P., & Kabakus, I. M. (2023). January, 1–8.

Frontiers in Cardiovascular Medicine. <https://doi.org/10.3389/fcvm.2022.1053398>

NAEOTOM Alpha

CT Angiography of the aorta using photon-counting detector CT with reduced contrast media volume.

Higashigaito, K., Mergen, V., Eberhard, M., & Jungblut, E. L. (2023).

Cardiothoracic Imaging <https://doi.org/10.1148/ryct.220140>

NAEOTOM Alpha

Myocardial characterization with extracellular volume mapping with a first-generation photon-counting detector CT with MRI reference.

Aquino, G. J., O'Doherty, J., Schoepf, U. J., Ellison, B., Byrne, J., Fink, N., Zsarnoczay, E., Wolf, E. V., Allmendinger, T., Schmidt, B., Flohr, T., Baruah, D., Suranyi, P., Varga-Szemes, A., & Emrich, T. (2023).

RSNA radiology Cardiac Imaging <https://pubs.rsna.org/doi/10.1148/radiol.222030>

NAEOTOM Alpha

New Horizons in Vascular Imaging With Photon-Counting Detector CT.

Wildberger, J. E., & Alkadhi, H. (2023).

Investigative Radiology, 00(00), 1–6. <https://doi.org/10.1097/RLI.0000000000000957>

NAEOTOM Alpha

Influence of heart rate and heart rate variability on the feasibility of ultra-fast, high-pitch coronary photon-counting computed tomography angiography.

Rotkopf, L. T., Froelich, M. F., Riffel, P., Ziener, C. H., Reid, C., Schlemmer, H. P., Schoenberg, S. O., & Ayx, I. (2023).

International Journal of Cardiovascular Imaging, 0123456789. <https://doi.org/10.1007/s10554-023-02808-y>

NAEOTOM Alpha

Photon-Counting Computed Tomography (PCCT): Technical Background and Cardio-Vascular Applications.

Meloni, A., Frijia, F., Panetta, D., Degiorgi, G., De Gori, C., Maffei, E., Clemente, A., Positano, V., & Cademartiri, F. (2023).

Diagnostics, 13(4). <https://doi.org/10.3390/diagnostics13040645>

NAEOTOM Alpha

Radiation dose optimization for photon - counting CT coronary artery calcium scoring for different patient sizes : a dynamic phantom study.

Dobrolinska, M. M., Werf, N. R. Van Der, Bie, J. Van Der, Groen, J. De, & Dijkshoorn, M. (2023). European Radiology, 33, 4668–4675 (2023). <https://doi.org/10.1007/s00330-023-09434-1>

NAEOTOM Alpha

Ultra-high resolution photon-counting coronary CT angiography improves coronary stenosis quantification over a wide range of heart rates – A dynamic phantom study.

Zsarnoczay, E., Fink, N., Schoepf, U. J., O'Doherty, J., Allmendinger, T., Hagenauer, J., Wolf, E. V., Griffith, J. P., Maurovich-Horvat, P., Varga-Szemes, A., & Emrich, T. (2023). European Journal of Radiology, 161, 110746. <https://doi.org/10.1016/j.ejrad.2023.110746>

NAEOTOM Alpha

Characterizing the Heart and the Myocardium With Photon-Counting CT.

Zsarnoczay, E., Varga-Szemes, A., Emrich, T., Szilveszter, B., van der Werf, N. R., Mastrodicasa, D., Maurovich-Horvat, P., & Willemink, M. J. (2023).

Investigative Radiology, 58(7):p 505-514 <https://doi.org/10.1097/RLI.0000000000000956>

NAEOTOM Alpha

High-Pitch Multienergy Coronary CT Angiography in Dual-Source Photon-Counting Detector CT Scanner at Low Iodinated Contrast Dose.

Rajiah, P. S., Dunning, C. A. S., Rajendran, K., Tandon, Y. K., Ahmed, Z., Larson, N. B., Collins, J. D., Thorne, J., Williamson, E., Fletcher, J. G., & Mccollough, C. (2023). 00(00).

Investigative Radiology, 58(9):p 681-690 <https://doi.org/10.1097/RLI.0000000000000961>

NAEOTOM Alpha

Photon Counting Detector CT-Based Virtual Noniodine Reconstruction Algorithm for In Vitro and In Vivo Coronary Artery Calcium Scoring: Impact of Virtual Monoenergetic and Quantum Iterative Reconstructions.

Fink, N., Zsarnoczay, E., Schoepf, U. J., Griffith, J. P., Wolf, E. V., O'Doherty, J., Suranyi, P., Baruah, D., Kabakus, I. M., Ricke, J., Varga-Szemes, A., & Emrich, T. (2023).

Investigative Radiology, 00(00), 1–8. <https://doi.org/10.1097/RLI.0000000000000959>

NAEOTOM Alpha

First in-vivo coronary stent imaging with clinical ultra high resolution photon-counting CT

Geering, L. , Sartoretti, T. , Mergen,V. ,Cundari, G. ,Rusek, S. , Civaia, F. ,Rossi, P. ,Templin, C. ,Manka, R. Eberhard M., Alkadhi, H. Journal of Cardiovascular Computed Tomography, 5(1), 1–2. <https://doi.org/10.1016/j.jcct.2023.02.009>

NAEOTOM Alpha

Quantifying lumen diameter in coronary artery stents with high-resolution photon counting detector CT and convolutional neural network denoising.

Koons, E. K., Rajendran, K., Thorne, J. E., Huber, N. R., Mccollough, C. H., Leng, S., & Chang, S. (2023). Medical Physics Research Article <https://doi.org/10.1002/mp.16415>

NAEOTOM Alpha

Radiation Dose Reduction for Coronary Artery Calcium Scoring Using a Virtual Non-Iodine Algorithm on Photon Counting Detector Computed Tomography Phantom Data.

Fink, N., Zsarnoczay, E., Schoepf, U. J., Doherty, J. O., lii, J. P. G., Pinos, D., Tesche, C., Ricke, J., Willemink, M., Varga-szemes, A., & Emrich, T. (2023).

Diagnostics 2023 Apr 25;13(9):1540. <https://doi.org/10.3390/diagnostics13091540>

NAEOTOM Alpha

Photon-Counting Versus Energy-Integrating Detector CT Angiography of the Lower Extremity in a Human Cadaveric Model With Continuous Extracorporeal Perfusion.

Gruschwitz, P., Hartung, V., Kleefeldt, F., Ergün, S., Huflage, H., Peter, D., Hendel, R., Patzer, T. S., Pannenbecker, P., Kuhl, P. J., Bley, T. A., Petritsch, B., & Grunz, J. (2023).

Investigative Radiology 1–6. <https://doi.org/10.1097/RLI.0000000000000982>

NAEOTOM Alpha

Spectral aortoiliac photon-counting CT angiography with minimal quantity of contrast agent.

Rau, S., Soschynski, M., Schlett, C. L., & Hagar, M. T. (2023).

Radiology Case Reports, 18(6), 2180–2182. <https://doi.org/10.1016/j.radcr.2023.01.066>

NAEOTOM Alpha

Photon-counting Detector CT in Patients Pre- and Post- Transcatheter Aortic Valve Replacement.

Bie, J. Van Der, Hirsch, A., & Mieghem, N. M. D. A. Van. (2023)

Radiology: Cardiovascular Imaging 5(2):e220318 <https://doi.org/10.1148/rvct.220318>

NAEOTOM Alpha

Dual-Source Photon-Counting Computed Tomography — Part I : Clinical Overview of Cardiac CT and Coronary CT Angiography Applications.

Cademartiri, F., Meloni, A., Pistoia, L., Degiorgi, G., Clemente, A., Gori, C. De, Positano, V., Celi, S., Berti, S., Emdin, M., Panetta, D., Menichetti, L., Punzo, B., Cavaliere, C., Bossone, E., Saba, L., Cau, R., Grutta, L. La, & Maffei, E. (2023). *J. Clin. Med.* 2023, 12, 3627. <https://doi.org/10.3390/jcm12113627>

NAEOTOM Alpha

Dual-Source Photon-Counting Computed Tomography — Part III : Clinical Overview of Vascular Applications beyond Cardiac and Neuro Imaging.

Meloni, A., Cademartiri, F., Pistoia, L., Degiorgi, G., Clemente, A., Gori, C. De, Positano, V., Celi, S., Berti, S., Emdin, M., Panetta, D., Menichetti, L., Punzo, B., Cavaliere, C., Bossone, E., Saba, L., Cau, R., Grutta, L. La, & Maffei, E. (2023). *Journal of Clinical Medicine.* 12, 3798. <https://doi.org/10.3390/jcm12113798>

NAEOTOM Alpha

The Importance of Temporal Resolution for Ultra-High-Resolution Coronary Angiography Evidence From Photon-Counting Detector CT.

Mergen, V., Sartoretti, T., Cundari, G., Serifovic, M., Higashigaito, K., Allmendinger, T., Schmidt, B., Flohr, T., Manka, R., Eberhard, M., & Alkadhi, H. (2023). *Investigative Radiology* 1–8. <https://doi.org/10.1097/RLI.0000000000000987>

NAEOTOM Alpha

Accuracy of ultrahigh-Resolution Photon-counting CT for Detecting Coronary Artery Disease in a high-risk population

H.Hagar, M. T., Soschynski, M., Saffar, R., & Rau, A. (2023). *Radiology* 307(5):e223305 <https://doi.org/10.1148/radiol.223305>

NAEOTOM Alpha

Cardiac virtual noncontrast images for calcium quantification with photon-counting detector CT.

Mergen, V., Ghouse, S., Sartoretti, B. T., Manka, B. R., & Euler, A. (2023). *Radiology: Cardiothoracic Imaging* 2023; 5(3):e220307 <https://doi.org/10.1148/ryct.220307>

NAEOTOM Alpha

Photon-Counting Detector CT Angiography for Endoleak Detection After Endovascular Aortic Repair.

Turron Gomollon, A. M., Mergen, V., Sartoretti, T., Polacin, M., Nakhostin, D., Pupipe, G., Alkadhi, H., & Euler, A. (2023). *Investigative Radiology*, Publish Ah(00), 1–6. <https://doi.org/10.1097/rli.0000000000000993>

NAEOTOM Alpha

Ex vivo coronary calcium volume quantification using a high-spatial-resolution clinical photon- counting-detector computed tomography.

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Intra-individual comparison of coronary artery stenosis measurements between energy-integrating detector CT and photon-counting detector CT Coronary artery stenosis measurements.

Wolf, E. V., Gnasso, C., Schoepf, U. J., Halfmann, M. C., O'Doherty, J., Zsarnoczay, E., Varga-Szemes, A., Emrich, T., & Fink, N. (2023). *Imaging*, 1–8. <https://doi.org/10.1556/1647.2023.00156>

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Intra-individual comparison of image quality of the coronary arteries between photon-counting detector and energy-integrating detector CT systems.

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Coronary stent imaging in photon counting computed Tomography: Optimization of reconstruction kernels in a phantom.

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NAEOTOM Alpha

Saving Contrast Media in Coronary CT Angiography with Photon-Counting Detector CT.

Cundari, G., Deilmann, P., Mergen, V., Ceric, K., Eberhard, M., Jungblut, L., Alkadhi, H., & Higashigaito, K. (2023). *Academic Radiology*, 6, 1–9. <https://doi.org/10.1016/j.acra.2023.06.025>

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Cardiovascular Applications of Photon-Counting CT Technology: A Revolutionary New Diagnostic Step.

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A prospective study comparing the quality of coronary computed tomography angiography images from photon counting and energy integrating detector systems.

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NAEOTOM Alpha

Comparison of Image Quality and Dose Exposure of Contrast-Enhanced Abdominal CT acquired on a 1st Generation Clinical Dual-Source Photon-Counting Detector CT in Obese Patients vs. a 2nd Generation Dual-Source Dual Energy Integrating Detector CT.

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Potential of Unenhanced Ultra-Low-Dose Abdominal Photon-Counting CT with Tin Filtration : A Cadaveric Study.

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Liver Fat Quantification in Photon Counting CT in head to head comparison with clinical MRI; first experience.

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Impact of CT Photon-Counting Virtual Monoenergetic Imaging on Visualization of Abdominal Arterial Vessels.

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Is There Still a Role for Two-Phase Contrast-Enhanced CT and Virtual Monoenergetic Images in the Era of Photon-Counting Detector CT ?

Estler, A., Nikolaou, K., Schönberg, S. O., Bamberg, F., Froelich, M. F., Tollens, F., Verloh, N., Weiss, J., Horger, M., & Hagen, F. Diagnostics 2023, 13, 1454. <https://doi.org/10.3390/diagnostics13081454>

5. Pulmonology

NAEOTOM Alpha

First Performance Evaluation of an Artificial Intelligence-Based Computer-Aided Detection System for Pulmonary Nodule Evaluation in Dual-Source Photon-Counting Detector CT at Different Low-Dose Levels.

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Impact of Contrast Enhancement and Virtual Monoenergetic Image Energy Levels on Emphysema Quantification: Experience With Photon-Counting Detector Computed Tomography.

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Performance of Virtual non-contrast images generated on clinical Photon-Counting Detector CT for emphysema quantification : Proof of Concept Performance of Virtual non-contrast images generated on clinical Photon-Counting Detector CT for emphysema quantification : Proof of Concept Performance of PCD-CT derived VNC images for emphysema quantification.

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Low-Dose High-Resolution Photon-Counting CT of the Lung: Radiation Dose and Image Quality in the Clinical Routine.

Woeltjen, M. M., Niehoff, J. H., Michael, A. E., Horstmeier, S., Moenninghoff, C., Borggrefe, J., Kroeger, J. R. (2022). Diagnostics, 12(6), 1441. <https://doi.org/10.3390/diagnostics12061441>

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Dose Reduction and Image Quality in Photon-counting Detector High-resolution Computed Tomography of the Chest: Routine Clinical Data.

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Potential of Photon-Counting Detector CT for Radiation Dose Reduction for the Assessment of Interstitial Lung Disease in Patients With Systemic Sclerosis.

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Impact of photon-counting-detector-CT derived virtual-monoenergetic-images and idione-maps on the diagnosis of pleural empyema.

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Impact of Photon Counting Detector CT Derived Virtual Monoenergetic Images on the Diagnosis of Pulmonary Embolism.

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Detection of Post-COVID-19 Lung Abnormalities:Photon-counting CT versus Same-day Energy-integrating Detector CT

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Accuracy of Nodule Volume and Airway Wall Thickness Measurement Using Low-Dose Chest CT on a Photon-Counting Detector CT Scanner.

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Ultra-High-Resolution Photon-Counting Detector CT of the Lungs: Association of Reconstruction Kernel and Slice Thickness With Image Quality

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Lung Cancer Screening Using Clinical Photon-Counting Detector Computed Tomography and A Prospective Patient Study.

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Ultra-High-Resolution Photon-Counting CT Imaging of the Chest A New Era for Morphology and Function.

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Photon-counting computed tomography in the assessment of rheumatoid arthritis-associated interstitial lung disease: an initial experience.

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Image Quality Analysis of Photon-Counting CT Compared with Dual-Source CT: A Phantom Study for Chest CT Examinations.

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Ultra-high resolution CT imaging of interstitial lung disease: impact of photon-counting CT in 112 patients.

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Photon - counting CT for diagnosis of acute pulmonary embolism : potential for contrast medium and radiation dose reduction.

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Minimizing Contrast Media Dose in CT Pulmonary Angiography with Clinical Photon Counting Using High Pitch Technique.

Saeed, S., Niehoff, J. H., Boriesosdick, J., Michael, A., Woeltjen, M. M., Surov, A., Moenninghoff, C., Borggrefe, J., & Kroeger, J. R. (2023).

Academic Radiology, 12, 1–7. <https://doi.org/10.1016/j.acra.2023.05.018>

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Regional Pulmonary Morphology and Function : Photon-counting CT Assessment

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Image quality of photon counting and energy integrating chest CT – Prospective head-to-head comparison on same patients.

Schwartz, F. R., Ria, F., McCabe, C., Zarei, M., Rajagopal, J., Molvin, L., Marin, D., O'Sullivan-Murphy, B., Kalisz, K. R., Tailor, T. D., Washington, L., Henry, T., & Samei, E. (2023).

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Investigating the Small Pixel Effect in Ultra-High Resolution Photon-Counting CT of the Lung.

Huflage, H., Hendel, R., Kunz, A. S., Ergün, S., Afat, S., Petri, N., Hartung, V., Gruschwitz, P., Bley, T. A., & Grunz, J.-P. (2023).

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Impact of ultra-high-resolution imaging of the lungs on perceived diagnostic image quality using photon-counting CT.

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6. Oncology

NAEOTOM Alpha

Image Quality and Radiation Dose of Contrast-Enhanced Chest-CT Acquired on a Clinical Photon-Counting Detector CT vs. Second-Generation Dual-Source CT in an Oncologic Cohort : Preliminary Results.

Hagen, F., Walder, L., Fritz, J., Gutjahr, R., Schmidt, B., Faby, S., Bamberg, F., Schoenberg, S., Nikolaou, K., Horger, M. (2022). Tomography 2022, 8(3), 1466–1476. <https://doi.org/10.3390/tomography8030119>

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Liver Iodine Quantification With Photon-Counting Detector CT: Accuracy in an Abdominal Phantom and Feasibility in Patients.

Sartoretti, T., Mergen, V., Jungblut, L., Alkadhi, H., Euler, A. (2022).

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NAEOTOM Alpha

Optimal Conspicuity of Liver Metastases in Virtual Monochromatic Imaging Reconstructions on a Novel Photon-Counting Detector CT—Effect of keV Settings and BMI.

Bette, S., Decker, J. A., Braun, F. M., Becker, J., Haerting, M., Haeckel, T., Gebhard, M., Risch, F., Woźnicki, P., Scheurig-Muenkler, C., Kroencke, T. J., Schwarz, F. (2022).

Diagnostics, 12(5), 1231. <https://doi.org/10.3390/diagnostics12051231>

NAEOTOM Alpha

Radiation Dose Reduction in Contrast-Enhanced Abdominal CT: Comparison of Photon-Counting Detector CT with 2nd Generation Dual-Source Dual-Energy CT in an oncologic cohort.

Wrazidlo, R., Walder, L., Estler, A., Gutjahr, R., Schmidt, B., Faby, S., Fritz, J., Nikolaou, K., Horger, M., Hagen, F. (2022). Academic Radiology, 1–8. <https://doi.org/10.1016/j.acra.2022.05.021>

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Anemia Detection by Hemoglobin Quantification on Contrast-enhanced Photon-counting CT Data Sets.

Decker, J. A., Huber, A., Senel, F., Bette, S., & Braun, F. Risch, F., Woznicki P. Becker J., Popp D., Haerting M., Jehs B., Rippel K., Wollny C., Scheurig-Muenkler C., Korenke T., Schwarz F. (2022) Radiology 1-3, 77–79. <https://doi.org/10.1148/radiol.220063>

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Photon-Counting Detector CT with Quantum Iterative Reconstruction. Impact on liver lesion detection and radiation dose reduction.

Racine, D., Mergen, V., Viry, A., Eberhard, M., Becce, F., Rotzinger, D. C., Alkadhi, H., Euler, A. (2022). Investigative Radiology, 00(00), 1–8. <https://doi.org/10.1097/RLI.0000000000000925>

NAEOTOM Alpha

Photon-counting detector CT improves quality of arterial phase abdominal scans: A head-to-head comparison with energy-integrating CT.

Graafen, D., Müller, L., Halfmann, M., Düber, C., Hahn, F., Yang, Y., Emrich, T., Kloeckner, R. (2022). European Journal of Radiology, 156, 110514. <https://doi.org/10.1016/j.ejrad.2022.110514>

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Photon-counting Detector CT with Deep Learning Noise Reduction to Detect Multiple Myeloma.

Baffour, F. I., Huber, N. R., Ferrero, A., Rajendran, K., Glazebrook, K. N., Larson, N. B., Kumar, S., Cook, J. M., Leng, S., Shanblatt, E. R., McCollough, C. H., Fletcher, J. G. (2022). Radiology, 1-8. <https://doi.org/10.1148/radiol.220311>

NAEOTOM Alpha

Prospective Multireader Evaluation of Photon-counting CT for Multiple Myeloma Screening.

Schwartz, F. R., Vinson, E. N., Spritzer, C. E., Colglazier, R., Samei, E., French, R. J., Said, N., Waldman, L., & McCrum, E. (2022). Radiology: Imaging Cancer, 4(6), e220073. <https://doi.org/10.1148/rycan.220073>

NAEOTOM Alpha

Myeloma bone disease imaging on a 1st-generation clinical photon-counting detector CT vs. 2nd-generation dual-source dual-energy CT.

Winkelmann, M. T., Hagen, F., Le-Yannou, L., Weiss, J., Riffel, P., Gutjahr, R., Faby, S., Nikolaou, K., & Horger, M. (2022). European Radiology. <https://doi.org/10.1007/s00330-022-09225-0>

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Evaluation of radiomics feature stability in abdominal monoenergetic photon counting CT reconstructions.

Tharmaseelan, H., Rotkopf, L. T., Ayx, I., Hertel, A., Nörenberg, D., Schoenberg, S. O., & Froelich, M. F. (2022). Scientific Reports, 0123456789, 1–12. <https://doi.org/10.1038/s41598-022-22877-8>

NAEOTOM Alpha

Soft reconstruction kernels improve HCC imaging on a Photon-Counting detector CT.

Graafen, D., Müller, L., Halfmann, M. C., Stoehr, F., Foerster, F., Düber, C., Yang, Y., Emrich, T., & Kloeckner, R. (2023). Academic Radiology, 3, 1–12. <https://doi.org/10.1016/j.acra.2023.03.026>

NAEOTOM Alpha

Photon counting detector CT: a new frontier of myeloma bone disease evaluation.

Cook J, Rajendran K, Ferrero A, Dhillon P, Kumar S, Baffour Acta Haematologica <https://doi.org/10.1159/000531461>

NAEOTOM Alpha

Anemia detection and quantification in contrast-enhanced CT scans on a novel photon-counting detector CT: A prospective proof-of-concept study

Decker, J. A., Huber, A., Senel, F., Risch, F., Bette, S., Braun, F., Becker, J., Popp, D., Haerting, M., Jehs, B., Rippel, K., Wollny, C., Scheurig-muenkler, C., Kroencke, T. J., & Schwarz, F. (2023). European Journal of Radiology, 166, 110967. <https://doi.org/10.1016/j.ejrad.2023.110967>

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Quantum iterative reconstruction on a photon-counting detector CT improves the quality of hepatocellular carcinoma imaging.

Graafen, D., Stoehr, F., Halfmann, M. C., Emrich, T., Foerster, F., Yang, Y., Düber, C., Müller, L., & Kloeckner, R. (2023). Cancer Imaging, 23(1), 1–10. <https://doi.org/10.1186/s40644-023-00592-5>

NAEOTOM Alpha

Impact of Photon-Counting Detector Computed Tomography on Image Quality and Radiation Dose in Patients With Multiple Myeloma.
Rau, A., Neubauer, J., Taleb, L., Stein, T., Schuermann, T., Rau, S., Faby, S., Wenger, S., Engelhardt, M., Bamberg, F., & Weiss, J. (2023). Korean Journal of Radiology, 24, 1–11. <https://doi.org/10.3348/kjr.2023.0211>

7. Neurology

NAEOTOM Alpha

Image-Quality Assessment of Polyenergetic and Virtual Monoenergetic Reconstructions of Unenhanced CT Scans of the Head: Initial Experiences with the First Photon-Counting CT Approved for Clinical Use.
Michael, A. E., Boriesodick, J., Schoenbeck, D., Woeltjen, M. M., Saeed, S., Kroeger, J. R., Horstmeier, S., Lennartz, S., Borggrefe, J., Niehoff, J. H. (2022). Diagnostics, 12(2), 265. <https://doi.org/10.3390/diagnostics12020265>

NAEOTOM Alpha

Photon-Counting Computed Tomography Scan of a Cerebrospinal Fluid Venous Fistula.
Kranz, P. G., Gray, L., Malinzak, M. D., Houk, J. L., Kim, D. K., Amrhein, T. J. (2021). American Journal of Roentgenology, 217(6), 1418–1430. <https://doi.org/10.2214/AJR.21.26182>

NAEOTOM Alpha

Ultra-Low-Dose Photon-Counting CT Imaging of the Paranasal Sinus With Tin Prefiltration—How low can we go?
Grunz, J., Petritsch, B., Luetkens, K. S., Kunz, A. S., Lennartz, S., Ergün, S., Bley, T. A., Huflage, H. (2022). Investigative Radiology, 00(00), 1–6. <https://doi.org/10.1097/RLI.0000000000000887>

NAEOTOM Alpha

Spectral Shaping Via Tin Prefiltration in Ultra-High-Resolution Photon-Counting and Energy-Integrating Detector CT of the Temporal Bone.
Grunz, J., Heidenreich, J. F., Lennartz, S., Weighardt, J. P., Bley, T. A., Ergün, S., Petritsch, B., Huflage, H. (2022). Investigative Radiology, 00(00), 1–7. <https://doi.org/10.1097/RLI.0000000000000901>

NAEOTOM Alpha

Photon-Counting Detector CT Virtual Monoenergetic Images for Cochlear Implant Visualization—A Head to Head Comparison to Energy-Integrating Detector CT. Tomography.
Waldeck, S., Overhoff, D., Alizadeh, L., Becker, B. V., Port, M., Froelich, M. F., Brockmann, M. A., Schumann, S., Vogl, T. J., Schoenberg, S. O., Schmidt, S. (2022). Tomography, 8(4), 1642–1648. <https://doi.org/10.3390/tomography8040136>

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Photon-Counting Detector CT for Temporal Bone Imaging : Up to Three Times the Resolution at Half the Radiation Dose.
Macielak, R. J., Benson, J. C., Lane, J. I., Carlson, M. L., Leng, S. (2022). Otology and Neurotology <https://doi.org/10.1097/MAO.0000000000003682>

NAEOTOM Alpha

Utility of photon-counting detector CT myelography for the detection of CSF-Venous fistulas.
A.A. Madhavan, L. Yu, W. Brinjikji, J.K. Cutsforth-Gregory, F.R. Schwartz, I.T. Mark, J.C. Benson, and T.J. Amrhein AJNR American Journal of Neuroradiology (2023) <http://dx.doi.org/10.3174/ajnr.A7887>

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Dual Source Photon-Counting Computed Tomography — Part II : Clinical Overview of Neurovascular Applications.
Cademartiri, F., Meloni, A., Pistoia, L., Degiorgi, G., Clemente, A., Gori, C., De, Positano, V., Celi, S., Berti, S., Emdin, M., Panetta, D., Menichetti, L., Punzo, B., Cavaliere, C., Bossone, E., Saba, L., Cau, R., Grutta, L. La, & Maffei, E. (2023). J. Clin. Med. 2023, 12, 3626. <https://doi.org/10.3390/jcm12113626>

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Combining virtual monoenergetic imaging and iterative metal artifact reduction in first-generation photon-counting computed tomography of patients with dental implants.
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Assessment of quantitative information for radiation therapy at a first-generation clinical photon-counting computed tomography scanner.

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