

Contact Dr.Ir.Ing Tim horeman-Franse, Assistant professor (UD1)

Department of BioMechanical engineering
Faculty of Mechanical maritime and Materials engineering'

Delft University of Technology
Mekelweg 2, Office F-1-360



Education

Ph.D. BioMechanical engineering, "Force based assessment of tissue handling skills" (0.8 FTE) **8/2008 - 4/2013**
Technical university Delft & LUMC. Thesis committee: Prof.dr. Dankelman, Prof.dr. Jansen, van den Dr. Dobbelsteen, Prof.dr. French Smeets, Prof.dr. Schijven, Prof.dr. Gomez, Prof.dr. Valstar

M.Sc. (Ir.) BioMedical Engineering, Technical university Delft, Major in Surgical Instruments and Medical Safety and BioMechatronics. "Isolator System for Minimally Invasive Surgery. (Ir, Master) **8/2004 - 8/2008**

B.Sc. (Ing) Mechatronics, Hogeschool INHOLLAND **8/2000 - 8/2004**

Intermediate Vocational Education (MTS alkmaar) Specialisation in production technology (machinery, welding etc.) **7/1998 -8/2000**

Experience

Technology Committee EAES **10/2018 - present**
Responsible for assessment and support of new endoscopic surgical procedures, technology and proposals. Involved with (the organisation of) winter meetings, yearly meetings, workshops and concession meetings.

Assistant professor, TU-Delft , BioMedical department **8/2017 - Present**
As track leader of Sustainable Surgery & translational Technology I am involved with the creation of a new line of multi-functional, steerable, detachable instrumentation and robotic system that can be cleaned and maintained by low/medium resourced hospitals.

Block coordinator and lector, TU-Delft, clinical technology **8/2017 - Present**
Within multiple BME and KT courses I educate students to apply multiple design principals and strategies for the development of innovative and SMART medical devices.

Living lab & Field lab coordinator, TU-Delft, De meern Utrecht **6/2020 - Present**
Within TU-Delft I manage a living lab for objective assessment and validation of new reusable/deposable devices and in a multidisciplinary Field lab in Delft and Utrecht that investigates new technology and methods for recycling and reprocessing methods of disposed medical instruments and other waste coming from the OR .

Tech Director & owner, Horeman Holdings BV **2/2010 - Present**
Holding involved with R&D, production, clinical testing and/or early stage marketing of new innovations in endoscopic surgery. Horeman holding initiated, founded and co-owns MediShield B.V and Surge-On medical B.V, SuperSeton BV & Tulipa medical technologies BV. Since 2010, medical devices were launched and sold in the worldwide laparoscopy market.

Guest/visiting Professor **6/2020-Present**
Visiting professor at Leeds university, London college and University of Malta. Courses are related to strategies and design methods for Smart Surgical Instrument design and development with examples from my own experiences.

Past Work experience:

- 2016-2017 **Vrije Universiteit** Research related to the identification of accurate imaging catheters that can be used within a new type of steerable needle for the detection of isolated cartilage defects. As designer/researcher involved with the creation of new multi-functional detachable instrumentation and robotic systems for low and middle income countries that can be cleaned and maintained by low/medium resourced hospitals. Within multiple BME and KT courses I educate students to apply multiple design principals for the development of innovative and SMART medical devices.
- 2016-2017 **Postdoc & block coordinator KT** Involved with the ASPASIA project that aims on the development of a multi steerable needle that cleans and repairs fractures in cartilage. Within the BME and KT courses I am specifically focussing on R&D of new smart surgical instruments and medical devices.
- 2014-2016 **Postdoctoral researcher & project leader TU Delft**
Project leader and researcher steerable punch project for arthroscopic knee surgery. Together with Amsterdam Medical Centre, (The Netherlands) De Koningh Medical Systems (The Netherlands) and ACMIT (Austria) we developed a new stiff but easy steerable instrument for arthroscopic procedures that can be easily disassembled, cleaned and sterilised.
- 2008-2013 **Phd Researcher TU Delft & Leiden medical centre (LUMC)**
Within the department of Biomedical engineering I was active in the field of in laparoscopic and arthroscopic training. With newly developed force sensors and motion tracking systems we developed new methods for objective assessment of laparoscopic skills. In the last phase of the PhD project I developed a new training environment (ForMoST) that provides real-time force and motion feedback to the trainee in order to improve tissue manipulation skills.
- 2008 – 2011 **Founder and owner of TIME VOF**
TIME (Technological Innovation in Medical Equipment) developed the new smart coupling for the MSIS trocar system and integrated force sensors in training systems for laparoscopic and arthroscopic surgery (ForMoST & PASSPORT). In collaboration with Salusion BV, TIME VOF developed a RF based measurement concept for remote detection of diaper saturation followed by the first working prototype's.
- 2008 - 2009 **R&D engineer at Salusion B.V.**
Involved with the development and validation of RF moisture tags for diapers and interface between patient and scanner.
- 2004 - 2006 **Freelance project leader Showpro and Believers**
Stage engineering and management for dance events (Fast Forward, Adidas originals and Diesel-U-Music). Stage manager dance events (Fast Forwards, UDC-Dance Valley, Powerzone).
- 2006 **Developer at Zonluik Uitgeest**
Zonluik BV develops and produces automated sun screen systems I developed a vibration sensor for the detection of screen rail vibrations generated by high wind speeds. All available systems detect the critical wind speed with a mill system giving my system an advantage since it is based on a small critical damped 2nd order vibration system with no moving parts that is easily attached to the front rail of the screen.
- 2005 **Manager traffic control and logistics at Rotterdam racing**
As manager traffic control, I was responsible for all barriers required to secure the complete racing circuit. This was done with the help of over 800 volunteers, the police Rotterdam and P3 security Rotterdam.
- 2003 **Graduation project at Tyco Healthcare**
The development of a new and more efficient container system for Jodium-131 capsules.

2002-2003

Internship trainee at Tyco Healthcare

During earlier projects, I developed my technical engineering skills. My first internship started with the development of a Krypton Ventilation Unit (KVU) for long function research. This medical device was equipped with a radioactive core filled with Rubidium-krypton adding some interesting requirements to the design process.

Research output:

- 57 journal publications & book chapters, 26 others (papers magazines, TV & radio)
- 17 patents (Philips, TU-Delft, Surge-On, Salusion, MediShield, SuperSeton)
- 12 invited conference lectures international / 7 invited lectures national
- 28 national/international presentations
- Supervised 4 (pre) clinical studies for medical devices (2 in-patient)
- Reviewer (IEEE, MITAT, ASME, SurgEndos, SurgInnov, Surgery, SurgEdu, etc)
- H-score = 20 Google Scholar

Grants:

- Delft Health Technology programme (200k, 2020)
- Covid-19 grant TU-Delft (20k, 2020)
- EAES research grant award (15k, 2020)
- Medical Delta Grant modular catheters (800k, 2019)
- IMDI grant, PI 2 projects (1.950k, 2018)
- Cooperation India-Nederland, Co-PI (1.849k, 2018)
- 6 x feasibility grant TTW phase 1 (total 210k, 2009, 2012, 2015, 2017, 2018)
- MIT (75k, 2018)
- MIT head-start (100k, 2019)
- EIT (25k, 2018)
- 3x take off grant TTW (total 750k, 2009, 2016, 2017)
- RANNIS (600k, 2016, Iceland)
- AMC/abbvie innovation Grant (100k, 2014)
- Syntens early stage development grants and vouchers (30k, 2007-2008)
- Noaber foundation (50k, 2013)

Education:

- Course leader & lecturer: BM04070 (Medical Device Prototyping, numerous fixes 30 students)
- Lecturer & project leader: WB1130 (Technische systemen, 740 students),
- Lecturer: Wb2308 (Ontwerpleer, 120 students)
- Lecturer TN2003 (Design Engineering voor fysici, 260 students)
- Course leader & lecturer: KT2700 (Ontwerpleer technische systemen, 100 students)
- Supervising Postdocs:
 - Dr.Ir.Andres Hunt (2018) Heart assist device-Cohesion project with PME
 - Dr.Jonathan Wei (2018-2022) 3D motion and force sensing in hip implant components- J&J depuys grant & Sensing in surgery
- Supervising PhD's:
 - Sem Hardon MD (2017-2022) Learning curves in surgical skills acquisition-collaboration with VUmc.
 - Roelf Postema MD (2018-2023) The value of haptic feedback in skills training-collaboration with VUmc.
 - Ir.Daniel Robertson (2019-2023) Cleaning systems for laparoscopy in LRS-SMART Surgery.
 - Ir.Tomas Larsson (2019-2023) SATA based steerable laparoscopic instruments-SMART Surgery.
 - Ir.Jan-Willem Klok (2019-2023) Force balanced compliant

laparoscopic instruments for delicate tissue handling-Sensing in Surgery. Ir.Nick White (2021-2025) A subcutaneous shunt closure device-Collaboration with LUMC, DRI Health Sustainable award grant. Bart van Starten MBA (2018-2023) Sustainable circular instruments-VSM industry financed. Nick Marsadi MD (2019-2023) Wound closure science-Collaboration LUMC industry and internally financed Dermatology.

- Supervising MSc students I was PI on (Graduation):
Daan van der heiden (2021),Lether remie with PME (2021), White Nick (2021), van der Kroft Sander (2021), Tuntuo Brian (2021), Ligtelijn Sharina (2021), Gulhar Dhruv (2021), weiWei LIU (2020), de Haes Philip (2020), Harish Priyanka (2020), Boedhoe Raoul (2020), de Ruiter Bram with PME (2020), Zhang Nianlei (2020), Klok, Jan-Willem (2019), Motyka Alicja (2019), Janssen Thomas (2019 †), Minnaard Jeffrey (2018), Berendsen Jasmijn (2018), Fernandes Rosnelo (2018), van Kasteren Rhea (2018), Wesselink Vincent (2018), Ridderbos Marlike (2018), van der Pol, Dieter (2018), Hoogeweegen Alekzander (2017), Schrier Tim (2017), de Goede Nick (2017), De Goeij Luuk JR (2017), Sun Siyu (2013)
- Supervising BSc students:8 bachelor groups (engineering) ,12 interns placed at startups and industry (engineering) 3 science interns LUMC and VUmc (medicine)

Awards:

- Science grant award, European Association Endoscopic Surgery, 2020
- Pharma Trend Award Germany “Most Innovative product” (Surge-On medical), Pharma 2019
- Best research Award (PhD student), NVEC 2018
- Athanasiou Award for best submission ABME 2017-2018
- Best Technology Award (PhD student), EAES Frankfurt 2017
- Royal Prins Friso “Engineer of the year award”, The Netherlands 2016
- Finalist & Runner up 3-in-5 competition DMD USA 2015
- Public award - Entrepreneurial Scientist Award DESA 2012-2013, Delft 2013
- Runner up Delft Entrepreneurial Scientist Award DESA 2012-2013, Delft 2013
- Top 50 best young professionals, 4th place technology, The Netherlands 2011-2012 and 2012-2013
- 1st place sustainable healthcare challenge, Nijenrode 2013
- 2nd place Eureka Mega Challenge, Utrecht 2013
- Daniel F. Kott Award for the Best New Instrumentation - Las Vegas AAGL 2011
- SMIT Young investigator award, Trondheim 2011
- Best business idea New Venture & Best feasibility study New Venture, Nijenrode 2009
- Finalist Philips Innovation Award (PHIA), Rotterdam 2008

Valorisation and implementation entities of VSH surgical engineering and Horeman Holdings:

- Founder and coordinator **Greencycl BV and GreenCycl Living labs**
- Founder and board member **MediShield BV**
- Founder and board member **Surge-On Medical BV**
- IP developer and project leader at **Salusion BV** (bankruptcy 2012).
- Co-Founder of **Tulipa BV**
- Co-Founder of **SuperSeton BV**
- Co-Founder of **Provinci Medical technology BV**

Journal Publications and book chapters

2021

Scheepens, Karlijn & Marsidi, Nick & Genders, Roel & Horeman-Franse, Tim. (2021). The Compressiometer: Toward a New Skin Tensiometer for Research and Surgical Planning. *IEEE Journal of Translational Engineering in Health and Medicine*. PP. 1-1.

van Straten, B., van der Heiden, D. R., Robertson, D., Riekwel, C., Jansen, F. W., van der Elst, M., & Horeman, T. (2021). Surgical waste reprocessing: Injection molding using recycled blue wrapping paper from the operating room. *Journal of Cleaner Production*, 322, 129121.

van Straten, B., Dankelman, J., van der Eijk, A., & Horeman, T. (2021). A Circular Healthcare Economy; a feasibility study to reduce surgical stainless steel waste. *Sustainable Production and Consumption*, 27, 169-175.

Hardon, S. F., Kooijmans, A., Horeman, R., van der Elst, M., Bloemendaal, A. L., & Horeman, T. (2021). Validation of the portable virtual reality training system for robotic surgery (PoLaRS): a randomized controlled trial. *Surgical Endoscopy*, 1-11.

van Straten, B., Robertson, P. D., Oussoren, H., Pereira Espindola, S., Ghanbari, E., Dankelman, J., ... & Horeman, T. (2021). Can sterilization of disposable face masks be an alternative for imported face masks? A nationwide field study including 19 sterilization departments and 471 imported brand types during COVID-19 shortages. *PloS one*, 16(9), e0257468.

Robertson, D., Gnanaraj, J., Wauben, L., Huijs, J., Samuel, V. M., Dankelman, J., & Horeman-Franse, T. (2021). Assessment of Laparoscopic Instrument Reprocessing in Rural India: A Mixed Methods Study.

van Straten, B., Ligtelijn, S., Droog, L., Putman, E., Dankelman, J., Weiland, N. S., & Horeman, T. (2021). A Life Cycle Assessment of reprocessing face masks during the Covid-19 pandemic. *Nature scientific reports* 1,1-1

Robertson, D., Sterke, F., van Weteringen, W., Arezzo, A., Mintz, Y., Nickel, F., EAES Technology Committee & Horeman, T. (2021). Characterisation of trocar associated gas leaks during laparoscopic surgery. *Surgical endoscopy*, 1-10.

Minnaard, J., Kleipool, R. P., Baars, W., Dankelman, J., Stufkens, S., & Horeman, T. (2021). A new bone-cutting approach for minimally invasive surgery. *Medical Engineering & Physics*, 87, 56-62.

Postema, R. R., Cefai, D., van Straten, B., Miedema, R., Hardjo, L. L., Dankelman, J., ... & Horeman-Franse, T. (2021). A novel Veress needle mechanism that reduces overshooting after puncturing the abdominal wall. *Surgical Endoscopy*, 1-10.

Hardon, S. F., van Gastel, L. A., Horeman, T., & Daams, F. (2021). Assessment of technical skills based on learning curve analyses in laparoscopic surgery training. *Surgery*.

Nakajima, K., Mintz, Y., Nickel, F., & Arezzo, A., The EAES Technology Committee (2021). The EAES intellectual property awareness survey. *Surgical Endoscopy*, 1-7.

Willuth, E., Hardon, S. F., Lang, F., Haney, C. M., Felinska, E. A., Kowalewski, K. F., ... & Nickel, F. (2021). Robotic-assisted cholecystectomy is superior to laparoscopic cholecystectomy in the initial training for surgical novices in an ex vivo porcine model: a randomized crossover study. *Surgical Endoscopy*, 1-16.

Geelhoed, W. J., Boonekamp, M., van de Stadt, H., Badulescu, S., Lalai, R. A., Groeneweg, K. E., ... & Rotmans, J. I. (2021). A Proof-of-Principle Study of the Design and Optimization of a Novel Fluid-Driven Automated Retracting Needle System. *Journal of Medical Devices*, 15(3), 031002.

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Minnaard, Jeffrey; Kleipool, Roeland P; Baars, Wim; Dankelman, Jenny; Stufkens, Sjoerd; Horeman, Tim (2020). A new bone-cutting approach for minimally invasive surgery. *Medical Engineering & Physics*, 87, 56-62

Postema, R. R., van Gastel, L. A., Hardon, S. F., Bonjer, H. J., & Horeman, T. (2020). Haptic exploration improves performance of a laparoscopic training task. *Surgical Endoscopy*, 1-8.

Marsidi, N., Vermeulen, S. A., Horeman, T., & Genders, R. E. (2020). Measuring Forces in Suture Techniques for Wound Closure. *Journal of surgical research*, 255, 135-143.

de Man, P., van Straten, B., van den Dobbelsteen, J., van der Eijk, A., Horeman, T., & Koeleman, H. (2020). Sterilization of disposable face masks by means of standardized dry and steam sterilization processes; an alternative in the fight against mask shortages due to COVID-19. *Journal of Hospital Infection*, 105(2), 356-357.

Teasing, G. R., van Straten, B., de Man, P., & Horeman-Franse, T. (2020). Is there an adequate alternative to commercially manufactured face masks? A comparison of various materials and forms. *Journal of Hospital Infection*, 106(2), 246-253.

Stellingwerf, M. E., Bak, M. T., de Groof, E. J., Buskens, C. J., Molenaar, C. B., Gecse, K. B., ... & Bemelman, W. A. (2020). Knotless seton for perianal fistulas: feasibility and effect on perianal disease activity. *Scientific reports*, 10(1), 1-8.

van Straten, B., & Horeman, T. (2020). NEN-spec Medische Hulpmiddelen voor eenmalig gebruik: Richtlijn voor hergebruik tijdens COVID-19.

Harskamp, R., van Straten, B., Bouman, J., van Maltha-van Santvoort, B., van den Dobbelsteen, J. J., van der Sijp, J., & Horeman, T. (2020). Decontamination of filtering facepiece respirators in primary care using medical autoclave. *medRxiv*.

Marsidi, N., Vermeulen, S. A., Genders, R. E & Horeman, T., (2020). Measuring Forces in Suture Techniques for Wound Closure. *Journal of Surgical Research*, 255, 135-143.

Mintz, Yoav, et al. "A Low-cost, Safe, and Effective Method for Smoke Evacuation in Laparoscopic Surgery for Suspected Coronavirus Patients." *Annals of Surgery* (2020).

Prinsen, D., van Dijke, A., Horeman-Franse, T., van de Berg, N., & Loeve, A. J. (2020). Lethal smothering with a pillow—How 181 music festival visitors tried to kill a dummy. *Forensic Science International*, 316, 110521.

2009-2019

Horeman, T., Rodrigues SP, Jansen FW, Dankelman J and Dobbelseen JJ van den, "Force measurement platform for training and assessment of laparoscopic skills," *Surgical Endoscopy*, vol. 24(12), pp. 3102-3108, 2009.

Taco te Gussinklo J, Horeman T, "Opereren buiten de operatiezaal", *Ned Tijdschr Geneesk*, vol. 153, pp. C247, 2009.

Horeman T, Jansen FW and Dankelman J, "An Isolator System for minimally invasive surgery: the new design," *Surgical Endoscopy*, vol.24(8), pp. 1929-1936, 2010.

Horeman T, Rodrigues SP, Jansen FW, Dankelman J, Dobbelseen JJ van den, "Force Parameters for Skills Assessment in Laparoscopy," *IEEE Transactions on Haptics*, vol 5 (4), pp. 312-322, 2011.

Horeman T, "The Isolating trocar for Laparoscopic surgery," *WHO-Compendium of new and emerging health technologies*, vol. 1(1) pp. 11-13, 2011.

Tuijthof GJM, Horeman T, Schafroth MU, Blankevoort L and Kerkhoffs GMMJ "Probing forces of menisci: what levels are safe for arthroscopic surgery," *Knee Surgery, Sports Traumatology, Arthroscopy*, vol. 19(2), pp. 254-258, 2011.

Horeman T, Rodrigues SP, Dobbelseen JJ van den, Jansen FW and Dankelman J, "Visual force feedback in laparoscopic training," *Surgical Endoscopy*, vol.26(1), pp. 242-248, 2011.

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Horeman T, Kertiva D, Valdastrì P, Dobbelseen JJ van den, Jansen FW, Dankelman J, "The influence of instrument configuration on tissue handling force in laparoscopy," *Surgical Innovation*, vol. 20(3), pp. 260-267, 2012.

Horeman T, Blikkendaal MD, Feng X, Dijke A van, Jansen FW, Dankelman J, Dobbelseen JJ van den, "Visual Force Feedback improves knot-tying security," *Surgical Education*, vol.71(1), pp. 133-141, 2013.

Horeman T, Meijer EJ, Lange J, Dobbelseen JJ van den, Dankelman J "Sensors for force measurements in suture wires," *PLOS-ONE*, vol. 8(12), e84466, 2013.

Horeman, T., Dankelman, J., Jansen, F. W., & van den Dobbelseen, J. J. (2014). Assessment of laparoscopic skills based on force and motion parameters. *IEEE Transactions on Biomedical Engineering*, 61(3), 805-813.

Sun S, Dankelman J, Horeman T, "Differences in abdominal force between conventional and single port laparoscopy," *Conference proceedings DMDEurope*, 2013.

Meijer EJ, Lange J, Dobbelseen JJ van den, Horeman T, "Disposable Force sensors for surgery," *Conference proceedings DMDEurope*, 2013.

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Horeman, T., van Delft, F., Blikkendaal, M. D., Dankelman, J., van den Dobbelseen, J. J., & Jansen, F. W. (2014). Learning from visual force feedback in box trainers: tissue manipulation in laparoscopic surgery. *Surgical endoscopy*, 28(6), 1961-1970.

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Horeman, T., Akhtar, K., & Tuijthof, G. J. (2015). Physical Simulators. In *Effective Training of Arthroscopic Skills* (pp. 57-69). Springer Berlin Heidelberg.

Horeman, T., Sherman, K., & Tuijthof, G. J. (2015). What Measures Represent Performance?. In *Effective Training of Arthroscopic Skills* (pp. 125-140). Springer Berlin Heidelberg.

- Tuijthof, G. J., & Horeman, T. (2015). What Thresholds Are Evidence Based?. In *Effective Training of Arthroscopic Skills* (pp. 141-148). Springer Berlin Heidelberg.
- Horeman, T., Schilder, F., Aguirre, M., Kerkhoffs, G. M. M. J., & Tuijthof, G. J. M. (2015). Design and preliminary evaluation of a stiff steerable cutter for arthroscopic procedures. *Journal of Medical Devices*, 9(4), 044503.
- Horeman, T., Aguirre, M., Kerkhoffs, G. M. M. J., Dankelman, J., & Tuijthof, G. M. J. (2015). The SATA, A Simple, Stiff, and Rigid Steering Mechanism. *Journal of Medical Devices*, 9(3), 030933.
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- Smit, D., Spruit, E., Dankelman, J., Tuijthof, G., Hamming, J., & Horeman, T. (2017). Improving training of laparoscopic tissue manipulation skills using various visual force feedback types. *Surgical endoscopy*, 31(1), 299-308.
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- Ilgersom, N. F., Horeman-Franse, T., Bleys, R. L., Eygendaal, D., van den Bekerom, M. P., & Tuijthof, G. J. (2018). Force measurement metrics for simulated elbow arthroscopy training. *Journal of experimental orthopaedics*, 5(1), 45.
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- Hardon, S. F., van Kasteren, R. J., Dankelman, J., Bonjer, H. J., Tuynman, J. B., & Horeman, T. (2019). The value of force and torque measurements in transanal total mesorectal excision (TaTME). *Techniques in coloproctology*, 23(9), 843-852.

Patents (published only)

Der Lee P van, Horeman T, 2006, Container for radioactive material, ES2366445 (T3).

Dankelman J, Horeman T, 2009, Surgical Instrument, CN101801302 (A); CN101801302 (B)

Groosman B, Horeman T, Vaandrager G, 2011, A moisture detection module and receiving unit, EA201290019 (A1); EA023505 (B1)

Tuijthof GJM, Horeman T, 2011, Training facility, surgical instruments and artificial knee with an upper limb and a lower limb for simulation and training of arthroscopic surgical techniques, Patent NL2006846 (C).

Horeman T, Delft F van, Bemelman W, Nerkens W, 2012, SETON FOR TREATING FISTULAE, AND A METHOD OF FORMING A CLOSED LOOP OF A SETON, US2015250460 (A1)

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Horeman T, Nerken W, 2015, DETACHABLE ANCHOR FOR GUIDING TOOL OF MINIMALLY INVASIVE SURGERY, WO2016030022 (A1)

MILTON EDWARD AGUIRRE JR, TIM HOREMAN, 2015 MECHANICAL END EFFECTOR, WO2016056908 (A1)

Tuijthof, Gabrielle Josephine Maria, and Tim Horeman, 2016, Surgical device, in particular for minimally invasive surgery, DK2976025 (T3)

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Biography

Dr.Ir.ing Tim Horeman is Assistant Professor in Sustainable Surgery & Translational Technology and Academic Portfolio Director (APD)-Medical technology (extension school 3.0) at the Delft University of technology. Tim has ample experience in objective assessment of surgical skills and surgical instrument functioning based on interaction force, instrument motion and other data sources. Lately, Tim is leading the development of a new generation of sustainable surgical instruments for advanced (robot)surgery that should foster the introduction of more functional instruments in less wealthy parts of the world. As it is essential to bring live saving surgical innovations in reach of our surgeons and healthcare workers, Tim became a distinguished serial Medtech Entrepreneur with a strong focus on surgical devices and evidence based implementation studies. As such, he is PI and (co) founder of the international operating companies GreenCycl, MediShield & ForceSense, Surgeon Medical and SuperSeton that brought multiple innovations to the worldwide market of surgical equipment. Tim is (co) author of over 60 journal publications, inventor on 18 patent (families) and PI on multiple international research projects in the field of surgical instrument waste processing, SMART implants, global instruments and Minimally Invasive Surgery. In 2016, Tim was awarded with the Dutch (royal) engineer of the year award for his contributions to the healthcare society and in 2018 Tim was elected as Tech Committee member of the European Association of Endoscopic Surgery.