MRCONSULT

Leidseweg 170
2251 LJ Voorschoten
Mobiel: 06 121 09 582
Telefoon: 071 5614229

minkros@mrconsult.nl
KvK-nummer 72033274
NL67 INGB 0008 481561
BTW-nummer NL068782123B02

CURRICULUM VITAE

Name	Ros	M
Initials	D.	
First name(s)	Mink (Dominicus)	
Date of birth	10th February 1947	
Address	Leidseweg 170 2251 LJ Voorschoten The Netherlands	

Telephone:
Private: +31 (0)71 5614229
Business +31 (0)6 12109582

Consultancy firm MRCONSULT B.V.
E-mail consultancy firm minkros@mrconsult.nl
(If necessary, please refer to the list of abbreviations on last page.

Education and training	**Period**	**Diploma**
- (evening classes) HTS, Mechanical Engineering	1966 – 1970	Yes
- MTS, Mechanical Engineering	1963 – 1966	Yes
- Mulo (MAVO) A Mathematics	1959 – 1963	Yes

Work experience

2005 – present: AS MRCONSULT B.V.:

Summary: Diminish of integrated costs and environmental pollution of civil and mechanical engineering constructions in and by water by the application of technical saving knowledge for extending the maintenance interval by using design simplification, innovative material applications (among which high strength concrete, composite, FRP, fibre-reinforced rubber etc.), innovative coatings on carbon steel, on the basis of objective comparison of integrated costing and environment pollution, corrosion prevention, control of wear and friction, tribologische knowledge for the calculation of bearings, life time calculation and life time guarantee. Also technical mediation by technical differences between client – contractor vice versa.

Working groups / Committees

- Chairman of de Dutch Association Corrosion Advisers (www.nvca.eu).
- Member of the Corrosion Advice Service (CAD) of the former NCC.

Projects as MRCONSULT B.V.:

1. Selection of hydraulic seals and metallic coatings of hydraulic cylinders with an extreme life span in sea water.
2. Carrying out a contra-evaluation concerning the cause of extreme wear of sleeve bearings of rolling gates in marine water.
3. Optimising an internal quality system at the production of hydraulic components.
4. Knowledge transfer to the industry association concerning TSA-coatings.
5. Interview requirement level at Micro System Technology by order of the "Hogeschool" Zeeland, the Netherlands.
6. Knowledge transfer to the "Hogeschool" concerning mechanisms and constructions in a salt water environment. Also external consultant for the "Hogeschool" Zeeland in cooperation with the business community during a tribological study for determining the life span of a plastic rod coating in combination with hydraulic seals.
7. Compilation of a quality declaration in relation to the wear resistance of a plastic guiding material for a pier project in Rotterdam port.

8. Advice ad the choice and life span determination of guiding and sleeve bearing constructions and corresponding bearing surfaces for vertical lift gates and locks.
9. External assessor of a research report concerning bubble formation in ceramic rod coatings that was drawn up by a third party on behalf of the *Rijkswaterstaat* (RWS), Construction Division.

10. Knowledge transfer in relation to TSA-coatings versus CUI (corrosion under insulation).
11. Knowledge transfer to Rijkswaterstaat in relation to metal-layers for the pistons-rods of the lock-doors of the Maeslantkering.
12. Design guide / Material-selector for constructions in and at marine water concerning constructions of Rijkswaterstaat.
13. Knowledge transfer to Rijkswaterstaat in relation to problems in the Netherlands of ceramic covers on piston-rods, the solutions and the execution of solutions.
14. Knowledge transfer concerning the seals for the hydraulic cylinders of the Oosterscheldekering in relation to stick-slip and wear.
15. Give of dozens recommendations for the Corrosion Advice Service (CAD) of the NCC.
16. Tribological knowledge transfer for a producer of plastic metal covers on piston-rods.
17. To calculate and reporting the friction, wear and temperature increase of sliding-surfaces in a prototype distortion machine, recommends and measuring setting up the test program at the material choice.
18. Essays and presenting knowledge about the life time of seals and rod coatings of the hydraulic cylinders of the Stormvloedkering Oosterschelde.
19. Investigation to control the availability of a locking complex concerning corrosion damage as a result of failing cathodic protection.

20. Recommendation at the material choice and quality guarantee of the life time at the convalescence of a piping system in a cooling central as a result of corrosion of stainless steel piping system and its components; also an investigation to suppression of algae in the system.
21. Recommendation for the choice of coatings for sliding surfaces of bars for lock applications in marine water.
22. Checking of the document concerning the inflatable storm surge barrier Ramspol.
23. Recommendation at a programme of a study day concerning very high strength concrete in comparison to other application possibilities of materials.
24. Troubleshooting as a result of sticks lip in a head turn point of a bascule bridge.
25. Troubleshooting as a result of friction increase at sliding gates and giving recommendations.
26. Essays integrated costing and environment pollution of guidance constructions for the ship entrance to sluice locks.
27. Contributions to bridge floor solutions.
28. Troubleshooting as a result of violent wear at gate valve drive and giving solutions directions.
29. Research and recommendation of material alternatives for sliding bearings and bar coatings of mitre gates in relation to construction alternatives and life times.
30. Recommendation concerning the wear of seals in combination with corroded sealing surfaces.
31. Constructive comparison of guidance systems at floating bollards in locks.
32. Recommendation concerning stick slip problems at a slap bridge.
33. Essays integrated costing and environment pollution comparison of alternative ship guidance constructions among which GVK.
34. Stagier coach on behalf of valves of high strength concrete.
35. Recommendation concerning the choice of sealing en rod coatings at hydraulic cylinders as a result of leakage problems.
36. Recommendation concerning the control and maintenance of cooling plants.
37. Recommendation concerning the convalescence the bond strength of TSA on sheet piling.
38. Inspection and reporting heat exchanger cooling plant with regard to the maintenance, corrosion, corrosion prevention, growth prevention and material choice.
39. Quality check on the supply of a FRP piping system for a cooling plant.
40. Essays evaluation plan with regard to TSA-applications at Rijkswaterstaat as a starting point for conserve choices.
41. Study to the corrosion protecting time and erosion life time of coatings for pump sealing.

42. Recommendation of conserve alternatives and integrated cost for a steel bridge.
43. Research, recommendation and reporting with regard to corrosion SS control panel in the air for elevators.
44. Recommendation and reporting with regard to the bearing of mitre gates in Limburg.
45. Recommendation and reporting with regard to the material choice for a guidance construction for a bicycle bridge of FRP.
46. Recommendation concerning saving knowledge by application of tribology and conserve knowledge by use of FRP.
47. Recommendation and reporting about the decrease off thickness of flow conductance plates of carbon steel.
48. Recommendation and reporting of innovative actions for cost saving, cost control and lengthening of the maintenance interval for a provincial administrator of locks and bridges among which FRP.
49. Recommendation and reporting for reducing the consequence costs at maintenances the bridge deck of a town bridge by means of innovative bridge alternatives among which FRP.
50. Recommendation and reporting for the material choice, construction and life time of a gate valve guidance.
51. Recommendation and reporting for the guidance of a milling machine for the production of wind mill masts.
52. Recommendation by the designing of a glass-fibre-reinforced plastic (FRP) water barrier.
53. Recommendation and reporting of the life time and integral costs of guidance alternatives for the rolling gates of the inter pacific locks of Panama.
54. Troubleshooting, recommendation and reporting as a result of corrosion on knife pattern holders in link castes.
55. Second opinion for the material choice of the propeller bearing for the energy generation by water.
56. Contributions to brainstorming for energy and water saving lock principles.
57. Recommendation for the design of sub marine boats to prevent corrosion.
58. Request to conciliation at dispute between assignees.
59. Troubleshooting as a result of corrosion in a piping system of a water purification installation.
60. Tribological recommendation for a friction poor maritime conductance under extreme surface pressure at the off-shore applications.

61. Check on the re-design of a sliding lock gat with hydrostatic support in Amsterdam.
62. Second opinion concerning the life time of chain conserve systems for Rijkswaterstaat.
63. Extension of the requirements thermal coatings NBD 10300 with galvanic coatings, trans ceramic coatings en welded coatings with a guaranteed life time of minimum 10 years in marine water and for life time up to 50 years.
64. Stipulate of reviewed wear factors of the sliding shoes and UHMWPE sliding tracks of the locks of Hansweert after 25 year commissioning, and establish convalescence recommendation of the sliding shoes for Rijkswaterstaat.
65. To describe test elaboration, establishes research programme, accompanies and reporting TNO-prototype-investigation of support bearing of plastic for mitre gates for Rijkswaterstaat.
66. Contributions to brainstorming for designing collision safe lock doors.
67. Design and calculation life time support bearing of lock gate concerning wear and corrosion.
68. Recommendation for the landing construction of light chip Goeree.
69. Essays of a material choice directive for pump material and pump sealing.

70. Essays programme of requirements for the upgrade of existing ship guiding constructions and building new innovative ship guiding constructions including calculating the integral costs and environmental pollution per meter construction and per module.
71. Presentation of knowledge for the extending of maintenance intervals for several administrators of locks in the Netherlands and Belgium.
72. Completing reference document administrator with knowledge for perceptible extending maintenance intervals of movable parts in bridges and locks.
73. Counter-evaluation reporting and recommends concerning the sliding shoes of hydrofeet.
74. Analysing and recommending concerning the corrosion of steel parts of baffle shooting for of Defence.
75. Analysing, recommending and calculating the life time of support bearings for the mitre gates of locks in Friesland.

76. Stagier coach concerning innovative ship guiding constructions to locks.
77. Essays design document with saving knowledge for plastic bearings to locks in Belgium.
78. Recommendation and calculating the life time of shuttle bearings in locks at Antwerp.
79. Recommendation concerning the hydro guidance of lock gates as an alternative for rolling gates.
80. Analysing and advising concerning corrosion to gas stations.

81. Check of life calculation of a pivot bearing of plastic in Limburg.
82. Accompaniment and presentation of knowledge in prototype testing to prototype testing of pivot bearings of plastic.
83. Supervise graduate research related to an innovative ship guiding system.
84. Presenting of knowledge concerning the low cost design of civil and mechanical structures and (sea) water.
85. Advising and calculating the service life time of the bearings of miter gates in Groningen.
86. Troubelschooting of the bearing of miter gates South Holland.
87. Counseling and checking of construction and life time of the plastic bearings of miter gates in South Holland.
88. Troubleshooting concerning the cardanic bearings of hydraulic driving systems of miter gates.

89. Testing document serving calculating spherical plain bearings in gimbal bearings for drives of lock gates .
90. Contributing to the development and material choices for corrosion prevention, sealing and thermal design aspects of lamps for application in seawater for cultivating fish in a natural environment , including test design and reporting .
91. Advise, calculating and reporting the service time of the bearings in the miter gates in the Zuid Willemsvaart .
92. Advise and reporting on behalf of the extension of service time of chafing chute suspensions , the testing and processing of test results to wear factors for the calculation of practical service times
93. Presentation of knowledge about the cathodic protection of piling in seawater and saving knowledge for designing and maintaining of civil and mechanical constructions in general .
94. Advice on to demonstrate the occurrence mutual contact of the cable drive of a lifting bridge.
95. Research, analysis, interpretation and restoration advice (troubleshooting) because of severe corrosion phenomena in a relatively new lock in combination with a provisional restoration advice on to improper functioning upper bearings of miter gates and supplemented with availability recommendations of the upper bearings and thrust bearings of miter gates and the sliding valve guiding.
96. Consultancy serving the internal seal contact pressure and friction in the steering gear considering expansion, deformation and temperature variations.

97. Technical mediation and counselling about possible tangential steel cables kabelverseizing a lift.
98. Advice for maintenance preventive vertical guidance and centering of a new table bridge.
99. Inspection of rubber bearing blocks under viaducts of highways in the provinces Zeeland and North Holland.
100. Technical mediation and advice regarding contractor serving the life time of rubber sliding bearing supporting a concrete bridge.
101. Research and plan to extend of the number of bending cycles of coated tension springs for the automotive industry.
102. Research and advice to extend the life time / durability of steel cables for bridges for lower total costs, including economical costs and environmental impact.
103. Research and advice on to extend the life time of main bearings in compressors.
104. Variants study, mediation and advice concerning self lifting ship guidings in a river bend.
105. Obtaining patent and licensee of a maintenance free cable fender construction with low total costs.
106. Research on the corrosion and life time of pump impellers and pump housings; making of a LCC cost comparison for the material advice concerning the pump impeller based on the total costs.
107. Advice to demonstrate remaining life time of glass fibre reinforced (FRP) poles for the landing lights of an international airport.
108. Advice to extend the life time of the bearings on the rod and bottom side of hydraulic cylinders to drive a drawbridge.

109. Advice by a basic document with the material combinations and friction coefficients for sliding formwork.
110. Corrosion research and advice on pressure sensors in ballast tanks of the gates of a sea lock.
111. Initiation research and plan to extend the life time and to increase the availability of the gates of airlocks in a nuclear reactor.

112. Advice, test and calculation of the vertical guide, bearings and centering of table bridges in Delft.
113. Advice and tribological protoype-investigation for arguably extend of the life time of coatings on tension springs in roofs of cars.
114. Advice and control of the ship-guiding and bearing of the self inflating ship guidance in the secondary gully in the river Waal at Nijmegen.
115. Advice concerning the wheel guiding of the Clevering gate at Lauwersoog.
116. Advice concerning the gate guiding and preservation of the new sea lock IJmuiden (tender phase).
117. Advice concerning guidance and preservation of gate slides in seawater at Bristol Port.
118. Advice concerning the maintenance strategy towards GRP masts landing on Schiphol airport.
119. Advice concerning hydro guidance of the Prince Willem Alexander Lock at Schellingwoude.
120. Advice concerning the pivat bearings of the Koninginnensluis at Nieuwegein.
121. Advice concerning material choice, life time and certification mooring buoy bearings in the ports of Rotterdam.

122. Advice concerning the hydro guidance of the Prince Willem Alexander Lock at Schellingwoude.
123. Advice and design mooring buoys bearing concerning the renovation of the mooring buoys arsenal in the port of Rotterdam.
124. Providing a judment for a legal organization concerning damage and color-release of pool walls.
125. Advice for extending the life time of steel cables in water.
126. Advice for extending the life time of miter gates bearing Peulensluis.
127. Advice concerning wear control lock Delden, tender phase.
128. Pre study concerning corrosion aspects subfloor and outside reinforcement Maastunnel.
129. Advice constructive and temperature control of the hydraulic cylinder bearing Hogebrug Gorinchem.
130. Research and consultancy concerning extensive wear on the bearings of heat pumps.
131. Advice concerning corrosion and wear preventive designing and maintaining ship equipment’s on sea ships.
132. Advice corrosion prevention concerning a new sea lock.

133. Recommendation extension of service life of (plastic) slide bearings in compressors and heat pumps in connection with bearing damage.
134. Recommendation for corrosion prevention for a new sea lock.
135. Advice on material selection of contact surface floating braking work on wear resistance and service life.
136. Advice regarding the material and location selection of the sliding guide for rotating lock doors.
137. Examination concerning tribo tests for measuring the wear factor and the static and dynamic friction coefficient of bearing material for RWS and civil applications.
138. Mediation and advice on sticky slip, wear and corrosion of sliding and sliding guidance in seawater.
139. Demonstrate the extension of the useful life of soft cable wheels by means of optimization of greasing interval: mediation of contractor - client.
140. Research and advice on corrosion of rod coatings in a highly corrosive environment: mediation of contractor - client.
141. Draw up comparison of conductor variants of floating windows in lock chambers with regard to the useful life and integral costs.
142. Advise owner of a paddle pumping station concerning wear and stickslip in a dental coupling.
143. Updating RWS requirements with approval and rejection criteria with respect to the life time of rod and shaft coatings with corrosion and wear as failure mechanisms.
144. Follow-up research and advice regarding corrosion of rod coatings in a highly corrosive environment: mediation contractor - client.
145. Investigation for alternative sheet for inflatable dams with production simplification and dam height control.
146. Advice concerning tube support in cargo vessels.

147. Advice on corrosion of stainless steel lifting tubes in of lock gates in sea water.

148. Drawing up a table with recommendations regarding corrosion, friction and wear for achieving the required service life of the guidances and moving parts of the New Sea Lock Terneuzen.
149. Troubleshooting, research and advice regarding stickslip in rotating parts and damage of hydraulic cylinder rods of the temporary bridge bridge Westknollendam.
150. Investigation and inventory of dominant causes of failure and inspection techniques to prevent unespected unavailability of RWS artworks.

151. Troubleshooting, research and advice concerning the overhanging lock gate of the Julianasluis Gouda by moving the pivot bowl holder.
152. Troubleshooting, research and advice with regard to the sliding support of the cylinder jackets due to oil leakage from the hydraulic cylinders Hagestein, Driel and Amerongen.
153. Troubleshooting, research and advice for the sealing of the Bouwhuisbrug concerning an anti-desiccation project.
154. Troubleshooting, research and advice with regard to the bearings, choice of materials, lubrication, wear and service life of paper rollers.
155. Design review for the Weurt locks with regard to a) bearing of the wheel sets of the roller doors due to wear, b) double locking gates due to leakage, c) preservation of cable drums and yokes of lift bridges due to corrosion by salt, d) cable lubrication of lift bridges, e) equator lubrication of counterweight lift bridges, e) pinion and gear lubrication lifting towers.

156 Troubleshooting, damage investigation groove formation in hydraulic cylinders i.r.t. stickslip, temperature rise with spherical bearings jamming and advice sliding bearings.
157 Advice sluice gate bearing Slikkendammersluis.
158 Troubleshooting, advice regarding gear damage and lubrication gear transmission lifting sluice lock Weurt Waal side east.
159 Troubleshooting due to jamming of the gates of the tidal sluice at Waterdunen: advice on the sliding materials, gate sealing and corrosion prevention.
160 Recommendations for sliding footbridges at the overnight harbor in Spijk .

2000 – 2005 **AS RESEARCH ENGINEER, CONSTRUCTION DIV., *RIJKSWATERSTAAT* (RWS)**

Development of knowledge and knowledge management processes in relation to reducing integral costs and environmental tax of civil and mechanical constructions and knowledge transfer by way of symposiums, as a lecturer for PAO courses and by way of lectures within the RWS-scope and market as the designing party. Knowledge development and exchange of knowledge as chairman of the trade association Innovative Designs and Maintenance and of CUR committees for a design proposal and background report VVK in civil supporting structures and for setting out knowledge in relation to the design and maintenance within the framework of Life Cycle Cost Management (LCCM). Also research and setting out of knowledge for steel preservation by way of thermal sprayed coatings including aluminium coatings, seals in hydraulic power and setting out gained tribo-knowledge in civil and mechanical applications.

1990 – 1999 Research engineer with Construction Division, *Rijkswaterstaat* (RWS) Technique Development department (NIO), for the reduction of integral costs and environmental tax of existing and new civil constructions by innovations in the systems, material applications and organisation, and spreading knowledge through information, in trade associations, committees, publications and standardization.

1977 – 1990 Technical engineer with the *Rijkswaterstaat* (RWS) Bridge department, from 1985 in cooperation with the Construction research, in the areas of design simplification, tribology, plastic application and (hydrostatic) supports, guides and seals of moveable water-control structures in civil constructions.

1968 – 1977 Designing and calculating of *Rijkswaterstaat* (RWS) combination mechanical engineering structures with the supervision of the construction of locks and bridges and the execution of project-based tribological research on metals and plastics.

1966 – 1968 Draughtsman – constructor with *Duiker Apparatenfabriek,* industrial burner installation equipment manufacturers.

Working groups / Committees

- Advice concerning the germ capture project for reuse of non-vituperated products from thermosetting material.
- Chairman, trade association for Innovative Designs and Maintenance (to present).
- Chairman, CUR committee Design Proposal Fibre-reinforced Plastics (to present).
- NRK project, Fibre-reinforced plastic in civil-technical supporting structures
- Work group, plastic prestressing.
- Work group, Reliability Centred Engineering and Maintenance (RCEM).
- Thermal Spraying Committee (NIL).
- Study group, plastics (SMOZ/NCC) for the realisation of plastic lock gate.
- Trade association Joint Junctions and slide bearings.
- Trade association Mechanical Components.
- Work group, anti-icing.

Given courses (from 2006 as MRCONSULT)

- Practice as corrosion laboratory without scaling effects (1x) (IIR) 2019
- Practice as corrosion laboratory without scaling effects (1x) (IIR) 2018
- Practice as corrosion laboratory without scaling effects (2x) (IIR) 2017
- Practice as corrosion laboratory without scaling effects (2x) (IIR) 2016
- Lessons learned about hydro-support movable gates PWA-Lock for PIANC 2015
- Practice as corrosion laboratory without scaling effects (2x) (IIR) 2015
- Practice as corrosion laboratory without scaling effects (2x) (IIR) 2014
- Practice as corrosion laboratory without scaling effects (2x) (IIR) 2013
- Life time of plastics in technical applications in (sea)water (IIR) 2012
- Extension of the requirements technical covers (NBD 10300) with among other things transkeramische coatings (IIR) 2011
- Checking and monitoring of wear factor and life time against corrosion of technical coatings in a maritime environment (BIL/NIL welding symposium) 2011
- Organising and implementation of learning errors (IIR) 2009
- Designing and checking of civil constructions: new developments and materials; (PAO)
- Presentation innovation and maintenance interval at sealing and thermal coatings in a maritime environment (IIR) 2009
- Presentation integral costs of thermal coatings under corrosive and sliding circumstances (BIL/NIL) 2008
- Presentation innovations for cost reduction with several materials and coatings among which high strength concrete (Concrete association) 2007
- Presentation conserve mechanism TSA and integral cost comparison of alternatives (IIR) 2007
- Integral cost reduction with innovative materials in the civil engineering (PAO-co leader) 2005
- Technical innovations for the reduction of integral costs and environmental pollution of mechanical and civil engineering; PAO. 2006 2005
- Life span of seals and rod coatings (Platform Hydraulics symposium). 2005
- Technical innovations for the reduction of integral costs and environmental pollution of mechanical and civil engineering (CUR/ONRI/RWS symposium). 2004
- Technical innovations for the reduction of integral costs and environmental pollution of mechanical and civil engineering (RWS symposium). 2003
- Fibre reinforced supporting structures (co course leader PAO). 2002
- Functional design of hydraulic engineering structures; new developments and materials (PAO). 2002
- Thermal sprayed aluminium coatings for the protection of steel in civil applications (Bond voor Materialenkennis (Society for Material Knowledge). 2002
- Aluminium spraying / Techniques of the future (Congress Metal Preservation KV Fosag-VMB-BS) 2002

Publications (from 2006 as MRCONSULT)

2009 Ros (MRCONSULT); Feel self your maintenance pain; interview at IIR corrosion course; Oppervlaktetechnieken no. 2 - 2009

2006 Ros (*Rijkswaterstaat* (RWS) Construction Division / MRCONSULT); Van Ostayen TU Delft); *Land+Water*; Hydrostatic bearings for lock gates and sluices; Part 1: Support principles, monitoring results and practical experiences*; Land+Water* 1 / 2; February 2006.

2006 Ros (Rijkswaterstaat (RWS), Construction Division / MRCONSULT); Van Ostayen TU Delft); *Land+Water*; Hydrostatic bearings for sluice gates and sluice valves; Part 2: Design aspects, costs and application possibilities; *Land+Water* 3 / 4; April 2006.

2005 Ros, Ramaekers, De Munter; FME CWM publication; TSA coatings; Costs and design aspects; April 2005.

2005 Ros, De Wit; Life span of seals and rod coatings; *Aandrijven en Besturen*; February 2005.

2005 Zeestraten, Van der Veen; Ros; Detailed design of a draw bridge in ultra high strength concrete; Cement 2005/1.

2005 Ros; Research into coatings in constructions RWS; *Aandrijftechniek* no. 1; January 2005

2004 Ros; Symposium "Rod coatings of hydraulic cylinders"; wax covering load; *Aandrijftechniek* no. 11. November 2004.

2004 Life span of seals, rod and shaft coatings with RWS; 30 September 2004.

2004 Innovation economies knowledge, 23 September 2004.

2003 Life Cycle Costs as reference point; Preservation, integral costs, integral environmental tax; surface techniques, principal theme environment / preservation; May 2003.

2002 Co-author; *B200-hefschuiven Stormvloedkering Oosterschelde* (B200-crest gates storm-surge barrier Oosterschelde); Cement 2002-4.
2001 Co-author; *Sterk staaltje beton (*Strong story concrete*)*; *De Ingenieur* number 15; 31 August 2001.
2001 Concrete sluice gates for the Oosterschelde storm-surge barrier; *Speurwerknieuws*; March 2001.
2000 Integral costs sheet pile variants; *Speurwerknieuws*; December 2000.
2000 *Betonnen B200 schuiven voor de stormvloedkering Oosterschelde* (Concrete B200 sluice gates for the Oosterschelde storm-surge barrier); *Speurwerknieuws*; December 2000.
2000 *Bouwspeurwerknieuws*; Trade Association Innovative Designs and Maintenance.
2000 *Land+Water* number 1 + 2; Bridge girder study (draw bridge leaf for traffic load) of HSB (200).
2000 *Otar* number 1; Aluminium coatings break-through at *Rijkswaterstaat* (RWS).
1999 *Bouwspeurwerknieuws;* December 1999; Graduation project ultra strong high strength concrete draw bridge.
1999 *Land+Water* number 12 / 1999; New materials for Oosterschelde barrier; plastic and ultra high strength concrete.
1999 *Bouwspeurwerknieuws;* December 1999; Graduation project ultra strong high strength concrete draw bridge.
1999 *Bouwspeurwerknieuws;* December 1999; Graduation project plastic sluice valve for the Oosterschelde storm-surge barrier.
1999 *Land+Water* no. 10 1999; Less maintenance with aluminium coatings.
1999 Preservation days; September 1999; Break-through in coatings? (aluminium coatings); Information sheet.
1999 *Perspectief*; plastic stay cables; Interview.
1999 *Land+Water* no. 1 / 2 1999; Topic plastics in civil engineering techniques.
1999 *Profiel 2*; 21 January 1999; Cathodic Secrets; interview.
1998 *Speurwerknieuws*; December 1998; Results of thermal sprayed aluminium coatings study.
1998 *Speurwerknieuws*; December 1998; Results of graduation research of plastic stay cable without external energy destruction.
1998 *Bouwdienst* magazine; September 1998; Will Andel get the first plastic draw bridge? Interview with R.T. van Tol.
1998 *Kunststof* magazine no. 6; August 1998; Rubber balloons protect West Overijssel; Interview.
1997 *Speurwerknieuws;* PLASTIC BRIDGE STUDY: plastic road bridges in the Netherlands.
1997 *VezelVersterkt* 4-1997; Input from *VezelverSterkt* readers.
1997 *Speurwerknieuws;* September 1997; publication PLASTICS REQUIREMENTS, technical delivery conditions for considering sliding-burdened plastics, including reclamation and recycling plastics.
1997 *Speurwerknieuws;* December 1997; Setting up trade association sustainable designs and plastics.
1996 *Speurwerknieuws*; Hydro-contact: effect of local mechanical contact on film bearing capacity.
1996 *De Constructeur;* February 1996/II; Co-publicist: Friction, wear and lubrication.
1994 *OTC* magazine; Construction Division magazine; Construction Division Rijkswaterstaat (RWS) examines costs and benefits of building plastic bridges.
1994 Construction division magazine, number 3; September 1994; Sustainable reclaimed wood and recycled plastic in hydraulic engineering.
1994 Construction division magazine, number 2; May 1994; To what extent are old slide bearings friction-free?
1993 Construction division magazine, number 2; September 1993; Hydro-guide test results; lock gates can slide on the water maintenance-free for years; part 2.
1993 Construction division magazine, number 1; May 1993; Lock gates will slide on wafer-thin waterfilm in the future; part 1.
1992 Construction division magazine, number 2; November 1992, Hydrostatic bearings support for new *Oranjesluis* gates.
1988 *Wegen Info*; Study of the drawing pressure bearing of the cable-stayed bridges.
1987 *Bruggenspraak*; Sliding door study; End of a wheel era?
1986-'89 *Onderzoeksinfo's* (information on studies) for design, building control, management and inspection.
1982 *Bruggenspraak*; Friction and wear of sliding guides and sliding bearings.
1975 *Bruggenspraak*; Construction of the bridges across the *Koopvaarderschutsluis*.

Projects at the Bouwdienst Rijkswaterstaat

Project name	**Function**	**Period**
- Graduation study draw bridge in concrete B115	Graduation supervisor	2004 – 2005
- Design/test maintenance-free strokes SVKO	Specialist	2004 – 2005
- Life span and tribology with hydraulic cylinders SVKO	Specialist	2003 – 2005
- Multi-client research TNO in relation to study monitoring aluminium coatings	Researcher	2003 – 2004
- Composition of Tribo-book	Specialist	2004 – 2005
- Composition of thermal sprayed coating requirements	Specialist	2000 – 2005
- Research into life span of seals and rod coatings	Specialist	2003 – 2005
- Graduation research floating fender in VVK	Graduation supervisor	2003 – 2004
- Graduation research detailed design B200 draw bridge	Graduation supervisor	2003 – 2004
- Drainage capacity barrier dam Afsluitdijk, tribo-study sliding guides	Consultant	2003 - 2005
- Graduation research stress cable concrete barrier	Graduation supervisor	2002 - 2003
- Spray painting or aluminizing? Choice on the basis of integrated costs and environmental impact	Researcher	2002 - 2005
- Coefficient of friction of pure UHMWPE uv; Average, Standard deviation, Upper limits	Researcher	2002
- Tribology and sliding load-bearing construction elements:	Project leader	2001 - 2003

recording of information and implementation		
- Aluminium layer: recording of information and implementation	Project leader	2001 - 2003
- Tribology study of coefficient of friction of slide guides ESSSB	Advisor	2001
- Project group very high strength concrete gate ESSSB	Advisor	2001 - 2003
- B200 concrete gate Eastern Schelde Storm Surge Barrier ESSSB	Dissertation supervisor	2000 - 2001
- Aluminium layer: interaction with concrete, adhesion	Project leader	2000 - 2001
- Study into Maritime Concrete: B110...B200 instead of steel?	Project leader	2000 - 2005
- CUR Committee C124: Recommendations for VVK load-bearing structures	Chairman	2000 - 2005
- Plastic gate Eastern Schelde Storm Surge Barrier	Dissertation supervisor	1999
- Very high strength concrete draw bridge for traffic load	Dissertation supervisor	1999
- Material comparison in costs and environmental impact, pedestrian bridge Noordland	Adviser	1998 - 1999
- Cathodic protection of sheet pile wall	Project leader	1998 - 2000
- Protection against corrosion with aluminium coatings	Project leader	1998 - 2005
- Drafting of specifications for metallic coatings	Project leader	1998 - 2005
- Start Specialist group Innovative Design and Maintenance	Chairman	1997 - 2005
- Research of clamping theory for collapsible rubber dam material	Chairman	1997 - 1999
- Plastic arrestor cable for slowing down ships	Dissertation supervisor	1997 - 1998
- REDOC: drafting of reference document plastics	Project leader	1998
- Hagestein steel bridge slide supports	Advisor	1998 - 1999
- INTMATKOST: Programme Material choice Integrated Material costs	Project advisor	1997 - 1999
- Study into hydrocontact: elongated hydrostatic/dynamic support and sealing of sliding doors	Project leader	1997 - 2001
- Plastic draw bridge for traffic use	Dissertation supervisor	1997 - 1998
- Collapsible rubber dam Ramspol; testing choice of materials, clamp, inspections and monitoring	Assessor	1997 - 2005
- Aluminium coatings; application of research	Assessor	1996
- Inflateble rubber dam Ramspol; investigative study of material of dam and clamp construction	Project leader	1996 - 1996
- Monitoring hydro guides of Prins Willem Alexander Lock	Researcher	1995 - present
- Rotating seals study	Researcher	1995
- Inflatable rubber dam Barrier Kampen	Advisor	1995
- Aluminium coatings; mechanism study	Project leader	1995 - 1996
- Momaro project; arrestor structures with plastic	Advisor	1994
- Road traffic bridge with fibre-reinforced plastic	Researcher	1994 - 1998
- Pivot bearings of mitre doors	Project leader	1994
- Bergsediep Lock; problem analysis tribology in slide valves	Researcher	1993
- Inflateble rubber dam Ramspol; preliminary study of rubber dam using plastic material	Researcher	1993 - 1994
- Kreekrak Bridges; Design innovations Push-pull supports	Project leader	1993
- Aluminium coatings; literature study	Initiator / project leader	1993
- Load-bearing capacity and deformation PE; computational guideline	Project leader	1993 - 1994
- Design and computational guideline; research into wheel loads	Project leader	1992 - 1994
- Combating ice, ice adhesion	Researcher	1992
- Bridge Katerveer 2; measurement of friction in old slide supports	Researcher	1992
- Recycling plastics and sustainably harvested wood; study	Project leader	1991 - 1995
- Eastern Schelde Storm Surge Barrier; cath. protection; Plastic tubes	Advisor	1991 - 1992
- Nieuwe Oranje Lock, prototype slide track for the sliding lock gate	Project leader	1990 - 1994
- Plastic slide bearings study	Researcher	1990 - 1999
- Plastic (GVK) sliding gate study	Project leader	1990 - 1995
- Translating seals study	Project leader	1990
- Kreekrak bridges; Damage analysis push-pull supports	Researcher	1989
- Roompot Lock; Damage analysis wheel guide	Researcher	1988
- Eastern Schelde Storm Surge Barrier; stick slip prevention seals of the hydraulic cylinders	Advisor	1988
- Corrosion prevention in designs	Advisor	1987
- Storm Surge Barrier Nieuwe Waterweg; Plastic slide surfaces ball hinge	Advisor	1987
- Corrosion proof sprayed layers study	Project leader	1986 - 2005
- Sliding lock gate investigation hydro guide Oranje Lock	Initiator/project leader	1985 - 2005
- Discharge sluice Haringvliet; tribology slide bearings of the guide wheels	Advisor/researcher	1985 - 1990
- Slide supports; problem analysis and tribological investigation	Researcher	1985 - 1994
- Kreekrak Sluices; guide 256 wall gates of plastic	Advisor/researcher	1984
- Navigational locks Hansweert; Gate guide of plastic	Advisor/researcher	1983
- Advisory projects analysis of existing structures; prototype measurements	Researcher	1981
- Noorder Lock IJmuiden; gate loads with and without storm;	Researcher	1980 - 1984

prototype measurements		
- Eastern Schelde Storm Surge Barrier; gate guide with plastic	Advisor	1978
- Noorder Lock IJmuiden; plastic slide bearings for bottom roller assemblies	Researcher	1979
- Testing computational specifications of dynamics of bridges with prototype measurements	Researcher	1978
- Hydro guide study	Project leader	1978 - 1994
- Sluice gate door loads during storm; prototype measurements	Researcher	1977 - 1983
- Naval Dockyard Den Helder; Gate locking; Air conditioning system	Designer	1974 - 1976
- Tribological study of slide guides with plastics	Project leader	1972 - 1975
- Volkerak Inlet sluice; wheel and slice guide	Initiator/designer	1971 - 1974
- Push towing locks WBD/Tiel; hydraulic sliding lock gate drive	Designer	1969 - 1972
– Navigational lock Medemblik; arrestor construction for ships	Designer	1969 - 1970
- Rozenburg Lock; hydraulic sliding lock gate driving	Designer	1968 – 1969

Courses followed	**Period**
- Train the Trainers (Post Graduate course for lecturers and course leaders)	2005
- Workshop LCC-Lite as computer tool in integrated cost management	2003
- Effective Influencing (KSW Kwintessens)	2001
- Leading meetings (Intermediair)	2000
- Personal effectiveness (Intermediair)	1999
- More creative in Communications	1996
- Negotiating	1995
- Senior course "Giving leadership to projects" (BD)	1994
- Course for advising specialist advisors (CASA)	1994
- Interview-, Discussion- and Meeting techniques (Rhetorica)	1993
- Working on Projects (Twijnstra)	1993
- Introduction to Design View 3.0. (Computervision)	1993
- Project management (RWS)	1992
- Material choice and environmentally aware design (PATO)	1991
- Principles of Finite Elements Method (PATO)	1991
- Probabilistic designs (BD- TUD)	1990
- Material aspects of tribology technique (MITNO-TUD)	1989
- System analysis, structured maintenance (KEMA)	1998
- Condition monitoring, Strategy for Technical Management (NVDO)	1986
- In-company training "Holding readings, introductions, talking to (large) groups of people and how to function in discussions"	1986
- Corrosion and protection against corrosion (TUD)	1985
- Plastics chemistry for non-chemists (SORK)	1984
- Properties and testing of plastics	1983
- Electronics for non-electrical engineers (NIRIA)	1981
- Technical language use (NIRIA)	1979
- The prediction of the dynamic behaviour and positioning accuracy of constructions and mechanisms (TUE)	1977
- Analysis of Machines (PATO)	1977
- Tribology, friction, lubrication and wear and tear (PBNA)	1975
- Steelchoicetechnique (SBC)	1973
- Loadprocess and probulsion techniques (TUE)	1972
- Hydraulics and Pneumatics (SBC)	1971

ABBREVIATIONS

CRC	Continuously-Reinforced Concrete
CUR	Centre for civil-technical engineering research and regulations
FME CWM	Association for the Metal and Electrotechnical Industry – Contact group of employers in the metal industry
HSB	High strength concrete /Timber framed structures)
HTS	Higher Technical Secondary School
KV Fosag	Royal Society of firms in the painting, finishing and glazing industry
MAVO	General Secondary Education
MTS	Technical Secondary School
NIL	Netherlands Welding Institute
NIO	Development Techniques for Wet Infrastructure
ONRI	Association of Consulting Engineers of the Netherlands
PAO	Postgraduate education
RWS	Directorate-General for Public Works and Water Management
SMOZ/NCC	Foundation for material research in the sea/Dutch Corrosion Centre
SVKO	Storm-surge barrier Oosterschelde
TNO	Netherlands Organisation for Applied Scientific Research
TSA	Thermally sprayed aluminium
TU	Technical University
VMB-BS	Association of Metal Finishing Companies- Painters and Decorators Industry Board
VVK	Fibre-reinforced plastics

- * -