

PERSONAL INFORMATION	
Full name	Maria Cristina dos Santos Cabaço Afonso
Date of birth	3th of June 1966
Nationality	Portuguese
QUALIFICATIONS	<p>Master of Science in Hydraulic and Water Resources by <i>Instituto Superior Técnico</i> (IST), Technical University of Lisbon, in 2008.</p> <p>Post-graduate degree in Maritime Transport, Port Management and Intermodal Transport by <i>Instituto Superior de Transportes</i>, in 2001.</p> <p>Civil Engineering, Communication Routes and Transport Engineering by <i>Instituto Superior de Engenharia de Lisboa</i> (ISEL), Polytechnic High School of Lisbon, in 1994.</p> <p>Technical Civil Engineering by <i>Instituto Superior de Engenharia de Lisboa</i> (ISEL), Polytechnic High School of Lisbon, in 1989.</p>
AREAS OF EXPERTISE	Maritime hydraulics, Port engineering, Coastal engineering, Sea outfalls and intakes.
CHARTMENTSHIPS	Senior Member and Specialist in Hydraulics and Water Management of the Portuguese Order of Engineers N° 38493.
CURRENT POSITION	
Nov 2018 -	Technical Director and Managing Partner of <i>OCEANING - Engenheiros Consultores, Lda.</i>
FORMER POSITIONS	
Jan 1990 - Jul 2018	Maritime Hydraulics consultant in <i>WW - Consultores de Hidráulica e Obras Marítimas S.A.</i>
Mar 2007 - Sep 2007	Internship under the Masters in Hydraulics and Water Resources of the Ports and Beaches Division, Hydraulics Department, in <i>Laboratório Nacional de Engenharia Civil, I.P. (LNEC).</i>
Apr 1987 - Nov 1989	Scholarship in Beach and Harbour Division, Hydraulics Department, in <i>Laboratório Nacional de Engenharia Civil, I.P. (LNEC).</i>
CONTACTS	e-mail: cristina.afonso@oceaning.pt; internet: www.oceaning.pt; phone: (+351) 217 780 088
LANGUAGES	Portuguese (native language), english and french.
PROFESSIONAL EXPERIENCE	
RESEARCHER IN LNEC UNDER THE SCOPE OF PHYSICAL MODELLING STUDIES	<p>During her research internship, has collaborated and developed 2D and 3D physical model studies for the determination of wave propagation, overtopping, stability of breakwater in harbours and other maritime structures.</p> <p>In the studies had provided support on the physical model tests, analysis of the results and reports, being the following the most relevant projects:</p> <ul style="list-style-type: none"> • Port of <i>Sines</i> (Portugal). Breakwater east stability. • Port of <i>Póvoa de Varzim</i> (Portugal). Breakwater stability. • Port of <i>Ericeira</i> (Portugal). Breakwater stability. • Marina of <i>Cascais</i> (Portugal). Wave disturbance studies. • Port of <i>Porto Santo</i> (Madeira). Wave disturbance studies. • <i>Praia da Vitória</i> (Azores - <i>Terceira</i> Island). Breakwater stability.

PROFESSIONAL EXPERIENCE

RESEARCHER IN LNEC UNDER THE SCOPE OF PHYSICAL MODELLING STUDIES	<ul style="list-style-type: none"> • Port of <i>Flores</i> (Azores - <i>Flores</i> Island). Breakwater stability. • <i>Ponta Delgada</i> Seaside Road Protection (Azores - <i>São Miguel</i> Island). Revetment stability. • Port of Saint-Quay-Portrieux (France). Wave disturbance studies and stability of the breakwater.
SPECIALIZATION AREAS	<p>Provided support on the physical model studies, result analysis and reporting, being the most relevant projects the following:</p> <ul style="list-style-type: none"> • Writing of Tender Proposals. • Development of Studies and Project designs. • Elaboration of ITT documentation. • Development of Technical Notes and Reviews. • Site Supervision. • Works inspection and monitoring. • Elaboration of applications for R&D projects. <p>A short list of key project on each area is presented below, comprising Consultancy and Site Supervision projects.</p>
SHORE PROTECTION	<ul style="list-style-type: none"> • Refurbishment of the Shore Protection of the Marginal Atlantic in Vila do Conde (Portugal) - Detail Design. <i>Docapesca, Portos e Lotas, S.A.</i>. 2018. • Maritime Protection Beach Between Forte Giribita and Cruz Quebrada (Portugal) - Detail design. <i>Câmara Municipal de Oeiras</i>. 2010. • Monitoring Plan of the Portuguese Continental Shoreline (Portugal) - Consortium WW/DHI - Water & Environment/IMAR. INAG.2001. • Safi Cliff Stabilization (Marocco) - Detail Design. <i>Ministère de l'Équipement</i>. 2001. • Marginal Road Protection Between Gibalta and Paço d'Arcos (Portugal) - Detail Design. <i>JAE - Junta Autónoma das Estradas</i>. 1991.
HARBOURS AND PORT TERMINALS	<ul style="list-style-type: none"> • Breakwater Extension and Platform extension for the Port of Casa (Azores - Corvo Island) - Detail Design. <i>Portos dos Açores, S.A.</i>. 2014. • Shore Protection Study of the Port of Laayoune (Marocco) - Detail Design. <i>ANP - Agence Nationale des Ports</i>. 2012. • Fishing Port in Tanger. Stability Assessment of the Breakwater and wave Overtopping studies (Marocco) - Detail Design. <i>Société d'Aménagement pour la Reconversion de la Zone Portuaire de Tanger Ville/Somagec</i>. 2011. • Port of Porto Moniz (Madeira) - Detail Design. <i>SREST - Secretaria Regional do Equipamento Social e Transportes</i>. 2001. • Commercial Port of Caniçal (Madeira) - Detail Design (3 phases). <i>APRAM - Administração dos Portos da Região Autónoma da Madeira</i>. 1992-2005.
MARINAS AND RECREATIONAL PORTS	<ul style="list-style-type: none"> • Madalena Recreational Port (Azores - Pico Island) - Detail Design. <i>Administração dos Portos do Triângulo e do Grupo Ocidental, S.A.</i>. 2010. • Vilamoura's Marina outer Port. Refurbishment for the mooring of super-yates (Portugal) - Detail Design. <i>Marina de Vilamoura S.A.</i>. 2009. • Marina do Lorde (Madeira) - Detail Design. <i>Marina do Lorde S.A.</i>. 1998. • Boaventura's Recreational Port (Madeira) - Detail Design. <i>DRP - Direcção Regional de Portos</i>. 1994. • Funchal's Marina Expansion (Madeira) - Detail Design. <i>DRP - Direcção Regional de Portos</i>. 1993.



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MISCELANIOUS PROJECTS	<ul style="list-style-type: none"> • Sediment Transfer for the Optimization of the Hydrodynamic Equilibrium Works of the Aveiro River (Portugal) - PROMAM's Detailed Design review and collaboration in the development of the ITT documentation. <i>Polis Litoral Ria de Aveiro, S.A.</i>. 2018. • Shoreline Landscaping General Plan of the Beaches of Samouqueira, Porto Covinho and Praia Grande in Porto Covo - Detail Design. <i>Polis Litoral Sudoeste – Sociedade para a Requalificação e Valorização do Sudoeste Alentejano e Costa Vicentina, S.A.</i>. 2014. • Intervention on the Creeks of Santa Luzia and João Gomes (Madeira) - Detail Design. <i>SREST - Secretaria Regional do Equipamento Social e Transportes</i>. 2011. • Porto Santo Port Infrastructure Refurbishment (Madeira - Porto Santo Island) - Detail Design. <i>APRAM - Administração dos Portos da Região Autónoma da Madeira</i>. 2005. • Algarve Artificial Reefs - Detail Design. <i>IPIMAR – Instituto de Investigação das Pescas e do Mar</i>. 1998.
PORT PLANNING	<ul style="list-style-type: none"> • Porto Santo Port Navigability and Operations Study (Madeira - Porto Santo Island). <i>APRAM - Administração dos Portos da Região Autónoma da Madeira</i>. 2006. • Canical Port Master Plan (Madeira). <i>APRAM - Administração dos Portos da Região Autónoma da Madeira</i>. 1989-2006. • Porto Santo Port Master Plan (Madeira - Porto Santo Island). <i>APRAM - Administração dos Portos da Região Autónoma da Madeira</i>. 2002. • Funchal Port Master Plan (Madeira). <i>APRAM - Administração dos Portos da Região Autónoma da Madeira</i>. 2002.
REMEDIAL AND REPAIR	<ul style="list-style-type: none"> • Stabilization of the Submarine Pipe on Ílhavo River - Deepening of the Outfall Pipelines and Cables (Portugal) - Detail Design. <i>AdCL - Águas do Centro Litoral</i>. 2017. • Espinho e São Jacinto Outfall Pipelines. Outfall adaptations and Cathodic Protection Renewal (Portugal) - Detail Design. <i>AdCL - Águas do Centro Litoral, S.A.</i>. 2016. • Remedial Work on Guia's Water Treatment Plant Outfall Pipeline Split Box's Foundation (Portugal) - Detail Design. <i>SANEST - Grupo Águas de Portugal</i>. 2014. • Funchal Breakwater Grand Repair Works (Madeira) - Detail Design. <i>DRP - Direcção Regional de Portos</i>. 1990.
INTAKES AND OUTFALLS PIPELINES AND UNDERWATER CABLES SYSTEMS	<ul style="list-style-type: none"> • Ta'Barkat L/O Xghajra Intake and Outfall Pipelines (Island of Malta) - Detail Design and technical support during construction. <i>Malta Water Service Corporation/ETERMAR/POLIDANO GROUP</i>. 2009-2011. • Tanger Port Intake and Outfall Pipelines (Marocco) - Detail Design and technical support during construction. <i>Société des Eaux et de l'Electricité du Nord/ETERMAR/SOMAGEC/ GEOCEAN</i>. 2006-2008. • Tetouan-Azla Intake and Outfall Pipelines (Marocco) - Detail Design and technical support during construction. <i>Société des Eaux et de l'Electricité du Nord/ETERMAR/SOMAGEC/ GEOCEAN</i>. 2006-2008. • Lagoa / Meco Intake and Outfall Pipelines (Portugal) - Detail Design. <i>SIMARSUL - Sistema Integrado Multimunicipal de Águas Residuais da Península de Setúbal, S.A.</i>. 2007.



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INTAKES AND OUTFALLS PIPELINES AND UNDERWATER CABLES SYSTEMS	<ul style="list-style-type: none"> • Intake tower of the Desalination Plant in Beni Saf (Argélia) - Detail Design. SETH/OFM/IC. 2007. • São Jacinto Intake and Outfall Pipelines (Portugal) - Detail Design and Technical Support During Construction. <i>ETERMAR - Engenharia & Construção S.A. (SIMRIA - Saneamento Integrado dos Municípios da Ria, S.A.)</i>. 1996-1998. • Underwater Power Cables for the Culatra and Armona Islands. Ria Formosa Span (Portugal) - Detail Design. <i>ETERMAR - Engenharia & Construção S.A.</i>, in 1990/91.
SITE SUPERVISION AND WORK INSPECTION	<ul style="list-style-type: none"> • Guia's intake and outfall pipeline maintenance works inspection and site supervision (Portugal) - Site supervision. <i>SANEST - Saneamento Básico da Costa do Estoril S.A.</i>. 2003-2004. • Matosinhos Intake and Outfall Pipeline (Portugal) - Site Supervision. <i>Câmara Municipal de Matosinhos</i>. 2000. • Refurbishment of the Area Adjacent to Fishing Port in Setúbal (Portugal) - Site Supervision. <i>APSS - Administração do Port of Sesimbra e Setúbal, S.A.</i>. 1999-2000. • Bulk Solids Terminal of the Figueira da Foz Port (Portugal) - Site Supervision. <i>DGPNTM - Direção Geral de Portos, Navegação e Transportes Marítimos</i>. 1997-1998.
RESEARCH AND DEVELOPMENT PROJECTS (R&D)	<ul style="list-style-type: none"> • Experimental Study of Forces on a Submarine Outfall: Influence of Incident Wave Direction, of Stabilizing Concrete Weights and Pipe Distance From the Bottom. Project HYDRALAB IV. UGR-Spain, UNAM-México, LNEC-Portugal and WW-Portugal. 2012-2015. • AREDIS – Experimental Study of Stability of Submarine Outfalls in Muddy Soils. Project R&D - Companies Incentive System for Research and Technologies Development. <i>WW - Consultores de Hidráulica e Obras Marítimas S.A.</i> and <i>LNEC – Laboratório Nacional de Engenharia Civil, I.P.</i>. 2012-2014.

PUBLICATIONS

	<p>Author or co/author of the following publications in National and International Scientific meetings and of a Master's Thesis.</p> <ul style="list-style-type: none"> • Mendoza, E., Neves, M. G., Afonso, M. C., Casarín, R., Reis, M. T., Clavero, M., Losada, M. (2014). Experimental Study of Stability of Submarine Outfalls in Muddy Soils. Paper presented at the 8th International Conference on Marine Waste Water Discharges and Coastal Environment. MWWD, St. Julien's Bay (Malta). • Neves, M. G., Mendonça, A., Didier, E., Reis, M. T., Inverno, J., Figueira, P., Afonso, M. C., Vilchez, M., Clavero, M., Sánchez, M., Losada, M. (2014). Experimental Study of Forces on a Submarine Outfall : Influence of Incident Wave Direction of Stabilizing Concrete Weights and Pipe Distance from the Bottom. Paper presented at the final projects meeting HYDRALAB IV. European Community Program. Lisbon (Portugal). • Afonso, C., Neves, M. G., Didier, E., Ferreira, O., Silva, L.G., Afonso, C., Lopes, M. R., Fortes, C.J. (2013) AREDIS – Adaptações para Reforçar a Estabilidade de Emissários Submarinos em Terrenos Lodosos (AREDIS - Experimental Study of Stability of Submarine Outfalls in Muddy Soils). Paper presented at the 8^{as} Jornadas Portuguesas de Engenharia Costeira e Portuária, AIPCN/PIANC, Lisbon (Portugal).
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PUBLICATIONS

- Reis, M. T., Neves, M. G., Didier, E., Ferreira, O., Silva, L. G., Afonso, C., Lopes, M. R., Fortes, C. J. (2012). **Maritime Structures Wave Overtopping. The Portuguese Experience**. Paper presented at the 2nd Mediterranean Days of Coastal and Port Engineering Infrastructures, Logistics and Sustainability. AIPCN/PIANC, Valencia (Spain).
- Afonso, C., Figueira, P., Pipa, I. (2011). **Projecto do Emissário Submarino de Ta'Barkat L/O Xghajra (The design of de submarine outfall of Ta'Barkat L/O Xghajra - Malta Island)**. Paper presented at the 7^{as} Jornadas Portuguesas de Engenharia Costeira e Portuária, AIPCN/PIANC, Oporto (Portugal).
- Mendonça, A., Losada, M. A., Reis, M. T., Neves, M. G., Figueira, P., Afonso, C. (2011). **Incorporação da Avaliação Probabilística de Riscos e de Métodos de Optimização no Projeto de Emissários Submarinos (Incorporation of Probabilistic Assessment of Risks and Methods of Optimization in the Design of Submarine Outfall)**. Paper presented at the 7^{as} Jornadas Portuguesas de Engenharia Costeira e Portuária, AIPCN/PIANC, Oporto (Portugal).
- Figueira, P., Afonso, C., Afonso, A. Ruivo, N. (2009). **Projecto e Construção de Dois Emissários Submarinos em Marrocos (The Design of the Submarine Outfall of Tanger and Tétouan-Azla in Morocco)**. Paper presented at the 6^{as} Jornadas Portuguesas de Engenharia Costeira e Portuária, AIPCN/PIANC, Funchal (Madeira).
- Figueira, P., Afonso, C., Afonso, A. Ruivo, N. (2008). **Aspects of the Design and Construction of the Submarine Outfall of Tanger Port**. Paper presented at the 5th International Conference on Marine Waste Water Discharges and Coastal Environment, MWWDC, Dubrovnik (Croatia).
- Afonso, C., Neves, M.G., Silva, L. G., Teixeira, T. T. (2008). **Hydraulic Stability of Antifer Cubes on Rubble Mound Breakwaters, Study on 3D Physical Model**. Paper presented at the 2th International Conference on the Application of Physical Modelling to Port and Coastal Protection, Coastlab08, Bari (Italy).
- Afonso, C., Neves, M.G., Silva, L. G., Teixeira, T. T. (2007). **Influência da Obliquidade da Agitação e da Densidade de Colocação dos Blocos Antifer na Estabilidade de Obras Marítimas de Talude (Stability of Rubble-Mound Maritime Structures: Influence of Angle of Wave Attack and of Placement Density of Antifer Blocks)**. Paper presented at the 5^{as} Jornadas Portuguesas de Engenharia Costeira e Portuária, AIPCN/PIANC, Lisbon (Portugal).
- Afonso, C., Figueira, P., Epifânio, L. (2007). **Projecto do Emissário Submarino da ETAR Lagoa/Meco (The Design of the Submarine Outfall of Lagoa-Meco)**. Paper presented at the 5^{as} Jornadas Portuguesas de Engenharia Costeira e Portuária, AIPCN/PIANC, Lisbon (Portugal).
- Figueira, P., Afonso, C. (2005). **Alguns Aspectos do Projecto de Emissários Submarinos (Several Aspects of the Design of Submarine Outfalls)**. Paper presented at the 4^{as} Jornadas Portuguesas de Engenharia Costeira e Portuária, AIPCN/PIANC, Angra do Heroísmo (Azores-Terceira Island).
- Tito, T., Afonso, C. (2001). **Molhe Exterior do Porto do Caniçal. Concepção e Dimensionamento (Extension of the main breakwater of the Port of Caniçal. Design and dimensioning (Madeira))**. Paper presented at the 2^{as} Jornadas Portuguesas de Engenharia Costeira e Portuária, AIPCN/PIANC, Sines (Portugal).



PUBLICATIONS

Thesis	<ul style="list-style-type: none"> • Afonso, C. (2008). Influência da Obliquidade da Agitação e da Densidade de Colocação dos Blocos Antifer na Estabilidade de Obras Marítimas de Talude (Stability of Rubble-Mound Maritime Structures: Influence of Angle of Wave Attack and of Placement Density of Antifer Blocks). PhD Thesis prepared at <i>Laboratório Nacional de Engenharia Civil (LNEC)</i> for the degree of Master of Science in Hydraulic and Water Resources, <i>Instituto Superior Técnico (IST)</i>, Technical University of Lisbon (Portugal).
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Lisbon, march 2019

