


## PERSONAL INFORMATION

## DAL'MAZ SILVA, Walter

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Date of birth 25th May 1989 | Nationality Brazilian

## PROFILE AND MOTIVATION

Please let me introduce myself. I am Walter Dal'Maz Silva, 34, married, Brazilian living in France for about 10 years now. I accumulate more than a decade of experience in industry, comprising a first experience in Oil&Gas, a PhD dedicated to aeronautic and automobile applications, then a career in steel production with a high focus in applied Data Science, followed my current position as a simulation engineer in advanced ceramics. That includes a broad variety of fields, from raw materials manufacture to mechanical construction, both in production settings and research, and also intermediate production technical support.

My original background is Materials Engineering by Universidade Federal de Santa Catarina - UFSC (2011), Florianópolis, Brazil, next I received my PhD in Materials Science by Université de Lorraine - UL (2017), Nancy, France. Early in my career I have acquired a good knowledge of technical standards, management and manufacture practices, quality management, and developed good interpersonal skills, especially in production settings. Later I accumulated skills in laboratory and production data treatment and analysis for scale-up of industrial processes. Also successfully applied numerical simulation to the thermal and thermochemical processing of materials : carburizing, nitriding, selective oxidation, ceramics, etc. This was possible thanks to the skills developed during my thesis years (2013-2017) that led me to the positions I held at ArcelorMittal, the world's largest steelmaker, then at Imerys, leader in specialty minerals.

Unknowingly, I started with Machine Learning while applying semi-supervised graph methods for simplification of chemical systems to allow the simulation of vacuum carburizing of steel early in my graduate studies and my love by the field simply continued growing. That later opened the path to an important moment of my career, when I led the digital transformation in a team of about 70 people. That role has proven important in my personal growth and interpersonal skills, as I have interacted, proposed solutions, and received feedback from all levels. Although I had great pleasure with the digital world, that led me too far away from my core passions related to materials, which I aim to rejoin in the near future. Obviously, the skills I have acquired have changed the way I work towards a more efficient and organized way, something I hope to continue improving.

Fluent in Portuguese, French, and English, I am also self-taught on several subjects, always open to more knowledge. Me and my wife are active trekkers and via ferrata climbers. On my side, I also practice rock climbing and mountain biking since an early age. I am an active member of Club Alpin Français, taking part in activities on some of the above and started to get training to become an activity supervisor at the club. I am also interested in learning languages, cosmopolitan environments, physical sciences, programming, numismatics, and philately.

I come to you through this letter to kindly request the study of my job application and reinforce my interest in the applied position. I strongly believe my past experiences and degrees provide an excellent foundation for the job's responsibilities. Please let me know if any supplementary information is required. You will find in the following sections preceding my career timeline, a self-assessment of relative mastery (filled bar size) across different skill groups. I can find flexible time slots for a phone or online discussion – or why not in person.

Yours sincerely,

Walter Dal'Maz Silva

## COMPUTATIONAL SKILLS

Scientific programming in Python, Julia, and C++

Development of low-order process numerical models

Materials thermodynamics with Thermo-Calc and OpenCALPHAD

Data analysis, modeling, and computer vision

Process CFD simulation with Ansys Fluent and OpenFOAM

## INDUSTRY SKILLS

Materials and process specification procedures

International standards (ISO, ASTM, NACE, API, AWS, ASME, DNV)

Project management, planning, and quality tools (FMEA, 5S)

## MATERIALS SKILLS

Thermal and thermochemical processing of materials

Materials selection for mechanical design

Materials chemical and microstructural analysis

Mechanical characterization of metals and ceramics

Thermal (DSC, DTA, TG) and x-ray diffraction analyses

## ACADEMIC

2013 – 2017 **Materials Science and Engineering PhD**

Nancy, France Université de Lorraine (UL)

Advisor Belmonte, Thierry

2007 – 2011 **Materials Engineering**

Florianópolis, Brazil Universidade Federal de Santa Catarina (UFSC)

Advisor Maliska, Ana Maria

## LANGUAGES

Mother tongue Brazilian Portuguese

Other languages

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C2	C2	C1	C1	C1
French	C2	C2	C1	C1	C1
German	A2	A2	A2	A2	A2

Levels: A1 and A2: Basic user – B1 and B2: Independent user – C1 and C2: Proficient user  
[Common European Framework of Reference for Languages](https://europa.eu/europass/cedefop/europa.eu)

## CAREER

02/2022 – Present

**Imerys, Vaulx-Milieu – France**

Introduced and internalized simulation activities in the group, leads simulation activities. Propose approaches, software, infrastructure, and other solutions to perform materials processing simulations. Vulgarize results and act as interface to subcontractors. Main achievements :

- Implemented an in-house state of the art rotary kiln model for the simulation of thermal cycles and energy balance for several calcination processes relevant to the group.

05/2017 – 01/2022

**ArcelorMittal, Maizières-les-Metz – France**

Industrial research with focus on gas phase processes for surface treatment steel. The role consisted of project management, model conception, and other creative tasks. In this position Acted as digital transformation leader in a team of more than 60 people, proposing and putting in place solutions based on Data Science and Machine Learning. Main achievements :

- Creation of an atmosphere simulation tool for optimizing its management in continuous annealing furnaces, enabling process setup for third-generation of galvanized steel.
- Handled several production crises in company sites, making use of massive data analysis for the identification of root causes and developed solution strategies.
- Made digital transformation of R&D a reality, raising awareness of needs and perspectives at all levels through the introduction of concrete time-saving solutions.

11/2013 – 11/2016

**IRT M2P, Metz – France**

Research of thermochemical treatment of steels for aerospace and automobile transmission applications. Studied both gas phase and metallurgical aspects, providing advances in the comprehension of the temper behavior of the diffusion layer in these alloys and the kinetics of decomposition of precursors. Modeling of gas phase allowed for establishing a simplified kinetic mechanism of acetylene decomposition. Main achievements :

- Introduced and validated a simplified kinetics mechanism for the simulation of acetylene pyrolysis through CFD, enabling detailed process study.
- Identified an ordered lattice leading to an undocumented type of hardening of steel after annealing, showing the potential of high temperature nitriding.

01/2012 – 10/2013

**Aker Solutions, Curitiba – Brazil**

Selection, compatibility analysis, and specification of materials for sub-sea oil & gas production equipment such as Xmas Trees, Manifolds, etc. Specification and technical alignment with clad pipe induction bending suppliers for applications in aforementioned equipment. Support to the specification of welded joints and nickel alloy cladding. Technical and quality audit of raw material (forgings and bar) suppliers. Product study during RFQ phases. Main technical standards used for product specification : ASTM, ISO, DNV, ASME, API, Petrobras.

02/2012 – 12/2012

**Ensitem, Curitiba – Brazil**

Taught introductory Materials Science and processes to technicians.

**Internships**

Laboratorial/industrial internships performed to obtain the Materials Engineer degree :

09/2011 – 12/2011

Aker Solutions, Curitiba, Brazil : selection and specification of metallic materials for subsea oil and gas equipment production.

06/2010 – 12/2010

Institut Jean Lamour, Nancy, France : study of decomposition of an organic material submitted to a microwave plasma post-discharge.

09/2009 – 05/2010

Aker Solutions, Curitiba, Brazil : specification of procedures for structural and overlay welds for the manufacture of subsea equipment. Selection and specification of polymeric materials.

02/2009 – 05/2009

SteelInject Injeção de Aços Ltda, Caxias do Sul, Brazil : study of shape retention in parts produced from a new polymeric binding system for powder injection molding technology.

05/2008 – 09/2008

Materials Laboratory – UFSC, Florianópolis, Brazil : treatment of materials by glow discharges – nitriding of precipitation hardening stainless steels and sintering of ferrous alloys.

Other activities

Responsible for the practical lectures on metallography and optical microscopy during academic periods (when not in internship, as listed above) between February 2008 and August 2011.

## PAPERS

F. Cavilha Neto, T. Bendo, B. Borges Ramos, W. Dal'Maz Silva, C. Binder, A. N. Klein, "Controlled addition of air in the gas mixture of plasma nitriding : an analysis of nitrided layer microstructure and microhardness of carbon steels," *Journal of the Brazilian Society of Mechanical Sciences and Engineering*, vol. 44 :199, 2022.

W. Dal'Maz Silva, J. Dulcy, J. Ghanbaja, A. Redjaïmia, G. Michel, S. Thibault and T. Belmonte, "Carbonitriding of low alloy steels : Mechanical and metallurgical responses," *Materials Science and Engineering : A*, vol. 693, pp. 225–232, 2017.

W. D. Silva, J. Dulcy, G. Michel, S. Thibault, P. Lamesle, and T. Belmonte, "Carbonituration des aciers faiblement alliés – réponses à la trempe et au revenu," *Traitements et Matériaux*, no. 438, pp. 30–37, 2016.

W. Dal'Maz Silva, T. Belmonte, D. Duday, G. Frache, C. Noël, P. Choquet, H.-N. Migeon, and A. M. Maliska, "Interaction mechanisms between Ar – O<sub>2</sub> post-discharge and biphenyl," *Plasma Processes and Polymers*, vol. 9, no. 2, pp. 207–216, 2012.

K. C. Kleinjohann, M. B. Martins, W. D. Silva, B. B. Ramos, and A. M. Maliska, "Nitretação por plasma de liga Ni–Cr–Mo - Inconel 625," in *XIX Congresso Brasileiro de Engenharia e Ciência dos Materiais (CBECIMat)*, Campos do Jordão, vol. CD-ROM, 2010.

E. A. Bernardelli, C. Brunetti, J. K. Brasil, W. D. Silva, and A. M. Maliska, "Efeito da temperatura de solubilização no tratamento de envelhecimento do aço inoxidável 15-5 PH, envelhecido em forno mufla ou em reator de plasma.," in *XVII Congresso Brasileiro de Engenharia e Ciência dos Materiais (CBECIMat)*, Porto de Galinhas, vol. CD-ROM, 2008.

## CONFERENCES

12<sup>th</sup> International Conference on Zinc and Zinc Alloy Coated Steel. Virtual Conference, 21st to 23rd June 2021. Oral presentation. W. Dal'Maz Silva, H. Saint-Raymond, C. Dulcy. An integrated methodology for the root cause analysis of mechanical and metallurgical defects in hot-dip galvanized coatings.

43<sup>e</sup> Congrès du Traitement Thermique et de l'Ingénierie des Surfaces. Nancy, France, 8th and 9th June 2016. Oral presentation. W. Dal'Maz Silva, J. Dulcy, J. Ghanbaja, G. Michel, P. Lamesle, T. Belmonte. Carbonituration des aciers faiblement alliés : rôles du carbone et de l'azote sur les réponses mécaniques et métallurgiques.

7<sup>th</sup> International Conference on Inovations in Thin Film Processing and Characterization, Nancy, France, 16th to 20th November 2015. Oral presentation. W. Dal'Maz Silva, J. Dulcy, G. Michel, P. Lamesle, T. Belmonte. The roles of carbon and nitrogen on metallurgical response of low alloy steels to carbonitriding.

42<sup>e</sup> Congrès du Traitement Thermique et de l'Ingénierie des Surfaces. Saint-Etienne, France, 2nd to 4th June 2015. Oral presentation. W. Dal'Maz Silva, J. Dulcy, G. Michel, P. Lamesle, T. Belmonte. Traitements thermochimiques des alliages 16NiCrMo13 et 23MnCrMo5 : le rôle du carbone et de l'azote sur les réponses métallurgiques à la carbonituration.

22<sup>nd</sup> International Federation for Heat Treatment and Surface Engineering Congress, Mestre, Italy, 20th to 22nd May 2015. Oral presentation. W. Dal'Maz Silva, J. Dulcy, G. Michel, P. Lamesle, T. Belmonte. Thermochemical treatments of alloys 16NiCrMo13 and 23MnCrMo5 : the roles of carbon and nitrogen on metallurgical response to carbonitriding.