

February 8, 2021

Job Code: AUV-Dorado (Mechanical Position)

Dear Sir/Madam,

I write to you regarding the *Dorado AUV Operations Engineer* position you are offering through your website. I regularly check your website for opportunities and this one looks very interesting and in line with my interests/skills.

After graduating with a Masters Degree in Mechanical Engineering, I have been working in ocean research centers in Spain and Mexico. I started in 2010 with gliders at SOCIB, in Mallorca, Spain, where we went from experiment driven deployments to continuous monitoring ones, increasing glider performance. To do that, we had to improve maintenance, operation and piloting practices. We consolidated SOCIB as a solid glider operator in the WMED when gliders were not as reliable as they are now. After 3 years, I felt like learning about AUVs and I moved to CSIC's Marine Technology Unit, also in Spain. They had 2 OceanServer Iver2 AUVs and needed someone to help put them into service. Aside of maintenance and operation, I developed some mechanical designs to incorporate new sensors and also processed data coming from the ADCP, which I noticed was barely being used by AUV operators/scientists. I presented this work to 2 OCEANS conferences. During these almost 3 years I got a good view of small AUV operation and had a taste of larger AUVs during a 3 week cruise where I helped operate 2 Ifremer's ISE Explorer. I was impressed by the change of scale and the requirements to operate such AUVs, which I think are of similar dimensions as the Dorados. After this experience I joined CICESE in Ensenada, Mexico, where I returned to gliders operation. CICESE had just acquired 7 Seagliders and needed someone with experience to set up operations in the Gulf of Mexico. In 3.5 years we performed 19 3 month-long missions sampling loop current eddies and other GoM features. The project got halted due to covid-19 and I used the time to update my mechanical design and engineering skills by taking courses on CAD (Solidworks and Rhinoceros) and CAE (Ansys Mechanical and Fluent).

Now I would like to find a place where instrument operation and mechanical engineering meet, having the chance to go out to the ocean but also being able to create new things. The position you are offering seems to offer both worlds and this really appeals to me. Being a homemade AUV, I imagine you have great control over the Dorado and have the chance to modify and improve its systems, as well as design new ones to suit new scientific needs. I am specially curious about the Gulper system you developed. Aside of mechanical design, I am also comfortable working with manual lathes and mills, metal sheet work, some welding and other workshop tasks I learned during my first work experiences. I am not ready to design electronics boards but I know the fundamentals and would be very interested to learn and contribute to this part as well. Also, I am comfortable with Python programming in case it was needed for data handling or to give support to software engineers.

I am a team player and enjoy sharing knowledge with my workmates. I like to listen, learn and contribute to create a friendly atmosphere in the workplace. I think MBARI would be a great place to work, because of its recognized excellence and also because of its privileged situation in a state I had the chance to discover during my time in Baja California.

I hope you too see my profile as a good fit for the position. If so, please let me know. I would be happy to have an interview with you to further explain my background and capabilities. In case you needed more information on my previous experiences, mechanical designs, references, etc. I would provide it with pleasure. Next pages contain my resume. Thank you for your attention and for your time reviewing my application.

Sincerely yours,

Simó Cusí Van Dooren

Simo Cusi Van Dooren
Spanish and Belgian citizenship

10 Muralla St
17853 Argelaguer, Spain
simocusi@gmail.com
+34 649332317

WORK EXPERIENCE

Underwater Glider Engineer '16-'20

CICESE: Ensenada Center for Scientific Research and Higher Education, Ensenada, Mexico

Duration: 3 years 6 months

- Glider Facility setup
- Kongsberg Seaglider mission preparation and piloting (19x~ 3 month missions, ~1.5 glider/day)
- Mission report writing and data representation
- Data System Administration (Linux server with python scripts)
- Mexican personnel training

AUV Engineer '13-'16

CSIC-UTM: Spanish National Research Council - Marine Technology Unit, Barcelona, Spain

Duration: 2 years 9 months

- OceanServer IVER2 AUV operation
- Sensor mechanical integration
- AUV-borne ADCP currents data processing

Underwater Glider Engineer '10-'13

SOCIB: Balearic Islands Coastal Observation System, Palma de Mallorca, Spain

Duration: 3 years 1 month

- Glider Facility setup
- iRobot Seagliders integral management: operation, maintenance, data processing, interaction with provider
- Teledyne SLOCUM gliders operator
- Glider scientific and technical data processing
- Propelled AUV market study
- AUV design and construction

R&D Manager '09-'10

University of Girona, eXiT Group: Control engineering and intelligent systems, Girona, Spain

Duration: 1 year 6 months

- Project management
- Fundraising from public and private sectors
- HR

GLIDER/AUV RELATED PUBLICATIONS

E. Pallas-Sanz et al., "Glidens observations of mesoscale and submesoscale flow structures in the Gulf of Mexico: over three years of continuous monitoring," Ocean Sciences Meeting, San Diego, USA, 2020

M. Tenreiro et al., "ADCP's on gliders: features and applications," Ocean Sciences Meeting, San Diego, USA, 2020

- T. Meunier et al., "Warm-Core Rings Heat Content and Transfers in the Gulf of Mexico," Ocean Sciences Meeting, San Diego, USA, 2020
- T. Meunier et al., "The Vertical Structure of a Loop Current Eddy," Journal of Geophysical Research: Oceans, 123, 2018
- E. Portela et al., "Hydrography of the Central and Western Gulf of Mexico," Journal of Geophysical Research: Oceans, 123, 2018
- T. Meunier et al., "Intra-Thermocline Eddies Embedded within an Anticyclonic Vortex Ring," Geophysical Research Letters, 45, 2018
- S. Cusi et al., "Operation, maintenance and management of an underwater glider fleet," RAUGM Conference, Puerto Vallarta, Mexico, 2017
- S. Cusi et al., "Evaluation of AUV-borne ADCP measurements in different navigation modes," OCEANS'17 MTS/IEEE Conference, Aberdeen, UK, 2017
- S. Cusi, P. Rodriguez and N. Pujol, "A Python tool for AUV-borne ADCP currents data processing," Martech Conference, Cartagena, Spain, 2015
- S. Cusi, P. Rodriguez and D. Roque, "Performance of an autonomous underwater vehicle borne acoustic Doppler current profiler," OCEANS'15 MTS/IEEE Conference, Genova, Italy, 2015
- A. Olita et al., "Observations of a phytoplankton spring bloom onset triggered by a density front in NW Mediterranean," Ocean Sci. Discuss., Vol. 10, pp. 657-666, 2014
- A. Pascual et al., "Multi-sensor observations towards coastal and mesoscale characterization: SARAL/AltiKa, HF radar, glider and drifter," Ocean Surface Topography Science Team Meeting, Boulder, Colorado, USA, 2013
- S. Cusi et al., "On the setup of an operational autonomous underwater glider facility," Martech Conference, Girona, Spain, 2013
- J. Tintore et al., "SOCIB: The Balearic Islands Coastal Ocean Observing and Forecasting System Responding to Science, Technology and Society Needs," Marine Technology Society Journal, Vol. 47, pp. 101-117, 2013

STUDIES

Master in Mechanical and Aerospace Engineering '07-'08

Illinois Institute of Technology, Chicago, IL, USA
Specialization: Dynamics and Robotics

Master in Industrial Engineering '06-'08

Universitat Politècnica de Catalunya - ETSEIB, Barcelona, Spain
Specialization: Mechanics and Vehicles

BS in Mechanical Engineering '02-'06

Universitat de Girona - EPS, Girona, Spain
Specialization: Machine design

Vocational Training in Electromechanical maintenance '00-'02
IES Josep Brugulat, Banyoles, Spain

SHORT COURSES

Expert in Numerical Simulation in Engineering with ANSYS (Fluid Mechanics majoring) '20-'21

Universidad Politécnica de Madrid - ANSYS, Online
Specialization: Computational Fluid Dynamics

Short Postgraduate Courses in Computer Aided Design and Engineering '19-'20

Universitat Politècnica de Catalunya - CIM, Barcelona, Spain
Specialization: CAD (105 hours) / CAE (105 hours)

COMPUTER SKILLS

Python, Matlab, Ansys, Solidworks, Rhinoceros3D
Unix and Windows

LANGUAGES

Native Spanish and Catalan
Advanced English (TOEFL iBT 100/120, 2006)
Advanced French (DALF B2 87/100, 2013)

OTHERS

SSI Open Water Diver (2017)
Kongsberg Seaglider refurbishment and maintenance course (2016)
Kongsberg Seaglider Pilot course (2016)
iRobot Seaglider refurbishment and maintenance course (2013)
Spanish 12m leisure boat skipper license, PER (2012)
iRobot Seaglider Pilot course (2011)
Teledyne Slocum Pilot course (2011)
Member of the winning team (VICOROB-UdG) of AUV SAUC-E competition (2010)
Driving license A and B