DOCTORATS INDUSTRIALS

EL PLA DE DOCTORATS INDUSTRIALS

PROJECTE DE DOCTORAT INDUSTRIAL EXPEDIENT 2016 DI 069

DADES DE L'EMPRESA I DE L'ENTORN ACADÈMIC

Títol del projecte

Software development to the study and characterization of natural fractures in rock masses. Application in hydrology, slope instability and reservoirs analogue

Empresa

ANUFRA, S.L.

Responsable de l'empresa

Xavier Alemany Monsó

Universitat

Universitat de Barcelona

Director/a de tesi

Josep Anton Muñoz De La Fuente

Treballador/a de l'empresa i doctorand/a

Laura Blanco Núñez

BREU DESCRIPCIÓ DEL PROJECTE DE RECERCA

The aim of this research project is implement a computer solution to enter data, measure in different techniques of data capture and process the data to characterize geometrically fractures from rock masses with parameters accepted and in use for academic and professional environments.

The PhD is supervised by University ob Barcelona and Anufra SL. U.B. is represented by the Geomodels Research Institute, where the Geodynamic and Basin Analysis Research Group, have a long experience in the study of natural fractures and in the development of computer tools. Equally exist the necessity providing tools for the industry where the process of measure and calculate will be efficient for the fracture characterization. The fractures knowledge of the Research Group together with the industrial experience of the Anufra company in hydrology and rock slope instability allow to create a frame to implement software solutions.

Mechanical discontinuities or simply fractures in rock mass is increasingly important in a wide range of applications. Rock slope instability, structural geology, reservoir outcrop analogue, geothermal flux or hydrology are different topics where fractures play a significant role. Therefore, geometric characterization of fractures is a necessary task to improve the understanding in these field.

Light Detection and Range (LIDAR), photogrammetry and Ground Penetration Radar (GPR) together with the classical measuring technique in the field are the different techniques of data

capture to achieve a complete fracture characterization and require of the specific software. Different outcrops around Barcelona area will be selected as a case studies to elaborate and validate the developed tools.

Geological degree or geologic engineering and computer knowledge are necessary to find and to develope different solutions. These computer solutions would be used for professionals in order to obtain a more efficient characterization of the rock mass.