Automatic Designing of Flange Coupler using Python Algorithm

Spandan Bhattacharya[1], 201706, U. G. Student, spandyb@gmail.com

Anish Dalvi[2], 201713, U. G. Student, avdalvi2@gmail.com

Anthony D'souza[3], 201718, U.G. Student, jordananthony786@gmail.com

Rohan D'souza[4], 201719, U.G. Student, rohandsouza732@gmail.com

Mr. Sanjay Rukhande[5], Assistance Professor, sanjay.rukhande@fcrit.ac.in

[1,2,3,4,5] Department of Mechanical Engineering, Fr. C. Rodrigues Institute of Technology, University of Mumbai, Maharashtra, India

Abstract: A Coupling is a device used to make a permanent or semi-permanent joint for two rotating shafts to each other. It is used to join two pieces of rotating equipment while permitting some degree of misalignment and for the purpose of transmitting power and torque. Rigid flange couplings are designed for heavy loads or industrial equipment. When designing Flange Couplers is considered, it involves a lot of basic mathematical operations that are time-consuming and are doomed for mistakes as, in the end, human error is evident. This course project aims to create a python Algorithm in which customer has to input Power, RPM, FoS & Service factor and coupler will be designed with considering factors like a Shear failure, Compressive failure, Torsional Shearing & Crushing failure. For a broader application, Material Database, key Size Database & Coupler Empirical relations Database will be created, and accordingly, appropriate values will be considered for design purposes. The program will give Text Output, which will have all the dimensions needed for manufacturing purposes & image output of two views of each Flange, Shaft & Key.

Keywords: Flange Coupler, Python, Factor of Safety (FoS), Service Factor, Database & Algorithm