

Prediction of Compressive Strength Of Concrete Using Adaptive Network-Based Fuzzy Inference System (ANFIS)

M. Shekarchizadeh¹
University of Tehran, Iran

M. N. Chari
University of Tehran, Iran

H. Dormohammadi
Sherif University of Technology, Iran

F. Mahmoodzadeh
University of Tehran, Iran

Abstract

Prediction of compressive strength of concrete is a subject that if properly implemented, can represent general presumption of concrete quality. This would be more important since compressive strength is usually related to other concrete properties. Considering the fact that current methods cannot take into the account the effects of numerous parameters simultaneously in prediction of compressive strength, therefore the obtained strength of hardened concrete has not been in good agreement with test results.

Current study was conducted following the experimental results of ACI Concrete Cube Competition in 2002, in which a constant compressive strength of 50 MPa was aimed and concrete density was limited to be approximately 1907 kg/m³. In this research a new method has been developed employing ANFIS (Adaptive Network-Based Fuzzy Inference System) in order to predict the compressive strength of concrete depending on its mixture proportions and curing condition. Accordingly, various concrete mixture results were used for input database for the ANFIS program.

Comparing results obtained from proposed method with another procedure, this method was observed to be more accurate if there are enough data.

Keywords: ANFIS, Semi Lightweight Concrete, Curing

¹Mohammad Shekarchizadeh
Department of Civil Engineering
Faculty of Engineering, University of Tehran
Enghelab Street, Tehran
Iran

Email: shekarch@ut.ac.ir
Tel: +98-21-640-0480