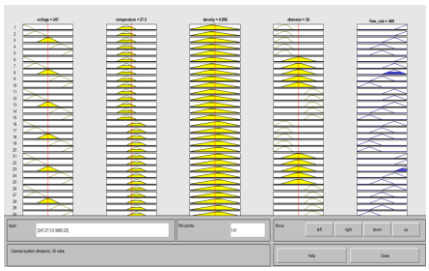

Figure 9. Rule viewer for input & output parameters

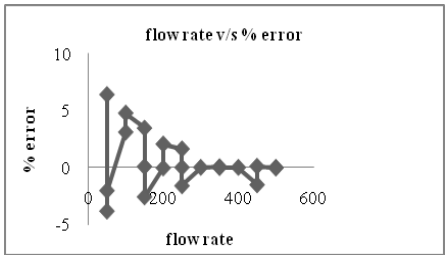

Figure 10. Error graph for the experimental result

6.CONCLUSION

Instead of the repeated calibration for adaptive of variation in liquid temperature,liquid density & pipe diameter the conventional calibration circuit is replaced by the intelligent fuzzy logic model.Available report shows that by using optimized fuzzy logic model system it produce the linear input & output characterics over the full scale of the input range.From the Table2 it is also seen that for given input flow, pipe diameter, liquid density & temperature maximum error is 6.38% .The characteristics graph between input flow rate & % error is shown into Fig 10.Except the ANN model & fuzzy logic intelligent system the proposed flow control system can be further optimized by the ANFIS ,GA or other hybrid optimized tool.

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NOMENCLATURE

E	Modulus of Elasticity of the liquid,N/m2
C_0	Velocity of ultrasonic signal in static fluid m.s-1

Greek symbols

α	Temperature coefficient of liquid, /
ρ	Density of liquid, Kg/m3
k	bulk modulus ,N/m2