In process will not be give the expected

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In the liquidflow process industry, the flow of theliquid change in irregular manner due to the inefficient processes. As the Flowrate in a process industry depends upon a number of parameter so the process will not be give the expected output as it is caused by the improper setting of parameters. The improper parameter settings could threaten the processes. In this paper, weutilize the Flower Pollination Algorithm methods and ANOVA to obtain the optimumconditions of a flow process and to gainthe percentage of contributions of each parameter. A verification test wascarried out to inspect among the ANOVA & FPA , FPA produce the optimumresult than ANOVA. 120 sets of data is used for constructing the objectivefunction by using ANOVA while 18 sets of data are used for the verification purpose.

Inmost of the industrial applications, there is a need to calculate the inputs toa process that will drive its outputs in a desired way and thus achieve someoptimum (desired) goal. In such applications, a mathematical input–output modelfor the process is usually derived. The model could be based on the physical phenomenaor available historical input–output data. Once the model is developed, mathematical techniques can be applied to determine the inputs to the processthat will satisfy a certain given criteria. combustion engines 21–24, two-stage combustor burning ethylene(doped with ammonia) in air 25, catalyticdistillation 26 and desulphurization ofhot metal and steel 27 those are theindustrial process where the modelling and optimization research have beenconducted.

The developed optimization algorithm is tested on a novel flowthermal sensor whose inputs are the flow velocity and fluid temperature andoutput is the voltage measurement. 29present thermal flow sensor has a high sensitivity at low flow rates because ofthe non-linear transfer function of the sensor which makes the deviceespecially suitable for very low flow rates measurements. From the experimentalset up provides 5 different variables where four inputs (sensor output, pipediameter, liquid conductivity , liquid viscosity) & single output, flowrate . An objective function is constructed with help of the four parameterswhich makes this process non linear. Liquidflow optimization is the one of the process where the optimized flow in aprocess plant can be achieved from a set of value of the process parameters. Anartificial neural net model that approximates the calibration data for thesensor and design an optimized algorithm which determines the flow velocity of the flowing gas in a pipe if the thermalflow sensor voltage measurement and fluid temperature are known. The problemreduces to minimizing a positive cost function that measures the differencebetween the neural net approximated voltage and its desired value discussed in31.

In most of the industrial applications, there is a need to calculate theinputs to a process that will drive its outputs in a desired way and thusachieve some optimum (desired) goal. In such applications, a mathematical input–outputmodel for the process is usually derived. The model could be based on thephysical phenomena or available historical input–output data. Once the model isdeveloped, mathematical techniques can be applied to determine the inputs tothe process that will satisfy a certain given criteria.

Anadvantage of the method is that it keeps the forward ANN which is obtained fromthe computationally expensive training and can be re-used for other purposessuch as prediction and adaptive control. The developed optimization algorithm istested on a novel flow thermal sensor whose inputs are the flow velocity andfluid temperature and output is the voltage measurement. The developmentof a Fuzzy Temperature compensation scheme (FTCS) for hot wire mass airflow(MAF) sensor is used to compensate the measurement error occurred by usingSugeno type FIS for temperature of 60C-100C. It verify the performance of theproposed hot wire MAF sensor temperature-compensation scheme. The effectivenessof the proposed fuzzy compensation scheme is verified with the estimation errorwithin only ±1% over full scale value 32.

The output of the thermal sensor isthe increase with wire temperature that is the time constant of the heated wirewhich is again related to the velocity of flow. At very low flow velocities theresponse is determined by the time constant of the wire while at highvelocities the response is almost like a constant current hotwireanemometer. the present thermal flow sensor can be used over a large range ofvelocities as well as measurements of steadyor slowly varying unsteady flows inindustrial application.

The calibration data of the sensor consists of a setof a set of curves at different fluiddensity, viscosity, thermal conductivity and pipe diameter where the the output voltageof the sensor is a function of flow velocity. A Fuzzy model is implemented whichapproximate the calibration data for the sensor and shows the better accuracy. 30 present thermalflow sensor has a high sensitivity at low flow rates because of the non-lineartransfer function of the sensor which makes the device especially suitable forvery low flow rates measurements. The sensitivity of the measured velocity isapproximately 0.

3% at low flow velocities and it increases with velocity toreach 3% at high velocities. The development of a Fuzzy Temperaturecompensation scheme (FTCS) for hot wire mass airflow (MAF) sensor is used tocompensate the measurement error occurred by using Sugeno type FIS fortemperature of 60C-100C. It verify the performance of the proposed hot wire MAFsensor temperature compensation scheme. The effectiveness of the proposed fuzzycompensation scheme is verified with the estimation error within only ±1% overfull scale value 33.

Real-world optimization problems are very complex andchallenging to solve, and many applications have to deal with these problems. To solve such problems, approximate optimization algorithms have to be used, though there is no guarantee that the optimal solution can be obtained 1. Overthe last few decades optimization algorithms have been applied in extensivenumbers of difficult problems. Several nature-inspired algorithms have beendeveloped over the last few years by the scientific community 2 4 5. Thereproduction of flower is achieved via the pollination process. Flowerpollination can be described as the distribution processes of pollen through awide range of pollinators such as insects, birds, bats and some other animals 7.

The purpose of thisstudy was to find the optimum conditions of the process since they wereunknown. The application of FPA &ANOVA method is expected to help reduce the amount of time for which the liquidflow process produce the optimum output.