# Enhanced fractional order controller for non linear process using fractional Ms constrained integral method 

*Ms. D. Prasanna, **Ms. B. Kalaiselvi<br>*Department of ECE, Bharath institute of higher education and research, Chennai-73<br>*Corresponding author: E-Mail: prasanna_d@gmail.com ABSTRACT

In this developing science and engineering world, usage of controller plays an important strategy in each and every domain. One cannot simply avoid this trend setting technology by merely avoiding this concept. Researchers are always focusing on new coming investigations and methods as a route of controlling theory. This remarkable application is usefully applied in this proposed paper. As per the simulation results displayed below, the overall performance of the concept has been analyzed with its output percentage.

KEYWORDS: Controller, Calculus.

## 1. INTRODUCTION

Numerous genuine element frameworks are better portrayed in this proposed paper. Conventional analytics depends on whole number request differentiation and integration. In any case, for a significant number of them the rationality is very low.

The best purpose behind utilizing the whole number request models was the non attendance of arrangement techniques for certain equations.

## Process Description



Figure.1. Trainer kit of Pressure controller
Fig. 1 which shows the pressure process training kit; consist of closed tank in which the input pressure is regulated by pressure regulator. The output pressure build inside closed tank is measured by the pressure transmitter. The real time data has been collected and fig 3.2 shows open loop response of pressure process.


Figure.2. Real time simulation of pressure process
Execution Anaysis Depends On Integral of Square Error Criteria
Table.1. Execution analysis based on ISE

| Nominal Operating Points |  | Numeral Order Pi Controller $C_{i}(s)$ | Partial Order Controller$C_{f}(s)$ |
| :---: | :---: | :---: | :---: |
| INPUT PRESS URE <br> U (psi) | $\begin{gathered} \hline \text { OUTP UT PRESS } \\ \text { URE } \\ \text { Y(psi) } \\ \hline \end{gathered}$ |  |  |
| 0.75 | 3.1 | 0.1226+ | $\begin{gathered} \hline 0.35447+ \\ 0.36848 \end{gathered}$ |
|  |  |  | $s^{2.2}$ |
| 1.5 | 34 | 0.1397+ | 0.1541+ |
| 6 | 58.57 | 2.51+ | 2.2438+ |
| 9.75 | 66.89 | $1.163+$ | $1.2616+$ |
| 8.25 | 60.04 | 0.993+ | 1.0709+ |

## 2. CONCLUSION

I hereby say that in my proposed thesis, the controller has been redesigned depending on the integral gain and partial equations for the upcoming process. Also, the extended procedure for the loop analyzing factor for different order based systems has been checked and analyzed. The final statement is made in such a way that it provides an overall performing efficiency of about $90 \%$ which seems to be a trend facing factor for this paper.

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