

## **DCS400:** **DCS Training for Control Room Operators**

<b>Duration:</b>	<b>1 Day Classroom or 6 hours Online</b>
<b>Audience:</b>	<b>Plant Operators, Process Engineers, DCS technicians, Instrument Engineers and Supervisors</b>
<b>Prerequisites:</b>	<b>Some control room exposure is desirable, but not required.</b>
<b>Course Material:</b>	<b>DCS screens and slides</b>

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### **Course Description and Objectives:**

Many new and inexperienced control room operators enter plants every year. This course is aimed at training both new and experienced operators. The course focuses not only on the mechanics of how to use the DCS but also covers many of the intricate details necessary for skilled and high quality operation.

In this course, we teach the operator many important DCS operational details, including DCS tag attributes, parameters and fields, how to start up complex control schemes, the meaning of SP tracking, PV tracking, windup and many other topics. We cover procedures for how to detect control problems and tackle them quickly and effectively. We also cover PID tuning. The operators learn DCS graphics and how to navigate from the various screens. We also teach how to modify and improve DCS graphics using typical configuration methods. The course helps to prevent careless mistakes that could potentially cause shut-downs and encourages safe habits. The operators also learn to fully utilize features like trending, event monitoring, history and other advanced features that can make the operators' time more effective.

### **Learning Outcomes:**

At the end of the course, operators will be skilled on all basic, advanced and practical concepts on DCS operations. They will understand DCS tag attributes and variables. They will know how to activate control schemes correctly, troubleshoot process and control problems and also tune PIDs. They would have learnt tag ranges, tuning parameters, alarm system, alarm limits, rate of change limits, trending in the DCS, event history, logs, reports and security. The course also teaches safety and important good habits recommended for operators. This course is a must for any operator or technician and will be of great value to engineers and supervisors too.

### **Day 1:**

Analog input, output and regulatory tag details, parameters and attributes  
Digital input, output and regulatory tag details, parameters and attributes  
Continuous control programs  
Discrete control programs  
PID equation- how it works  
PID parameters, nonlinear control, gap action, special forms of PID  
Long chains of control tags, cascade chains, chain startup procedure  
Preventing mistakes when entering data into DCS, use of clamp functions  
Event history  
Trending system  
Alarm rationalization, management and enforcement  
Troubleshooting common problems  
Smart messaging and advisory  
Interlocks and Permissives  
Sequence and rule-based controllers  
Safety and reliability in the control room