

# Compressor Maps and Surge (CMS-1)

Explore the dynamic relationship between compressor operation and surge via CCC's ground-breaking **Compressor Map**. **CMS-1** prepares the learner to continue through the next six courses in our initial Fundamental Core Class group, as we dig deeper into the theories of advanced anti-surge, performance and speed control.

For **O — M — P — E**

## Transmitters & Control Elements (TCE)

Understand how transmitters and final control elements are best matched to various conditions and equipment arrangements, including instrumentation selection and location criteria. *(Pre-req: CMS-1).*

For **P — E**

## Basic Antisurge Theory (BAS-1)

Examine the correlation between the Surge Control Line and the PI response, including factors which influence the safety margin, how CCC calculates Deviation, and the advantages of operating closer to the Surge Limit Line. *(Pre-req: CMS-1).*

For **O — M — E**

## Basic Perf. Control Theory (BPF-1)

An introduction to the CCC Performance Controller, describing the types of process input variables and control elements, how the PID loop keeps the process stable, and impacts on the operating point. *(Pre-req: CMS-1).*

For **O — M — E**

## Basic Steam Turbine Speed Control Theory (BST-1)

Determine types of turbines CCC can control using the Speed controller, explore signal paths from turbine shaft to steam actuation system, and survey different usable set points. *(Pre-req: CMS-1).*

For **O — M — E**

## Piping & Field Instrumentation Best Practices (PBP)

Discover key installation practices from decades of field experience for improved performance & efficiency with your CCC control system and instrumentation equipment.

For **M — P — E**

## Basic Antisurge Theory (BAS-2)

Study the CCC Antisurge Controller Recycle Trip response (RT) for medium and large process disturbances; learn how and why RT is necessary to protect the compressor, operator notification methods and additional benefits. *(Pre-req: BAS-1).*

For **O — M — E**

## Basic Perf. Control Theory (BPF-2)

Explore how CCC's proprietary algorithms share and balance compressor system loads between multiple compressors, controllers, and networks to increase efficiency and enhance protection. *(Pre-req: BPF-1).*

For **O — M — E**

## Basic Steam Turbine Speed Control Theory (BST-2)

Dig deeper into how the speed controller sequences the entire steam turbine process, from start to shutdown, and how the CCC controller prevents turbine overspeed. *(Pre-req: BST-1).*

For **O — M — E**

## Basic Extraction Control Theory (BEX-1)

Expands upon how the steam turbine speed controller is paired by CCC with the extraction turbine to optimize variables to best meet control and limiting objectives. *(Pre-req: BST-2).*

For **O — M — E**

## Basic Antisurge Theory (BAS-3)

Learn how the CCC "Safety On" response detects a surge event, breaks the surge cycle and stabilizes the process, including operator notification and next steps. *(Pre-req: BAS-2).*

For **O — M — E**

Compressor Controls Corporation offers a diverse set of courses for a range of client needs, from fundamental skill development to refresher and specialization classes for experienced employees. **Click each class to register today!**

**CCC's classes are designed for 4 major types of learners:**

**Operators — Maintenance — Producers (OEM/EPC) — Engineers**

