# Controls in the CAER System

Controls

- A list of controls will exist for the facility

- A control will only define 1 piece of control equipment

- Only the pollutants controlled by this piece of equipment are listed with the control. The % reduction for the pollutant is the amount reduced due to this one piece of equipment.

- Will track the "path" of the controls
  - In series
  - In parallel

New Concept: The Control Path

- **A path contains**:
  - one or more controls at a facility that are connected
  - Another path connected to one or more controls
- **Control apportionment:**
  - % of the emissions that are coming from a previous control or path
  - If there is a control apportionment percentage < 100, it can only point to one component (either a control device OR another path)
- The path assignment defines the order in which controls are configured, each control or path is given a sequence number:
  - Sequential if in sequence
  - The same sequence number if parallel
- Ultimately, there will be a parent or master path that will define the controls that are encountered from the emissions generation point to the release point.
- A path is connected to a **release point apportionment** record (also defines emissions generation point to the release point)
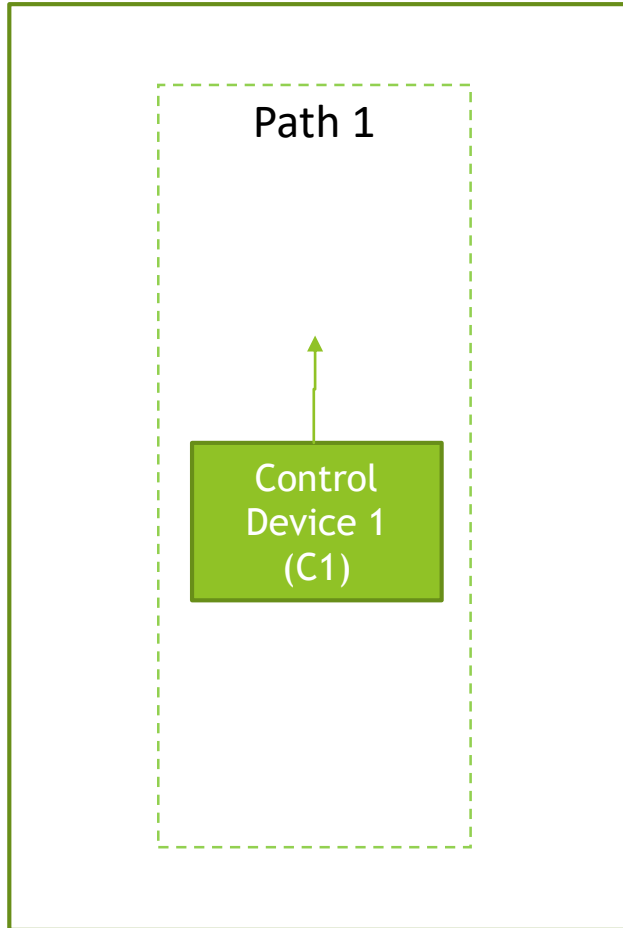
No Controls

Stack 1

Stack 2

Stack 3
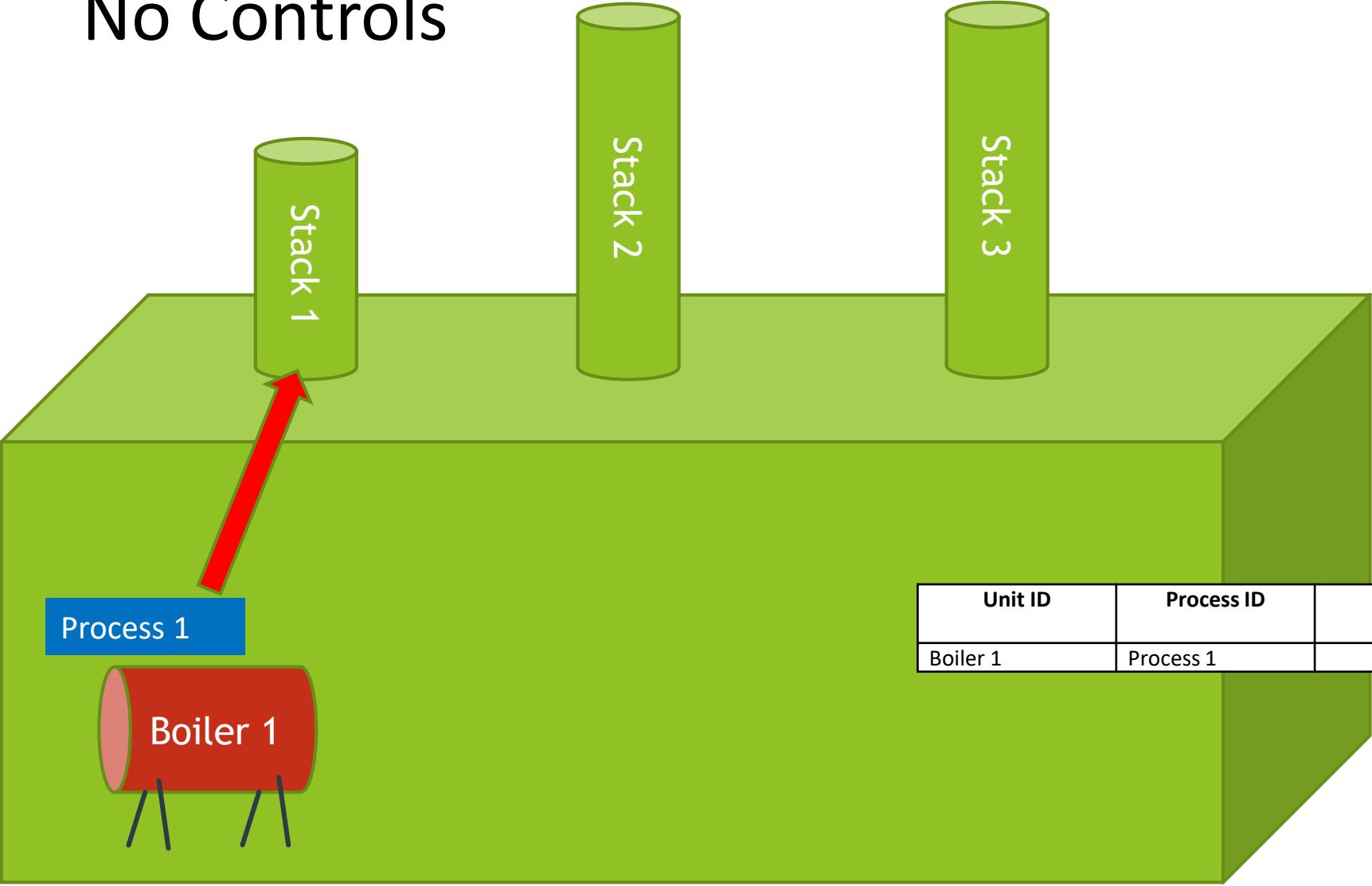
Process 1

Boiler 1

Unit ID	Process ID	Path ID	Release Point ID	Release Point Apportionment
Boiler 1	Process 1		Stack 2	100%

One Control
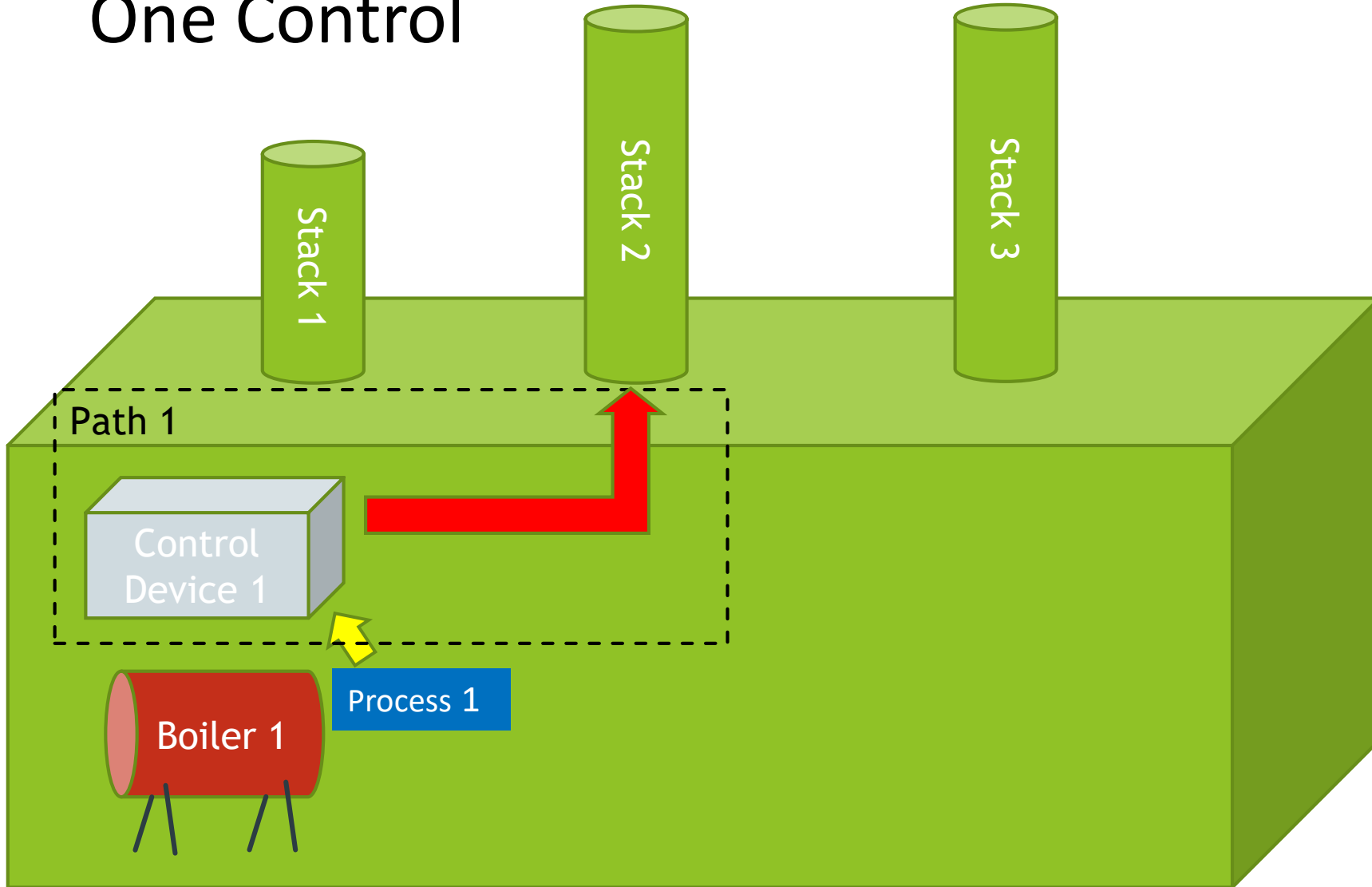
Stack 1

Stack 2

Stack 3

Path 1

Control Device 1

Process 1

Boiler 1

Path 1

Control Device 1 (C1)

Path ID	Sequence Number	Assignment (Control or Path)	Apportionment (for Control or Path)
Path 1	1	Control Device 1 (C1)	100%

Unit ID	Process ID	Path ID	Release Point ID	Release Point Apportionment
Boiler 1	Process 1	Path 1	Stack 2	100%

In Sequence
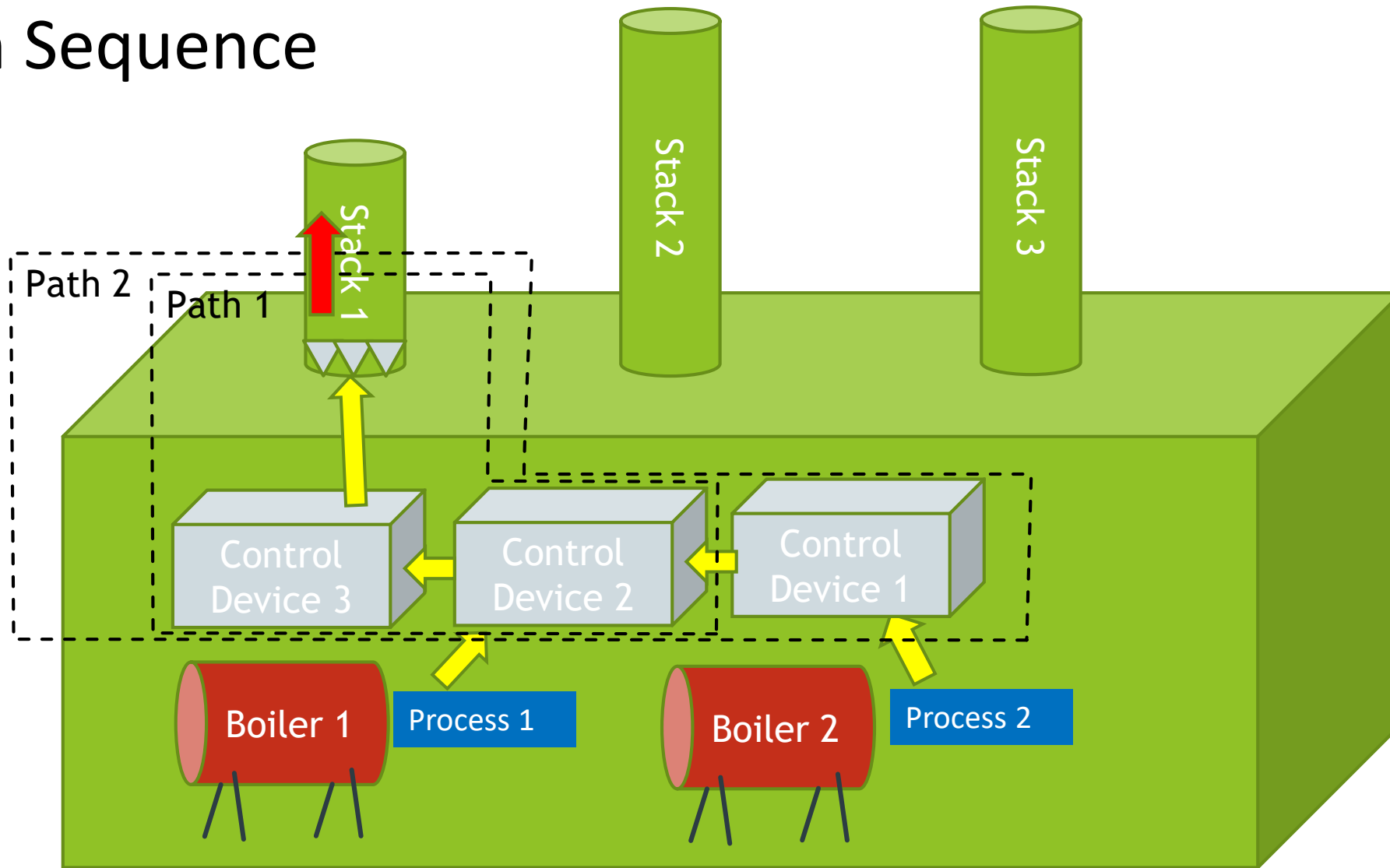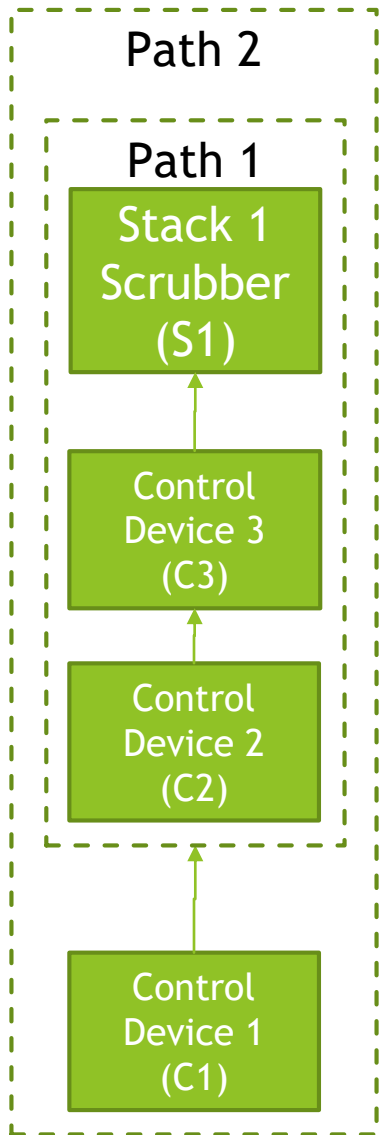
Scrubber 1

Stack 2

Stack 3

Path 2

Path 1

Stack 1

Control Device 3

Control Device 2

Control Device 1

Boiler 1

Process 1

Boiler 2

Process 2

Path ID	Sequence Number	Assignment (Control or Path)	Apportionment (for Control or Path)
Path 1	1	Control Device 2 (C2)	100%
Path 1	2	Control Device 3 (C3)	100%
Path 1	3	Scrubber 1 (S1)	100%
Path 2	1	Control Device 1 (C1)	100%
Path 2	2	Path 1	100%

Unit ID	Process ID	Path ID	Release Point ID	Release Point Apportionment
Boiler 1	Process 1	Path 1	Stack 1	100%
Boiler 2	Process 2	Path 2	Stack 1	100%

In Parallel
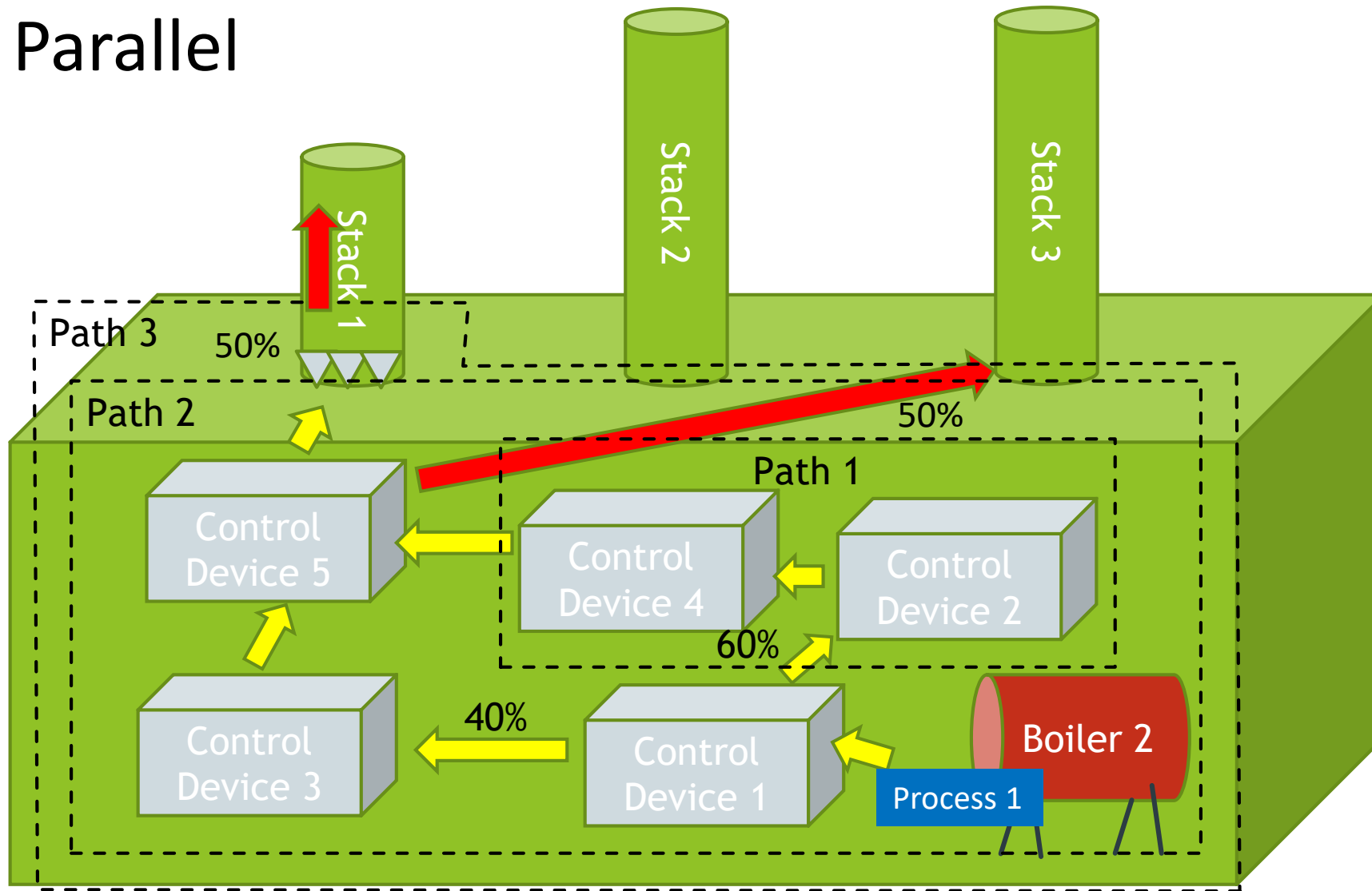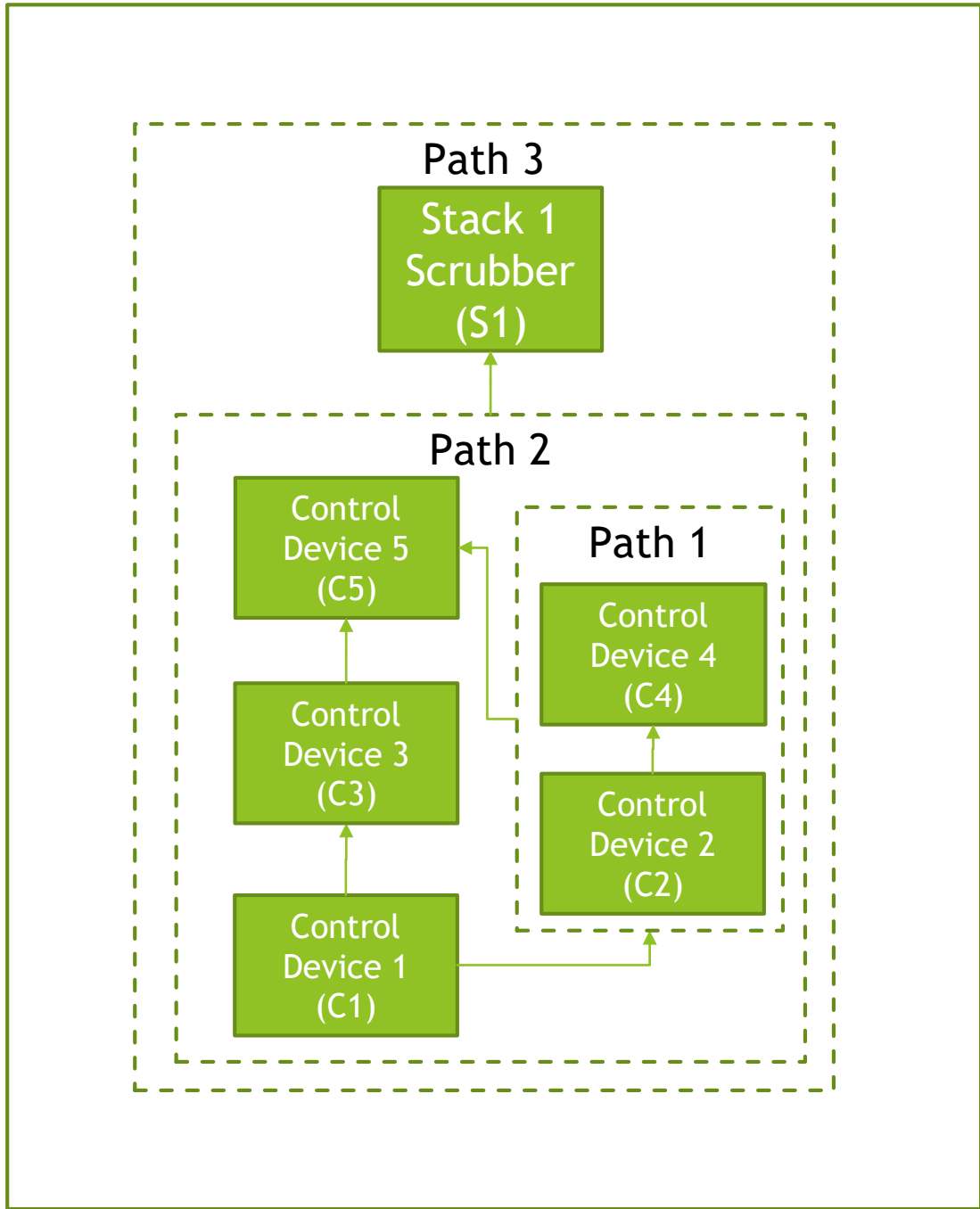
Path ID	Sequence Number	Assignment (Control or Path)	Apportionment (for Control or Path)
Path 1	1	Control Device 2 (C2)	100%
Path 1	2	Control Device 4 (C4)	100%
Path 2	1	Control Device 1 (C1)	100%
Path 2	2	Control Device 3 (C3)	40%
Path 2	2	Path 1	60%
Path 2	3	Control Device 5 (C5)	100%
Path 3	1	Path 2	100%
Path 3	2	Scrubber 1 (S1)	100%

Unit ID	Process ID	Path ID	Release Point ID	Release Point Apportionment
Boiler 2	Process 1	Path 2	Stack 3	50%
Boiler 2	Process 1	Path 3	Stack 1	50%

"Take Home" Messages

- An inventory of controls is defined at the facility level

- The relationship between the controls is defined by one or more "control paths"
  - You must define a path for each unique set of controls encountered between the emissions generation point and the release point
  - A path is composed of controls AND / OR paths
  - You define the order of the controls through these associations
  - You may define sets of controls that operate at the same time (parallel controls) by defining the percentage of the stream that flows in one direction or another.

- Associate a release point apportionment record to a given path (only 1)