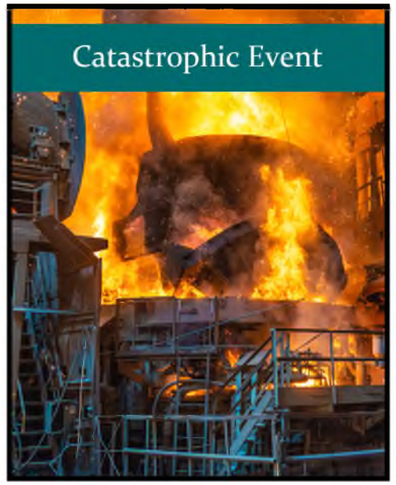
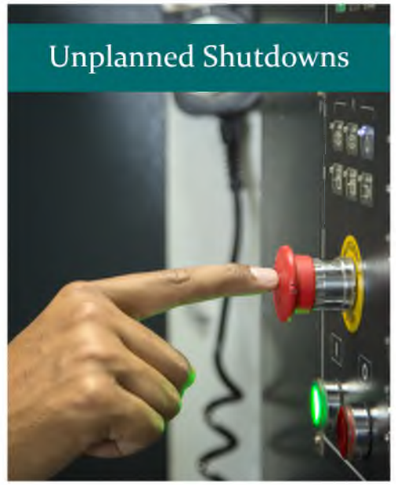
PEOPLECORE®

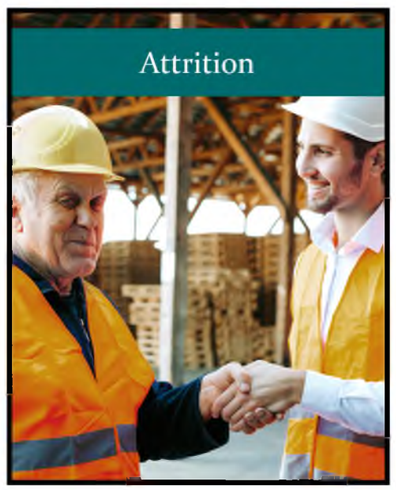
Your People. Better Results.

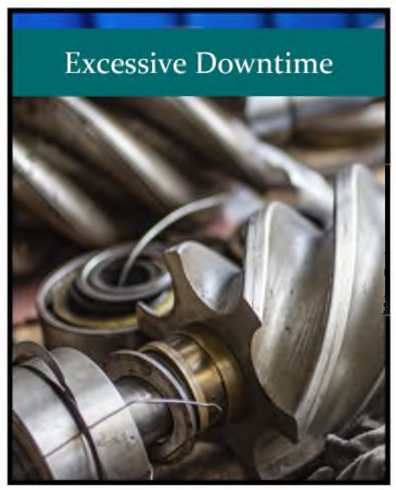
OPERATOR TRAINING SUMMARY





What Problem do you Need to Solve?





Operator Training

PEOPLECORE®
Your People. Better Results.

We Have Solutions

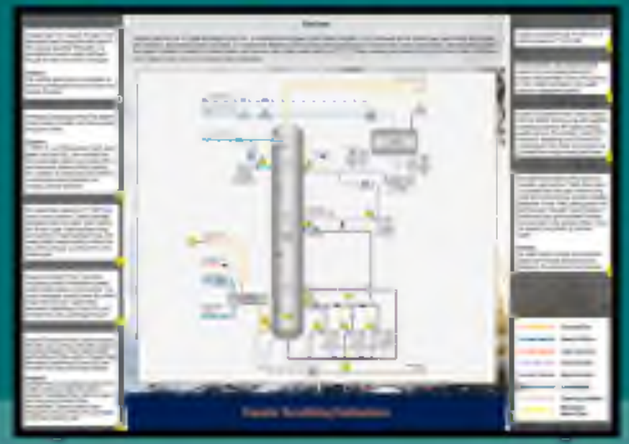
INSTRUCTIONAL MATERIAL DEVELOPMENT

BASIC OPERATOR TRAINING

- Designed for New Operators
- Fundamental knowledge
- 16 In-depth Courses
- Includes Assessments

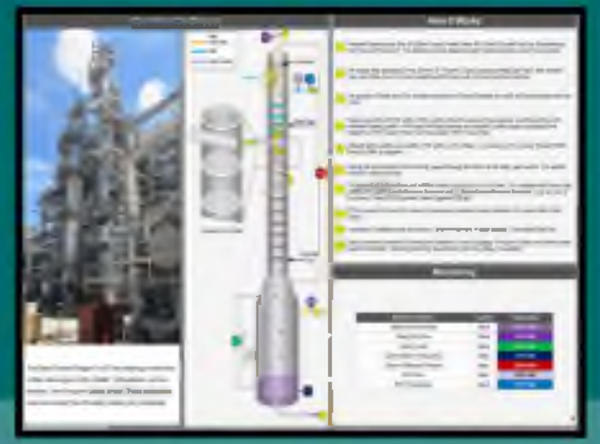
FACILITY/UNIT OVERVIEW

- Brief overview of the facility
- Types of equipment incl - input/output
- Simplified Process Flow
- Associated EHS considerations and hazards



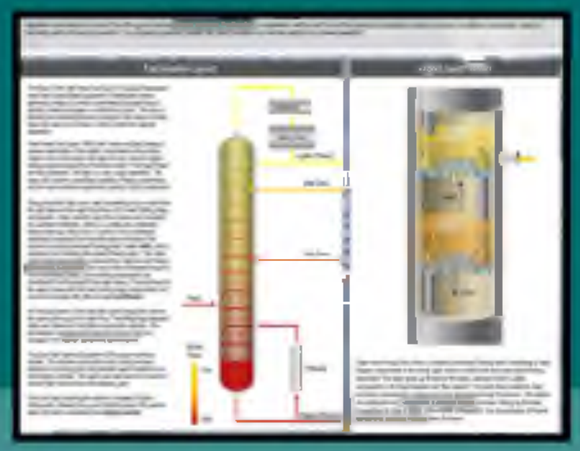
SYSTEM MODULE

- Process flow description
- Nodes explain subsystem aspects and purpose
- Unit is organized into systems
- Overview of system importance to unit
- System drawing based on P&IDs



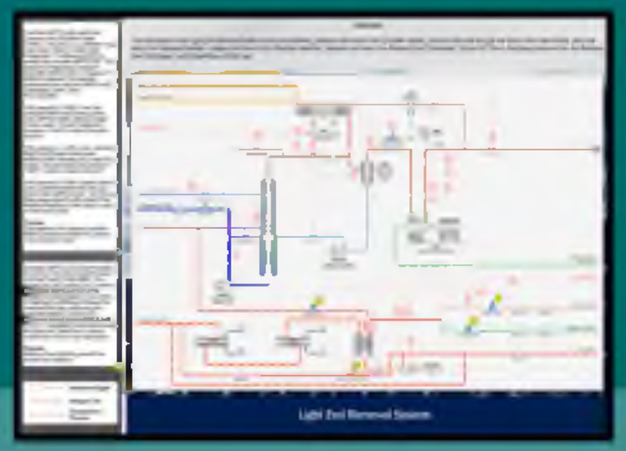
EQUIPMENT MODULE

- Overview of equipment in a system
- Picture of each actual equipment item
- Purpose of each equipment item
- Site specific detailed equipment drawings
- Internal breakdown incl how it works and monitoring points



PROCESS TECHNOLOGY

- Chemistry and physics utilized within the facility or unit
- Builds on how system processes work
- Operational relationships
- Example technologies: ie compression, fractionation, absorption, neutralization, etc.



PROCESS CONTROL MODULE

- Function and purpose of process controllers
- Intro to controls for field operator
- Detailed description of the components and logic within each control loop

DUTIES

- Job aid on how to perfom specific tasks
- Materials needed to perform the task
- Step-by-step instructions
- Detailed pictures to guide the operator

CONSOLE OPERATOR

- For console/board operator
- DCS navigation
- Control Objectives
- Trends
- Alarms
- Controller modes

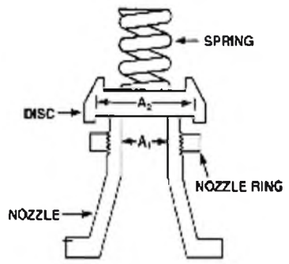
Operator Training at Every Level

New Operator — Field Operator — Console Operator — Operator Leadership

Traditional Training Material

Figure F2-2 is a simple sketch showing the disc held in the closed position by the spring. When system pressure reaches the desired opening pressure, the force of pressure acting over Area A_2 equals the force of the spring, and the disc will lift and allow fluid to flow out through the valve. When pressure in the system returns to a safe level, the valve will return to the closed position.

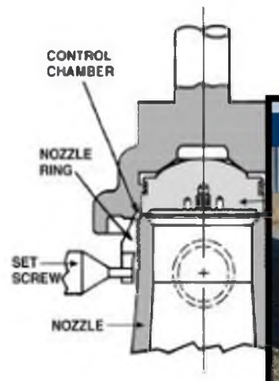
When a pressure relief valve begins to lift, the spring force increases. Thus system pressure must increase if lift is to continue. For this reason pressure relief valves are allowed an overpressure allowance to reach full lift. This allowable overpressure is generally 10% for valves on unfired systems. This margin is relatively small and some means must be provided to assist in the lift effort.



Trim Areas Diagram
Figure F2-2

Most pressure relief valves, therefore, have a secondary control chamber or huddling chamber to enhance lift. A typical configuration is shown in Figure F2-3. As the disc begins to lift, fluid enters the control chamber exposing a larger area A_2 of the disc (Figure F2-2) to system pressure. This causes an incremental change in force which overcompensates for the increase in spring force and causes the valve to open at a rapid rate. At the same time, the direction of the fluid flow is reversed and the momentum effect resulting from the change in flow direction further enhances lift. These effects combine to allow the valve to achieve maximum lift and maximum flow within the allowable overpressure limits. Because of the larger disc area A_2 (Figure F2-2) exposed to system pressure after the valve achieves lift, the valve will not close until system pressure has been reduced to some level below the set pressure. The design of the control chamber determines where the closing point will occur.

The difference between the set pressure and the closing point pressure is called blowdown and is usually expressed as a percentage of set pressure.

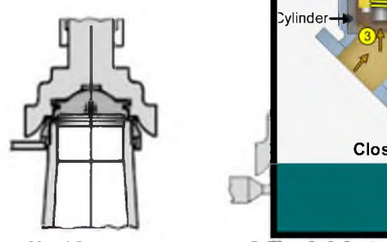


Crosby Style JOS Pressure Rel
Figure F2-3

The design of the control or huddling
a series of design tradeoffs. If the de
effort then blowdown will be long. If th
is to minimize blowdown, then the
diminished. Many pressure relief valv
equipped with a nozzle ring which c
vary the geometry of the control ch
particular system operating requirem
and F2-3).

Liquid Trim Designs

For liquid applications, Crosby offers
liquid trim design designated as Style
JBS. See Figure F2-4 showing liqui
metal or soft seated valves. These
stable non-chattering valve perfor
capacity at 10% overpressure.



Metal Seat O-Ring Soft Seat
Crosby Styles JLT-JOS and JLT-JBS
Figure F2-4

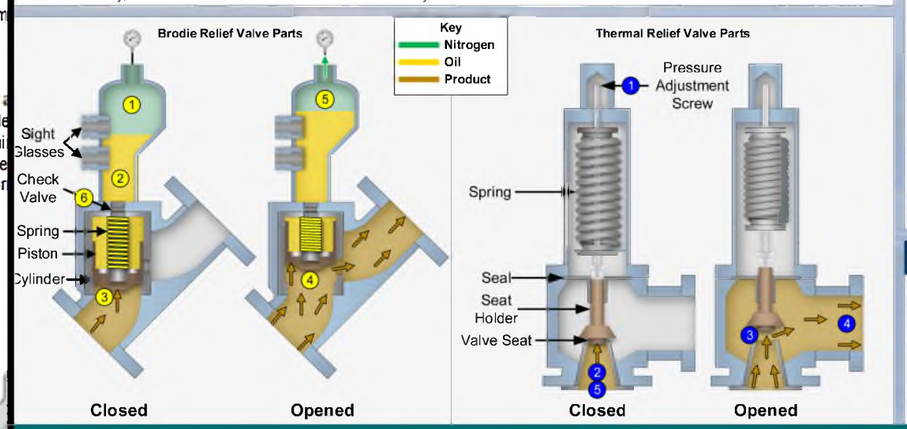
Brodie Relief Valves

The **Brodie Relief Valves** protect pipelines from being over pressured by a transit or other pressure anomaly. For pipeline and subline facilities, relief valves are installed on the suction side. At deliveries and end point facilities, they are installed upstream of the take-off valve.

Thermal Relief Valves

High ambient air temperature and radiant heat from the sun can raise the pressure of the product in exposed pipe due to thermal expansion. **Thermal Relief Valves** are located on sections of piping that may become isolated from Brodie Relief Valves to provided over pressure protection and are set to open and vent to a relief tank or sump if a predetermined pressure is reached to prevent damage.

When a Brodie Relief Valve opens, the pipeline operation enters "AOP-CC-J50, Operation of Any Safety Device." The relief systems include isolation valves that are normally open to provide a clear path to a relief tank or sump; these valves are closed to isolate the relief valve from the line or tank for maintenance. If it becomes necessary, some main line isolation valves can be closed remotely.



How It Works – Brodie Relief Valve

1. Nitrogen gas is used to pressurize the valve piston in order to keep the valve in the closed position. The pressure of the nitrogen gas in addition to the force of the valve spring is the valve set point.
2. Below the nitrogen is a level of oil that provides lubrication to the valve components, such as the spring and piston, to ensure the valve will open and close when required. The oil also provides a tight seal and acts as a barrier between the nitrogen gas and the valve's piston and cylinder.
3. When the fluid pressure in the pipeline is not enough to overcome the valve set point, the valve remains tightly closed.
4. As pipeline pressure increases to a level requiring surge relief, the spring and gas pressure are overcome, causing the spring to compress. The valve opens and product flows through ports in the cylinder, exiting to a relief tank.
5. When the valve opens, nitrogen gas exits from the top of the valve, expelling the gas pressure. Once the pipeline pressure decreases below the set point, the nitrogen pressure and spring cause the valve to close.
6. A check valve mounted to the internal surface of the cylinder head controls the opening and closing speed of the valve. The result is a fast-opening response.

How It Works – Thermal Relief Valve

1. The force that keeps the valve in the closed position is provided by a helical spring that is compressed by an adjusting screw.
2. When the fluid pressure in the pipeline is not enough to overcome the spring force, the valve remains in the closed position. The valve seat is pressed against the inlet nozzle, so fluid cannot pass through.
3. If the pipeline pressure increases to the point where the total upward force is greater than the spring force due to thermal expansion, the valve seat lifts from the inlet nozzle and the spring compresses.
4. Product flows through the valve to a relief tank or sump. By providing an alternate path for the pressurized fluid, pipeline pressure is relieved. A seal around the top of the valve seat holder prevents liquid from flowing into the upper portion of the valve.
5. Once the pipeline pressure decreases below the spring force, the valve returns to the closed position.

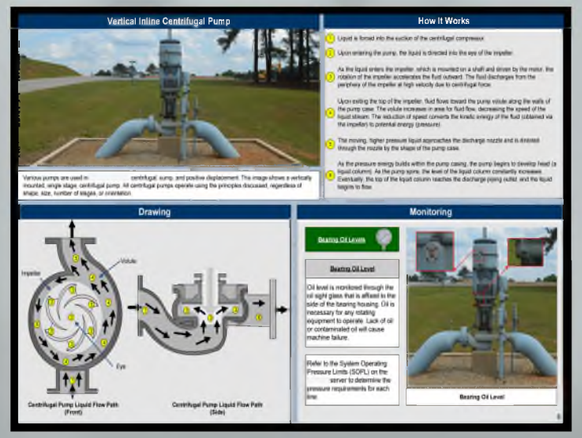
Monitoring Responsibilities – Brodie Relief Valve

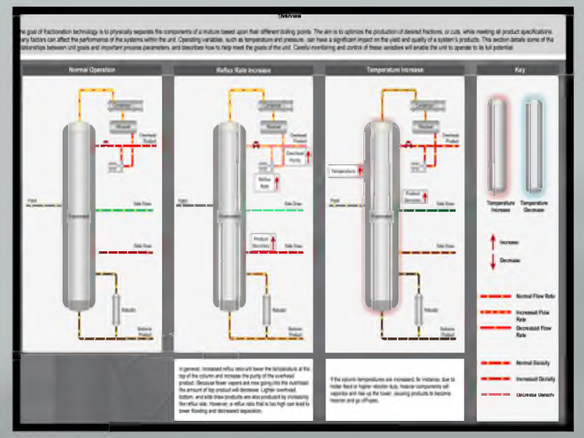
Monitored Variable	Location	Notes
Nitrogen Pressure	Field	Low pressure causes the valve to open early High pressure causes valve to open late
Sight Glass for Oil Level	Field	To ensure proper lubrication in the valve
Stains Around Valve	Field	Indication that valve is leaking
Manual Isolation Valve Locked in Open Position	Field	

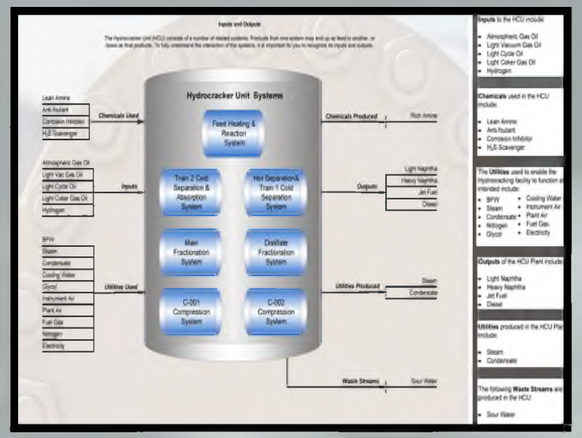
The Peoplecore Approach

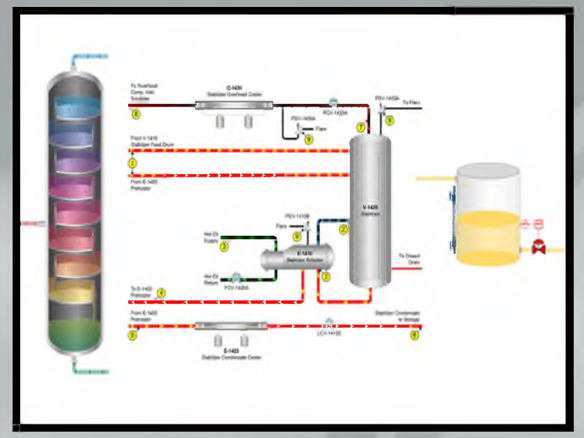
THE PEOPLECORE ADVANTAGE

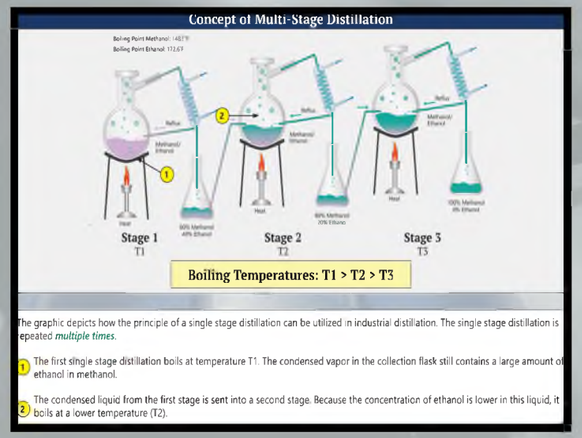
	VS COMPETITION	
Graphic-Driven - Studies by educational researchers found that 83% of human learning occurs visually.	✓	X
Results Oriented - Great training is more than just knowledge transfer. We develop our training with the end goal in mind.	✓	X
Brain-Based - We provide rich learning experiences that optimize the brains ability to process, recall, and apply new information.	✓	X
Hierarchical - An essential factor of retention is to create learning that builds on itself and prior knowledge.	✓	X
Microlearning - Learning improves when information is not overwhelming and is broken into small easily remembered portions.	✓	X
Experiential Learning - Hands-on training that helps learners connect concepts learned to broader ideas and life experiences.	✓	X
Real World Application - learners progress faster when they can relate training to their actual job.	✓	X

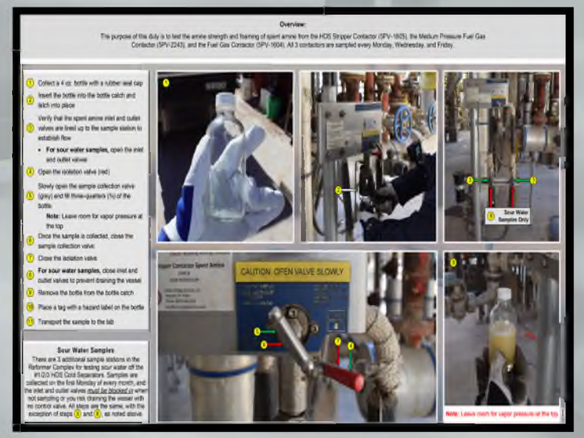












Ways To Engage

INSTRUCTOR LED

A classroom environment provides students the opportunity to have face-to-face interactions with their peers and instructors.

Includes:

- Instructional Material (.pdf, .vsdx, mp4, and idml)
- Facilitator guides w/learning activities, instructor notes, and discussion questions
- Powerpoint decks
- Performance evaluations
- Supplemental documents (e.g. worksheets, forms, activity documents, etc.)

VIRTUAL

Virtual Classrooms use video conferencing, slideshows, online whiteboards, and live action/instruction to create a collaborative environment.

Includes:

- Instructional Material (.pdf, .vsdx, mp4, and idml)
- Facilitator guides w/learning activities, instructor notes, and discussion questions
- Powerpoint decks
- Recommended equipment list
- Performance evaluations
- Supplemental documents (e.g. worksheets, forms, activity documents, etc.)

e-LEARNING

e-Learning is an instructional method that delivers asynchronous learning through digital media to grow knowledge, shape behaviors, and increase motivation on an individual basis.

Includes self-paced interactive learning experiences:

- Instructional material
- Audio/ Video
- Animation
- Branching activities
- Simulation
- Augmented reality
- Gamification
- Written instruction

STRUCTURED OJT

The goal of a structured OJT program is to understand duties, achieve demonstrable skills and gain a predetermined level of knowledge in a coordinated, planned, and consistent manner. It should provide clearly defined roles, expectations, objectives, and standards.

Includes :

- Instructional material
- Coaching
- KPI tracking
- Instruction plan
- Defined learning objectives
- Knowledge/skill assessments

OUR OTHER CAPABILITIES

Leadership Development

SOP Writing

Train-The-Trainer

Organizational Improvement

PEOPLECORE®

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