

**WHITE PAPER**

# **COFE<sup>®</sup>: Intelligent DC Operations Management**



Used

↑  
Thru Put



Reduce  
Capital  
Investments  
Tap  
Capacity

**Automated Wave Planning  
Starts Here**

The COFE logo features the letters "COFE" in a bold, sans-serif font. The letter "O" is replaced by a 3D cube with yellow, red, and white faces. Below the logo, the text "Automated Wave Planning Starts Here" is written in a smaller font.

Fastest  
Order  
Cycle Time

Minimize  
WMS  
Functional

Adaptive



When visitors tour facilities powered by COFE®, they often ask us to take them to “the control room” or “master control room.” What they want to see is where and how operational decisions are made to manage the workflow through the facility. When we explain that such a control room or control areas do not exist with COFE®, many of our visitors have a difficult time imagining how this type of facility operation is possible. A number of years ago it was very rare to see a master control room; today it has become commonplace. What has changed? Today, it is necessary to *quickly* react in order to coordinate operations for fast moving and ever-changing fulfillment demands, and the master control room facilitates rapid communication between fulfillment process managers.

The management of the operation in COFE® driven operations is significantly different than in traditional operations. To best describe the differences, let us divide operation management into several categories, namely:

- Labor forecasting and the determination of future staff availability
- Work planning and the selection and sequencing of work to be performed
- Deployment of the labor workforce to process areas to perform planned work
- Detail deployment or labor tasking within process areas to perform planned work
- Management and monitoring of equipment to ensure operation

Traditional distribution facilities often perform these functions in a single master control room that represents the “heart” of the operation. Many older facilities have been upgraded to consolidate several management functions in a single area. The driving force behind this is the need for immediate communication of pertinent information between the managers of the various functions or categories of management. Due to today’s quick response service levels that are being imposed on operations through business requirements, the immediacy of communications between functions has become a necessity. Gone or going are the days when distribution plans allow days to plan and react.

### **Responsive Workflow Management**

Many of the management categories listed above require continuous observation and reaction to changes during

operation. Expecting floor or section supervisors to manage the workflow will not suffice. Too often these supervisors and managers are not available for workflow observation and response due to other responsibilities. When this “distraction” from workflow management occurs, the distribution operation is non-responsive to changing conditions and, in a very few minutes, the facility can go from operating perfectly to having to recover from a catastrophe.

COFE® is a Warehouse Execution System, or WES, and as such it is responsible for the control and synchronization of work—creating a workflow. COFE® is a real-time system that responds or reacts immediately to changing requirements and conditions. It was created primarily as a solution to meet the needs of rapid response and continuous observation in the management of the operation.

### **Labor Forecasting**

Another major category of operation management—labor forecasting—does not require real-time coordination with the other management categories. Labor forecasting is a management function that looks at historical information and current work to determine the labor requirements for a future day. For this function, COFE® provides data to the forecaster as to the current work and historical work rates, and the forecaster analyzes the data to provide labor forecasts.

### **Workforce Deployment**

Deployment of the available workforce is different than labor forecasting because it requires real-time decision making. Workforce deployment is how labor is to be distributed among and within the various processes to create a desired workflow. Typically, the master control room managers address workforce deployment among the various processes. Then on-the-floor supervisors manage the deployment of the available workforce within a specific process.

### **Intelligent Distribution Center Operations Management with COFE®**

Let us now focus on the aspects of operational management that COFE® handles. We will address the features within each of the operational management categories.

**Work Planning and Sequencing**

Work planning is the selection and sequencing of work to be performed. COFE® normally receives “work” as individual delivery requirements. These may be sent in real-time and do not need to be organized in any sequence. Work planning has a significantly different paradigm in COFE®. A traditional concept of work planning involves determining how much of any particular type of work is required, forecasting labor availability, planning the sequence of that work (which is to be accomplished first) and then to lay available work resources against the work to determine when the work will be done. COFE® work planning is not tightly linked with available labor resource planning. The work plan is focused only on the prioritization and sequencing of the work and the order in which the work will be accomplished.

**Macro Deployment of Labor**

Deployment of the total available workforce among processes is called macro deployment of labor. In continuous flow operations the goal is to achieve a balanced operation where each process is performing continuously, drawing from the upstream process and delivering to the downstream process an equal and constant workflow. While there are buffers between processes, those buffers are only designed to hold sufficient work in progress to allow the re-deployment of labor in order to maintain flow. With this model, the absolute amount of labor available is deployed as a ratio to the various processes. COFE® is constantly looking at the production levels of each of the processes, and it can “see” when one process is getting ahead or behind another. COFE®’s observation into this system is much more precise than a human’s observation of the system. If COFE® detects that one work queue is growing and another shrinking, it provides this information to decision makers to let them see the imbalances in process production well in advance of having the imbalance create a production issue.

**Automated Micro Deployment**

Deployment within a process is called micro deployment, and in some operations it may be referred to as tasking. COFE® automatically deploys available labor within the process (micro deployment) to balance the output of the process. Micro deployment also informs workers within a process when the process is overstaffed, telling the workers when there is no available work.

**Equipment Management and Monitoring**

There are numerous real-time tools available to inform assigned parties of anomalies in the operation management and monitoring of equipment. HMI screens, buzzers, lights, conveyor motors not running, automatic emails, texts, radios and so on are all part of management of the equipment. In COFE® driven systems, pertinent mechanical condition information is also sent to COFE® by the equipment controller to tell COFE® of the conditions. Then COFE® uses that information to alter the operation of other processes as necessary.

In summary, COFE® driven systems do not require master control rooms to immediately convey operational conditions for making decisions. The operational condition information is constantly being monitored and automatically acted upon by COFE® to maintain product flow. COFE® eliminates the entire work planning and sequencing decisions, reduces workforce deployment to a macro level only, and automatically incorporates equipment conditions into its decisions making it a powerful intelligent WES software solution.

*Contact VARGO® to learn how COFE® is replacing master control rooms in the distribution center by intelligently monitoring and managing DC operations.*