Operator Requirement Index

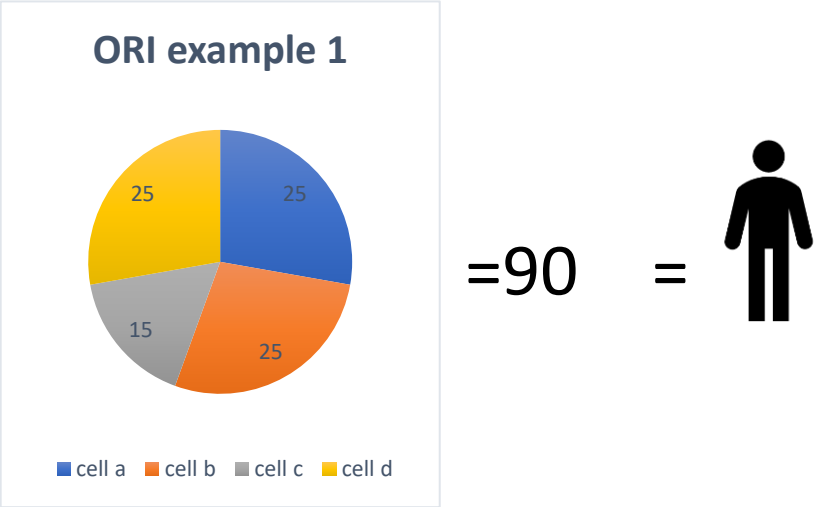
By David B. Jolley - September 9th, 2017

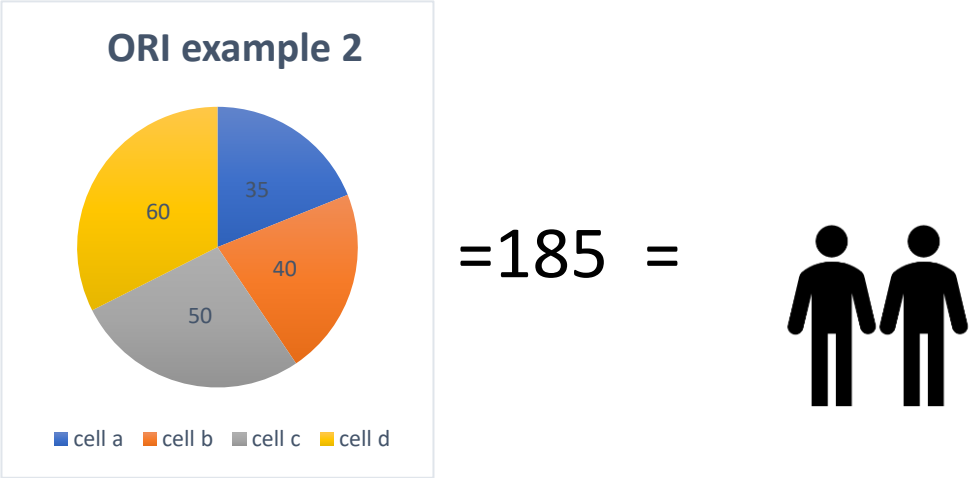
Operator Requirement Index (ORI)- Measures the level of autonomy of a process by way of measuring the need for human interaction. Basically, it measures how much human attention is needed to keep a process running.
Example. If 2 processes have an ORI of 50% or below, they could be operated by one human. Other things like logistics may affect this example.

In 2017, the United States manufacturing labor skills gap is getting wider and wider. This is one issue we face in medium to small manufacturing companies. How to get and keep qualified resources. There just isn't enough qualified help. That is a topic for another day. Anyways, the money reaches a point to where automation becomes a better and more reliable solution. More than once companies have had to go this route to solve labor issues.

Automation costs are coming down, but they still cost money. It also doesn't always have to be fully automated. Maybe enough for one operator to run multiple line. That by itself could be a huge cost savings. Here I will show you how I evaluate the automation readiness of a line by creating a measurement of how much operator involvement is needed to run this line.

I call it ORI or Operator Requirement Index. Basically, how it works is that a production line of 0 needs no human intervention to run. A production line with an ORI of 100 needs full human interaction to make every single part. In theory, 2 production lines with an ORI of less than 50 could be ran by 1 human. Further 4 processes with an ORI of 25 or less could be ran by 1 human. See example 1.





Example 2 shows the ORI higher, so 2 humans are needed to operate the processes. You get the idea. Logical, right? Ok, so how do we figure the ORI? We need to know how much human interaction is needed to keep the process running. This is what I call an ORI Study.

ORI Study

1. I do this by running a full shift of production on a process. During that time, I document any action that is needed to keep this line running. I then categorize and quantify each. Only count the things that need to keep the line running. This is important.
2. Now total up all the times the operator interacted with the process.
3. Divide that by the time the process ran.
4. Now multiple that times 100. That is your ORI.

I have included a sample ORI study that I have done in the past. ORI Study Sample
This was to determine if 1 human could run to identical processes. See this worksheet.
Each hour the ORI was calculated to see how much human interaction the process needed. This was an 8-hour study. Hours 2 and 6 hit an ORI of 56. So, the Max ORI for the process is 56. So, this answers our question. With some improvements, 2

of these lines could be ran by 1 human, but not without some improvements. They can try to run both, but you will probably suffer process efficiency losses.

This should give you a way to measure the level of automation in your processes. Maybe give you some guidance into some possible process improvements and cost savings. Of course, you can expand on this in many directions. Let me know your ideas.