VersaBuilt Automation System Run-Time Examples:

MultiGrip Systems:

Assumptions:

- 45 second VersaWash process
- VersaWash process is employed to clean the part and jaws after the finished part unload, before placing on the finished part on the infeed, and for empty jaws after placing the finished part on the infeed.
- Robot motion between home positions is 5 seconds per move
- It takes 9 seconds to load or unload MultiGrip Jaws to/from the Vise
- Door time to open or close is 5 seconds
- Each machining operation includes 0.13 minutes of table wash, 0.07 minutes to move the CNC table and Spindle at the beginning and end of the machining program to accommodate robot loading and unloading, and 0.08 minutes of part probing with the spindle probe.
- Partial infeed can be reloaded mid-process to keep the system running (for example, half of the infeed has been processed at the end of the day at a 1 shift per day plant, the operator before leaving can unload the finished parts, replace the infeed slots with new raw material, then on the U/I acknowledge that the finished parts have been removed, and add the new quantity of added parts. The system will automatically continue processing the remaining parts from the original load, and process the added parts).

1. Mill Automation System with MultiGrip, running 2 Operation Parts with 2 MultiGrip Vises:

Op10 CNC Machining Time (minutes)	Op20 Machining Time (minutes)	Average Robot Overhead per Part (minutes)	Example Infeed Capacity (# of parts)	Example Total Run Time per full infeed load (hours)
1.00	1.00	4.10	48	4.88
2.00	2.00	2.30	48	5.04
3.00	3.00	2.30	48	6.64
10.00	10.00	2.30	48	17.84
20.00	20.00	2.30	48	33.84

2. Mill Automation System with MultiGrip, running 1 Operation Parts with 1 MultiGrip Vise:

Op10 CNC Machining Time (minutes)	Op20 Machining Time (minutes)	Average Robot Overhead per Part (minutes)	Example Infeed Capacity (# of parts)	Example Total Run Time per full infeed load (hours)
1.00	N/A	3.19	48	3.40
2.00	N/A	3.19	48	4.20
3.00	N/A	3.19	48	5.00
10.00	N/A	3.19	48	10.60
20.00	N/A	3.19	48	18.60

3. **Mill Automation System with MultiGrip, running 1 Operation Parts with 2 MultiGrip Vises running a pipeline process:**

Op10 CNC Machining Time (minutes)	Op20 Machining Time (minutes)	Average Robot Overhead per Part (minutes)	Example Infeed Capacity (# of parts)	Example Total Run Time per full infeed load (hours)
1.00	N/A	3.44	48	3.60
2.00	N/A	3.44	48	4.40
3.00	N/A	1.16	48	3.30
10.00	N/A	1.16	48	8.90
20.00	N/A	1.16	48	16.9

DuoGrip Systems:

Assumptions:

- 12 second VersaBlast (wrist-air) process
- VersaBlast process is employed to clean the part and workholding before and after the finished part unload.
- Robot motion between home positions is 5 seconds per move
- Door time to open or close is 5 seconds
- Each machining operation includes 0.13 minutes of table wash, 0.07 minutes to move the CNC table and Spindle at the beginning and end of the machining program to accommodate robot loading and unloading, and 0.08 minutes of part probing with the spindle probe.
- Partial infeed can be reloaded mid-process to keep the system running (for example, half of the infeed has been processed at the end of the day at a 1 shift per day plant, the operator before leaving can unload the finished parts, replace the infeed slots with new raw material, then on the U/I acknowledge that the finished parts have been removed, and add the new quantity of added parts. The system will automatically continue processing the remaining parts from the original load, and process the added parts).

4. Mill or Lathe Automation System with DuoGrip, running 1 Operation Parts with 1 Vise or Chuck, or 2 Operation Parts with a Dual Spindle Lathe:

Op10 CNC Machining Time (minutes)	Op20 Machining Time (minutes)	Average Robot Overhead per Part (minutes)	Example Infeed Capacity (# of parts)	Example Total Run Time per full infeed load (hours)
1.00	N/A	0.96	48	1.60
2.00	N/A	0.96	48	2.40
3.00	N/A	0.96	48	3.2
10.00	N/A	0.96	48	8.80
20.00	N/A	0.96	48	16.8

5. **Mill or Lathe Automation System with DuoGrip, running 2 Operation Parts with 1 Vise or Chuck, with a Regrip step between operations:**

Op10 CNC Machining Time (minutes)	Op20 Machining Time (minutes)	Average Robot Overhead per Part (minutes)	Example Infeed Capacity (# of parts)	Example Total Run Time per full infeed load (hours)
1.00	1.00	3.28	48	4.22
2.00	2.00	3.28	48	5.82
3.00	3.00	3.28	48	7.42
10.00	10.00	3.28	48	17.39
20.00	20.00	3.28	48	34.62

6. **Mill or Lathe Automation System with DuoGrip, running 2 Operation Parts with 2 Vise or 2 CNC's with 1 Vise or Chuck each, with a Regrip step between operations, running in a pipeline fashion:**

Op10 CNC Machining Time (minutes)	Op20 Machining Time (minutes)	Average Robot Overhead per Part (minutes)	Example Infeed Capacity (# of parts)	Example Total Run Time per full infeed load (hours)
1.00	1.00	1.74	48	2.99
2.00	2.00	1.74	48	4.59
3.00	3.00	1.74	48	6.19
10.00	10.00	1.74	48	17.39
20.00	20.00	1.74	48	33.39

ZPS Systems:

When using VersaBuilt's VSC software to automatically assign the layout of parts for the infeed, with the parts loaded in ZPS vises or pallets on the VersaBuilt ZPS infeed, the capacity depends on the part height for the number of rows of infeed and vises/pallets/part widths for spacing between parts in a single infeed row. For typical parts, the infeed capacity is:

Vise / Pallet Type	Rows of Infeed	Max Infeed Capacity (# of parts)
5th Axis A52-V75100X - AUTOMATION READY SELF-CENTERING VISE, 75mm X 100mm, with 52mm ZPS	4	28
5th Axis A52-V75100X - AUTOMATION READY SELF-CENTERING VISE, 75mm X 100mm, with 52mm ZPS	5	35
5th Axis A52-V75100X - AUTOMATION READY SELF-CENTERING VISE, 75mm X 100mm, with 52mm ZPS	6	42
HAAS ZERO POINT SYSTEM PULL STUD, P/N 05-0571, with 5.25" SQUARE PALLET	4	20
HAAS ZERO POINT SYSTEM PULL STUD, P/N 05-0571, with 5.25" SQUARE PALLET	5	25
HAAS ZERO POINT SYSTEM PULL STUD, P/N 05-0571, with 5.25" SQUARE PALLET	6	30