

## Checklist Buffering Systems

### Required Buffering Volume:

	Question	Answer
1	Required Buffering Volume: How many parts or containers have to be buffered?	
2	What production time should be bridged (what self-sufficiency should be achieved)?	

### Part / Container description:

3	For piece goods/individual parts: part dimension L x W x H [mm]	
4	For piece goods/individual parts: part temperature [°C]	
5	Container type, e.g. cardboard box, steel box, wooden box, small load carrier, pallet, mesh box, bags, sacks, etc.	
6	Container dimension L x W x H [mm], for bags/sacks: Ø x L [mm]	
7	For cardboard boxes: how are the cover flaps fixed?	
8	Container description (photo from all sides, top view, side view, bottom of container)	
9	For several different container types, please specify all types	
10	Weight empty container [kg]	
11	Weight filled container [kg]	
12	No. of parts per container [Stk.]	
13	Space requirement for parts as piece goods [pcs./m <sup>2</sup> ]	
14	Reproducibility of containers (e.g. cartons uniformly and securely glued, lid flaps fixed)? [yes/no]	

## Checklist Buffering Systems

15	Are bags placed in containers? Are these securely fixed and is it ensured that there are no protruding bag parts? [yes/no/description]	
16	Are parts/containers to be moved on the belt (no sharp edges, damage) [yes/no]	
17	Are parts/containers suitable for accumulation (dimensionally stable, no ribs, not conical) [yes/no]	
18	Can parts/containers be positioned exactly (dimensionally stable) [yes/no]	
19	Can parts/containers be reliably detected (e.g. by light barriers/light scanners) or are there reinforcing ribs/openings, etc. [yes/no]	

## Production Parameters

20	No. of parts/containers per time unit [pcs./h]	
21	Cycle time [s]	
22	Parts/cycle [pcs./cycle]	
23	How much time is available for container change [sec.]	
24	Must containers be changed during the production cycle (parts may have to be stored temporarily) [yes/no]	
25	How do parts get into containers (conveyor belt/chute/robot/manual depositing/falling out of machine chute, etc.)?	

## Production Environment

26	How much space is available for the system? L x W x H [mm]	
27	Which routes must be taken into account (e.g. travel routes, personnel routes, escape routes, access to production machines, maintenance openings, etc.) Description/sketch?	
28	Which special framework conditions must be taken into account (e.g. fire compartments, clean room areas, ATEX zones, dusts, humidity, temperature zones, etc.)?	

## Checklist Buffering Systems

29	Should the buffer be permanently installed or mobile?	
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### Interface / Control

30	How are production quantities recorded? Are there potential-free pulses as a counting signal or is independent recording (e.g. by counting/weighing) necessary?	
31	Should the operating status of the buffer be displayed (e.g. via signal towers, display, acoustics)?	
32	Should the control unit be connected via a remote maintenance module? [yes/no]	
33	Which signals should be exchanged with any existing machines/controls, e.g. enable signals, automatic mode messages, fault messages, emergency stop function, etc.?	
34	Where should the control unit be located? [Sketch/description]	
35	What functionalities should the control system have, e.g. recipe master management)?	
36	Special requirements for the user interface (e.g. special display, presentation, control buttons, password protection, etc.)?	
37	Specifications regarding the control components to be used (e.g. Siemens, etc.)?	
38	Which warning messages should be issued?	

### Function Specifications

39	Compliance with FIFO (First In First Out) necessary? [yes/no]	
40	Do quality parts have to be removed at regular intervals and discharged separately? How are the quality parts recorded in terms of quantity? [yes/no/description]?	
41	Do certain buffer times have to be observed (e.g. cooling times, drying times, curing times, etc.)? [yes/no/how long]?	
42	Do the containers have to be removable by an operator at any time?	

## Checklist Buffering Systems

43	Is it necessary for the contents of the individual containers to be visible (e.g. for quality purposes)?	
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### Safety Aspects

44	Is there already existing safety equipment that can be used for the buffering system (e.g. safety fence)? [yes/no]	
45	Should the buffering unit be integrated into an existing safety architecture (e.g. emergency stop circuits)?	
46	Where are the operators located on the system? Are there any accessibility restrictions?	
47	Where should emergency stop buttons be installed?	

### Further General Conditions

48	Are there any other design specifications on the part of the customer (e.g. color specifications, manufacturer specifications for components) [yes/no] please enclose if applicable.	
49	In which shift model should the system be operated?	
50	What savings can be achieved with the buffer (e.g. unmanned production/autarky over a certain period of time)?	
51	What budget is available?	

**Drawings /Photos**

Containers	Production Environment
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