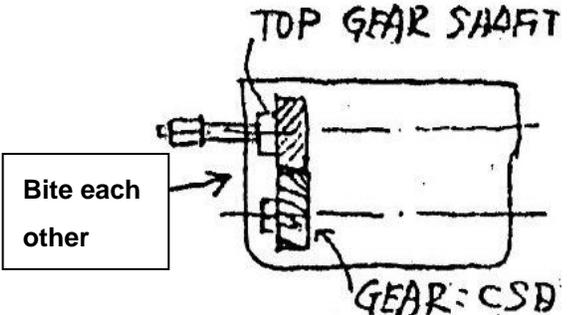
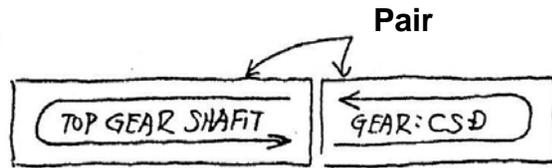
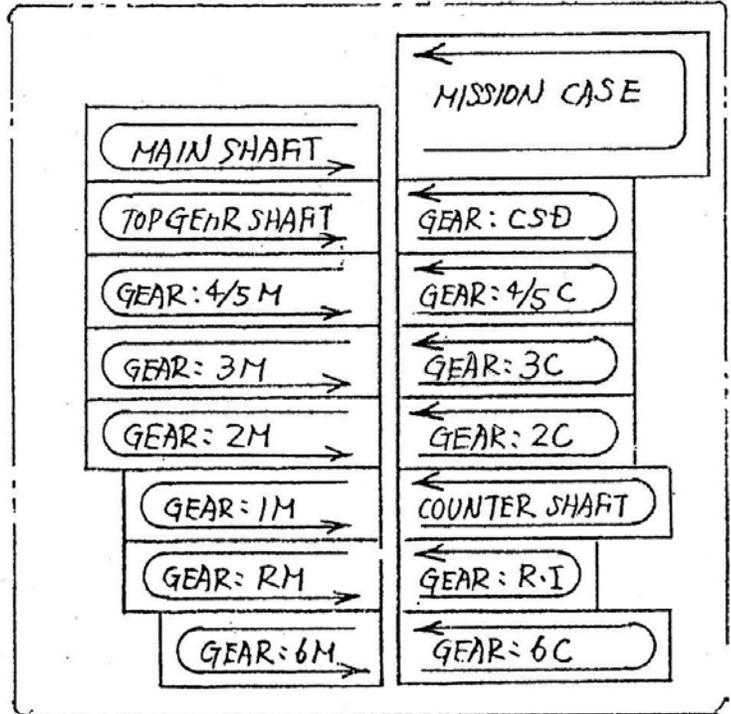
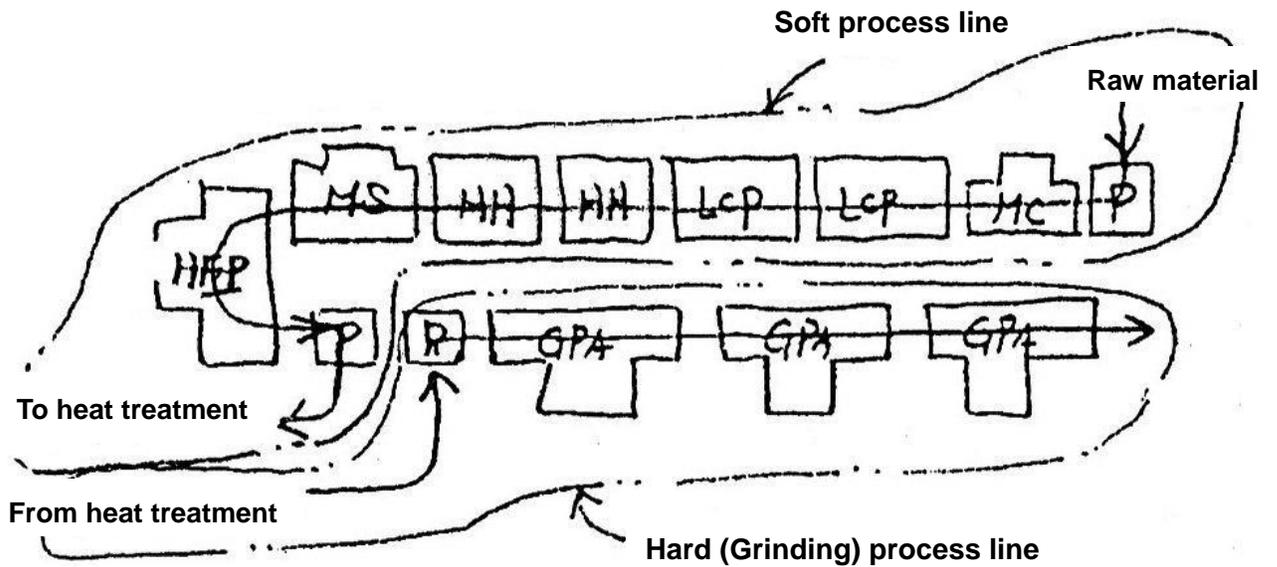


	Method Development	Image
1	<p>One large room concept</p> <p>①Layout of same takt time line put together in the same area (one set production)</p> <p>②Set production for the pair which bites each other.... Example of T/MISSION where one pair of gear and shaft bite each other within the same case</p>  <p>&lt;Example of process line layout&gt;</p> 	<p>• Example of one large room concept for T/MISSION GEAR and SHAFT machining process line...One car set of parts can be produced in one area.</p> 

③The soft processing line and the hard processing line are laid out as a pair, and operated as one cell. .

• Example of the T/MISSION System GEAR and SHAFT machining process line



④Bring isolated islands into the process line

Example;

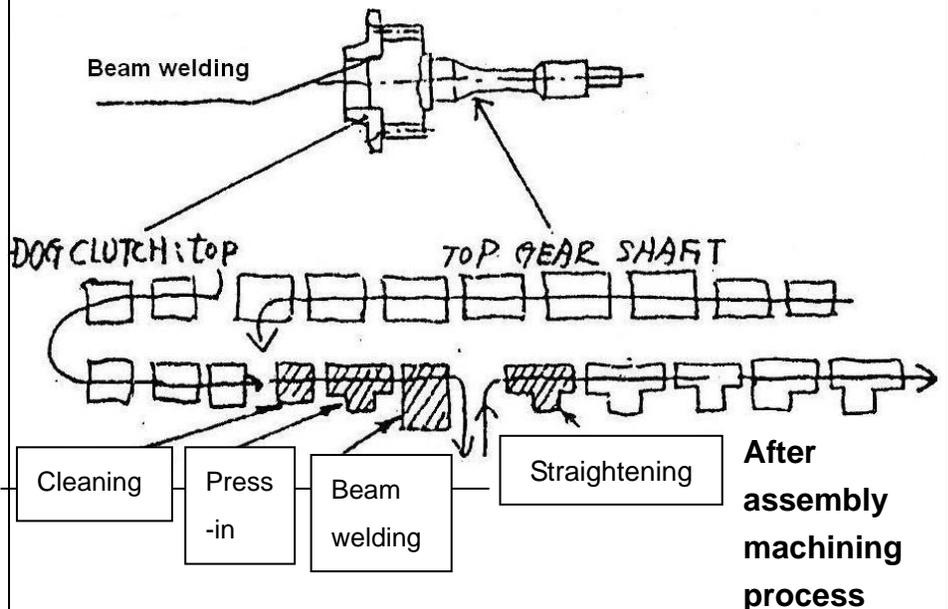
- Cleaning process before beam welding, press-in process
- Beam welding process
- Bending repair process for shaft etc.

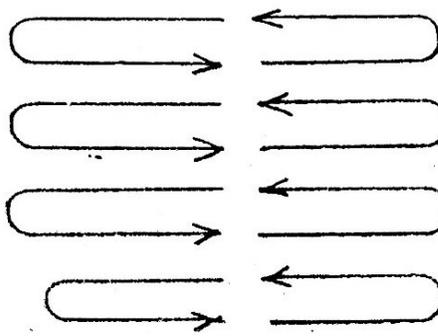
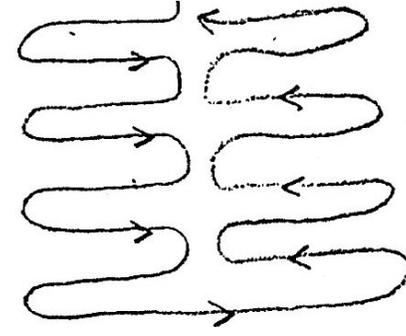
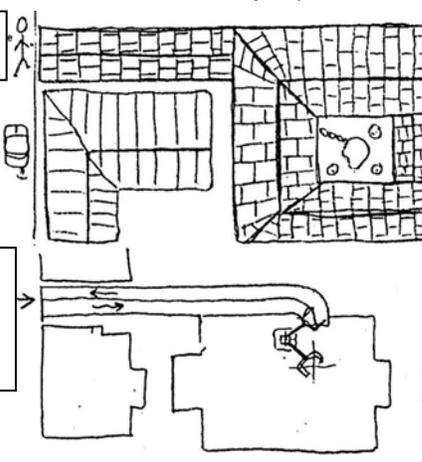
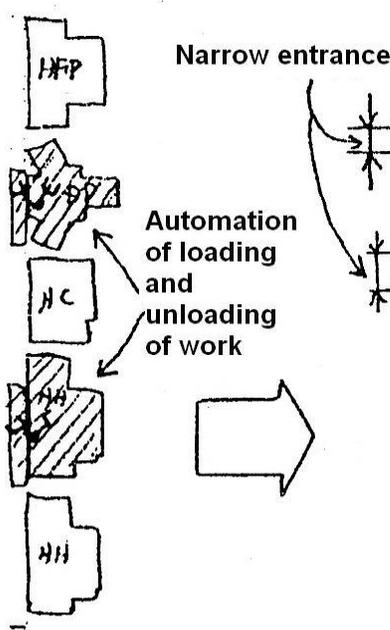
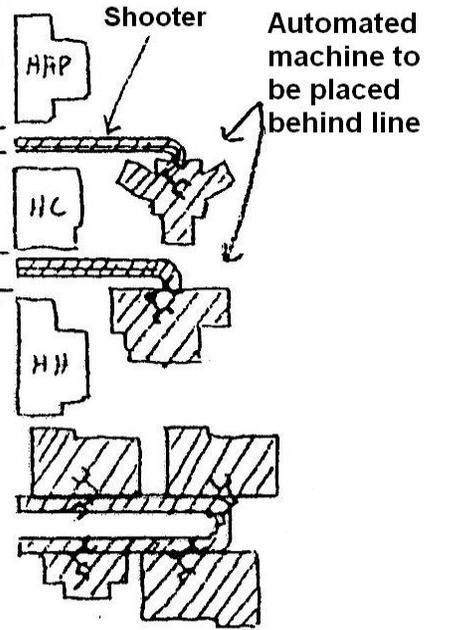
⑤Part assembly line in the middle of process line should be laid out as a same cell

Example;

- Top Gear Shaft
  - Dog Clutch:top
- ↔ Pair

• Example of T/MISSION System Top Gear Shaft line



<p>2</p>	<p>Layout which connects U-shape process cell</p> <p>Counter –clock direction and one smooth move layout ( no back and forth)</p> <p>&lt; One large room concept &gt;</p>	<p>&lt;Layout of machine and flow&gt;</p> 	<p>&lt;movement of operator&gt;</p>  <p>Smooth move as one stroke writing</p>
<p>3</p>	<p>Automated machine to be placed behind line</p> <p>Operators 's processing point should be close to each other</p> <p>...Reduce walking distance</p> <p>•<u>Kyo-maguchi</u> layout of equipment</p> <p>(Equipment layout with narrow entrance width and depth)</p> 	<p>&lt;traditional layout &gt;</p>  <p>&lt;Layout after Kaizen&gt;</p>  <p>• Utilize existing automated machine as effective as possible</p>	

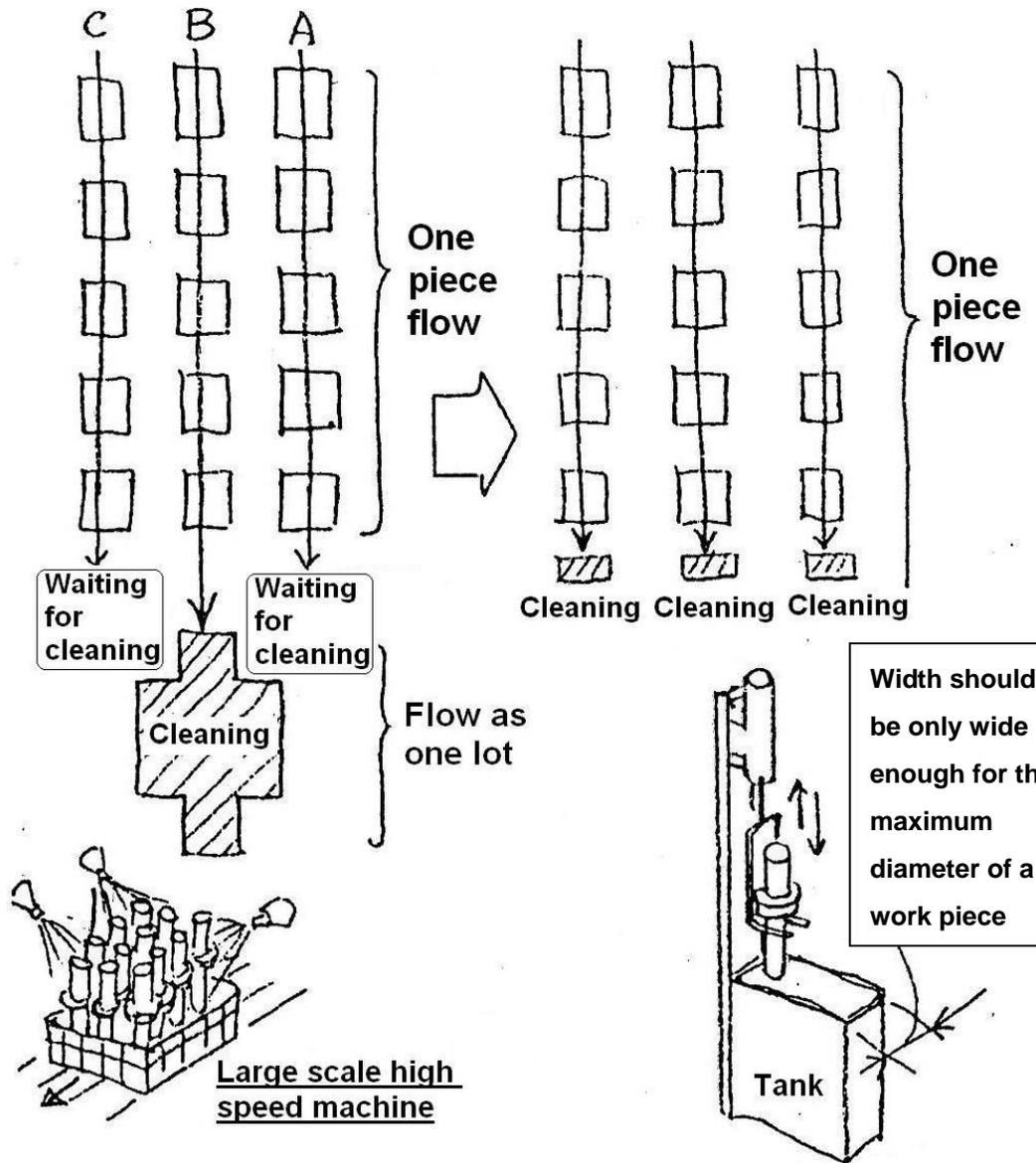
<p>4</p>	<p>Unloading point is at same position as next process's loading point</p>	
<p>5</p>	<p>Chaku-chaku line(load-load line)</p> <p>Auto ejection system should be equipped to each process and an operator should only load work piece continuously without unloading</p>	<p>• Example of utilizing exhaust air pressure from air cylinder</p> <p>Cylinder for work piece ejection When press position is up, pusher moves forward by exhaust air pressure</p>
<p>6</p>	<p>Ire-pon(Auto setting) Dashi-pon (Auto ejection) machine</p> <p>Machine equipped by auto setting and auto ejection. Operator only throw the work piece into loading entrance position</p>	<p>Ire-pon (auto setting)</p> <p>Dashi-pon(auto ejection)</p>

7

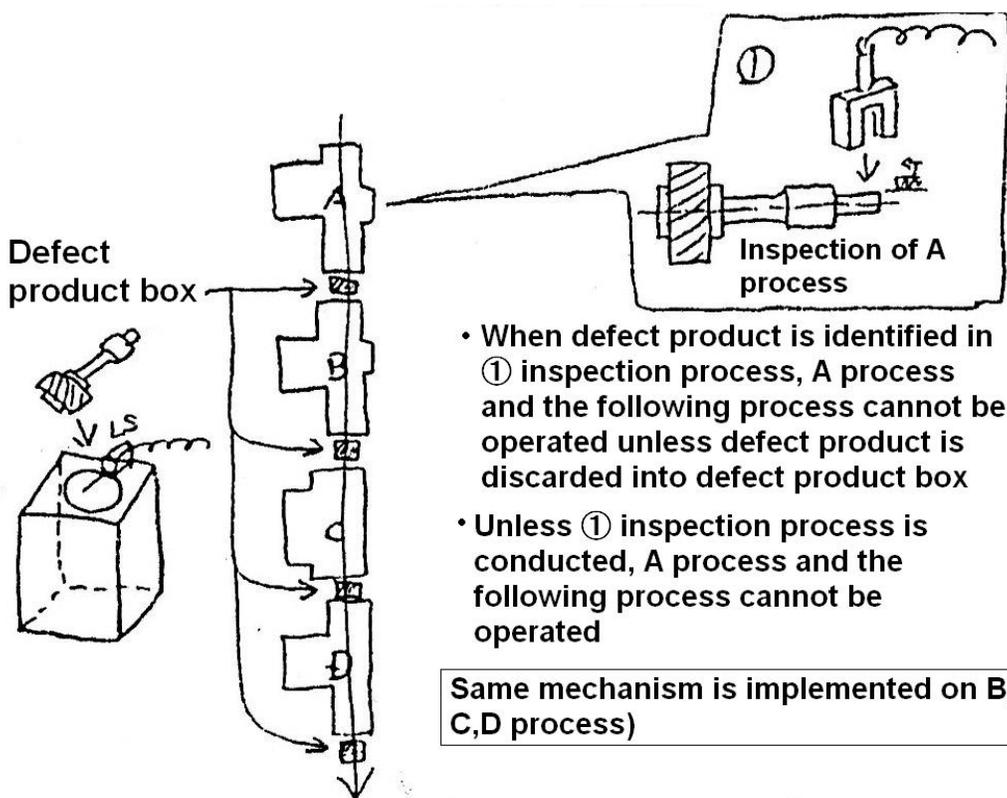
Machine(Equipment)  
suitable for one piece  
flow

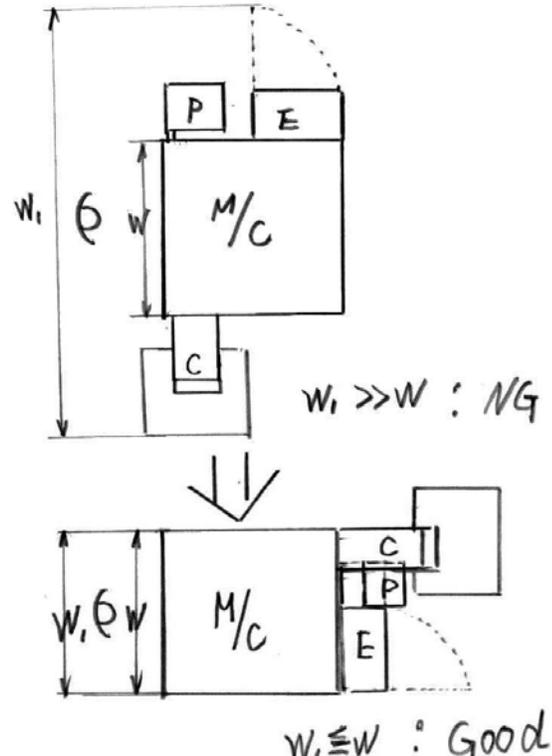
(One piece flow  
equipment)

- No more Monument,
- No more share  
Resource



**Small scale machine for one piece flow**  
Small equipment enough to clean one by one within takt time

<p>8</p>	<p>JIDOUKA (Pokayoke)</p> <p>Autonomation (Automation with human)</p> <p>Pokayoke(mistake proof)</p> <p>•Mechanism that a line stops with abnormal situation  (abnormal quality, abnormal machine condition, abnormal quantity)</p>	<p>•Example quality abnormality stops line.</p>  <ul style="list-style-type: none"> <li>• When defect product is identified in ① inspection process, A process and the following process cannot be operated unless defect product is discarded into defect product box</li> <li>• Unless ① inspection process is conducted, A process and the following process cannot be operated</li> </ul> <p>Same mechanism is implemented on B, C,D process)</p>
----------	---	---

<p>9</p> <p><b>Design of machine</b></p> <p>•No accessories on the side of the machine</p> <p>Example</p> <p>Chip Conveyer, Hydraulic Pump unit, Electric panel, etc.</p> <p>&lt; Benefit &gt;</p> <ul style="list-style-type: none"> <li>•Layout of machine close each other...shortest walking distance</li> <li>•Maintenance for performance check can be fully completed from the back of machine.</li> </ul>	 <p><math>w_1 \gg w : NG</math></p> <p><math>w_1 \approx w : Good</math></p>
---	--

10 An operator does the standard work inside of the cell.

Machine checking standard operation by the maintenance person should be done outside the cell.

