

2.3 THE NEW FRONT

Current state

- **Production (P)**
 - **Production Rate**
 - **Production Cost**
 - **Production Quality**
 - **Production Safety**
 - **Production Flexibility**
- **Cost (C)**
 - **Material Cost**
 - **Energy Cost**
 - **Water Cost**
 - **Waste Cost**
 - **Transportation Cost**
- **Quality (Q)**
 - **Defect Rate**
 - **Scrap Rate**
 - **Rejection Rate**
 - **Customer Satisfaction**
- **Safety (S)**
 - **Accident Rate**
 - **Lost Time Incidents**
 - **Occupational Injuries**
 - **Environmental Incidents**
- **Flexibility (F)**
 - **Changeover Time**
 - **Production Variety**
 - **Capacity Expansion**
 - **Supply Chain Resilience**



PRODUCTION SYSTEMS

Production Lines

Assembly Line	Flow shop process
Jobbing Method	Jobbing
Jobbing Method	Jobbing
Jobbing Method	Jobbing
Jobbing Method	Jobbing
Jobbing Method	Jobbing
Jobbing Method	Jobbing
Jobbing Method	Jobbing
Jobbing Method	Jobbing

Production Process Flow

Jobbing Method



Production System

Jobbing Method

Jobbing Method

Jobbing Method

1.1 THREE 2D-SCANS

Legend (see Appendix)

 Stopping feature	Scanned by SICK LMS
 Stopping feature	Scanned by SICK LMS
 Stopping feature	Scanned by SICK LMS
 Stopping feature	Scanned by SICK LMS
 Stopping feature	Scanned by SICK LMS
 Stopping feature not scanned	Scanned by SICK LMS
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 Stopping feature not scanned	Scanned by SICK LMS
 Stopping feature not scanned	Scanned by SICK LMS

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1.3 IDENTIFYING POINTS

Identifying Points

- **Identifying Points** (Start Body)
- **Identifying Points** (End Body)
- **Identifying Points** (Start)
- **Identifying Points** (End)
- **Identifying Points** (Start)



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PLU TRENDS OVER TIME

CURRENT MARKET CONDITIONS

- Shipping Volume: 2018
- Inventory: 2018
- Shipping Volume: 2019
- Price Movement: 2018-2019
- Inventory: 2018
- Inventory: 2019



SHIPPING VOLUME TRENDS

2018-2019

PLU PRICE MOVEMENT OVER TIME

2018

2019

2019



5.4 THREE-DIMENSIONAL

5.4.1 THREE-DIMENSIONAL

- **Three-Dimensional** **Three-Dimensional**
- **Three-Dimensional** **Three-Dimensional**
- **Three-Dimensional** **Three-Dimensional**
- **Three-Dimensional** **Three-Dimensional**
- **Three-Dimensional** **Three-Dimensional**
- **Three-Dimensional** **Three-Dimensional**
- **Three-Dimensional** **Three-Dimensional**



Figure 5.4.1: Three-Dimensional

Figure 5.4.1

2.2.3.11 3D-Modellierung (Körper)

3D-Modellierung (Körper)

- **Zeichnen** (2D)
- **Skizzieren** (2D)
- **Skizzieren** (3D)
- **3D-Modell**
- **Skizzen** (3D)
- **Skizzen** (2D)



6.2 2D Mechanisms (Contd.)

2D Mechanism with 6 links

 revolute joint	 revolute joint
 revolute joint	 revolute joint
 revolute joint	 revolute joint
 revolute joint	 revolute joint
 revolute joint	 revolute joint
 revolute joint	 revolute joint



Figure 6.2.2: 2D Mechanism with 6 links