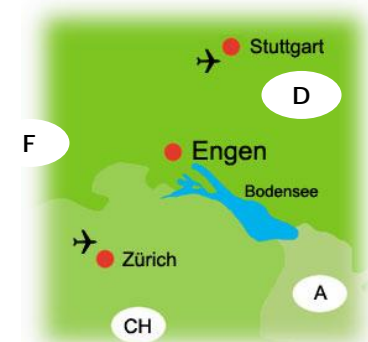




# Introduction

**waldorf**  
††† technik

## to Waldorf Technik



Overview of the company:

# Waldorf Technik focuses on High speed automation systems

- n Our Business: **Customer-specified automation systems for injection moulders**
- n Our Focus:
  - n **Medical & Healthcare products**
  - n **Packaging**
  - n **Plastic cutlery & Drinking vessels**
- n Experience Over 1,000 projects installed worldwide
- n Facts Founded in 1986. Currently 63 employees, sales growth in last 2 years: + 29 %



## Why do successful companies invest in automation technology? Key reasons

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All our clients pursue benefits through...

- > Visible and measurable increase of **Efficiency**
- > Cost Reduction by effective **Quality Control**
- > **Cost Savings** e.g. in Supply Chain and labour content
- > **Added value** given to the product.

Conclusion:

The key reason to invest in an automation system from Waldorf Technik is: **A Growth in profitability !**

## Specific points to be considered:

- n How to define what is „high speed“ in the injection moulding business?
- n What are the characteristics of a high speed automation system?
- n Bespoke high speed automation systems are expensive. Can they be profitable?
- n Example I                      Profit from a high speed example.
- n Example II                     Profit from a nominal speed example
- n Videos

## The High speed Moulding Process with Automation

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- n Cycle times inclusive of take out process between **2.0 - 8.0 sec.**
- n Influence on cycle time reduced to a minimum of **(0.1 - 0.8 sec.)** by take out process
- n **Optimal acceleration ( $a \geq 4 - 11 \text{ G}$ )**  
dependant on moving mass
- n **Optimal process rate** depending on drive technology  
(Mechanical drive / belt / linear motor)

## High speed Automation can be achieved with

n **High-performance actuators**



n **Minimisation of weights**



n **Ultra fast gripper functions**



## ... as well as by process-orientated optimisation of the general concept

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- è **Reduction of distances**  
by side entry take out systems and gripper functions
  
- è **Optimised process criteria**
  
- è **Direct hand over to downstream automation**  
Direct and fast handling of the product leads to
  - è increased output,
  - è increased precision/quality of finished parts and
  - è reduced logistical expenses

High speed automation systems are developed bespoke to customer requirements ...

... they naturally cost more than a standard system.  
Can they be profitable?

Example: cycle time IMM

**Product A**

**5.4 sec**

**Product B**

**13.8 sec**

Examples

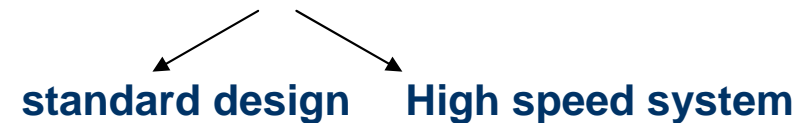
- + Packaging,
- + plastic cutlery,
- + MedTec-Products such as pipette tips etc.
  
- + technical parts as for automotive industry

# High speed systems will multiply profit margin for products with short cycle times

## Example:

### Product A

5.4 sec



Additional time for robot take out

1.5 sec

0.6 sec (- 60 %)

Total cycle time incl. take out

6.9 sec

6.0 sec

Output per year (parts)

13,88 Million

15,96 Million (+ 15%)

(e.g. 4 cavities, 7,000 hours per year, assuming availability of 97 %)

annual sales (price e.g. €60,-/1000 pieces)

832,800.-- €

957,600.-- €

Material costs (65 % of sales)

541,300.-- €

622,400.-- €

Other costs (personnel, energy, depreciation etc.)

258,200.-- €

268,100.-- €

Profit margin:

33,300.-- €

67,100.-- € (+ 102%)

## Benefit will be clearly lower for products with medial cycle times

<b>Example:</b>	<b>Product B</b>		<b>13.8 sec</b>
	<b>standard design</b>	<b>high speed design</b>	
<b>Additional time for robot take out</b>	<b>2.0 sec</b>	<b>1.2 sec (- 40 %)</b>	
<b>Total cycle time incl. take out</b>	<b>15.8 sec</b>	<b>15.0 sec</b>	
<b>Output per year (parts)</b> (e.g. 4 cavities, 7,000 hours per year, assuming availability of 97 %)	<b>6,06 Million</b>	<b>6,38 Million (+ 5 %)</b>	
annual sales (price e.g. €130,-/1000 pieces)	787,800.-- €	829,400.-- €	
Material costs (65 % of sales)	472,700.-- €	497,600.-- €	
Other costs (personnel, energy, depreciation etc.)	244,200.-- €	248,800.-- €	
<b>Profit margin:</b>	<b>70,900.-- €</b>	<b>82,900.- € (+ 17%)</b>	

## Highspeed automation systems are a key factor for products with short cycle time

Examples:

cycle-time IMM

Robot-time Highspeed

Profit Margin

Payback

**Product A 5.4 sec**

**- 60 %**

**+ 102 % 1-2 Years**

**Product B 13.8 sec**

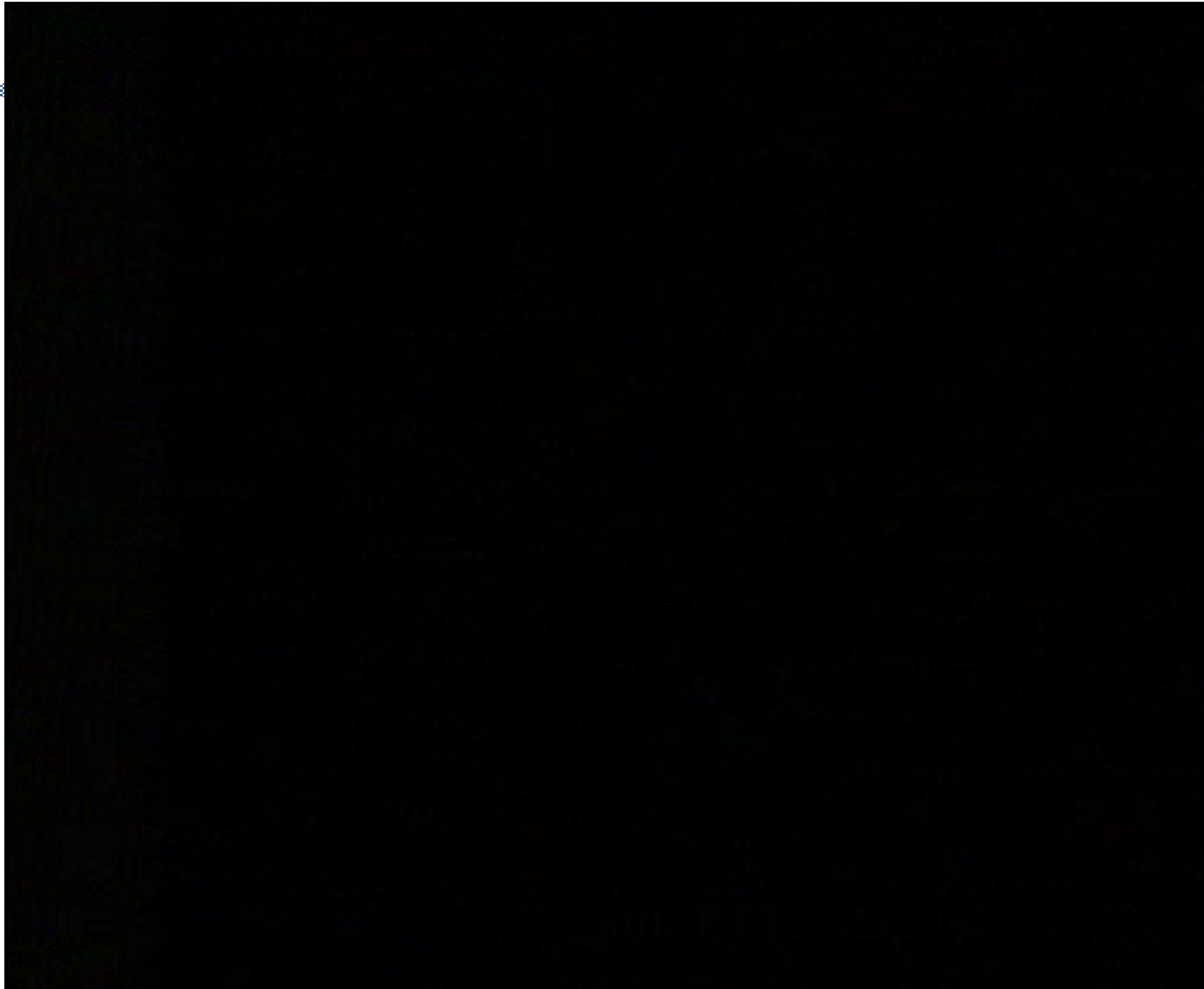
**- 40 %**

**+ 17 % 4-8 Years**

## Video Example of IML System.



## Video Example of Closure product.



## **Result: High speed automation systems strengthen the future of European injection moulding companies**

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### **Market trend:**

- ▶ **High-performance moulds**  
**à High cavitation**
- ▶ **High speed injection moulding machines**  
**à Short cycle times**

### **Highspeed automation systems**

***are key factor for products  
with a short cycle time***

## Result: High speed automation systems strengthen the future of European injection moulding companies

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**High speed automation  
for**

**waldorf**  
† † † technik

**à High cavitation**

**à Short cycle times**

**That's our business !**



**Thank you  
very much  
for your  
attention.**

**Any questions?**

