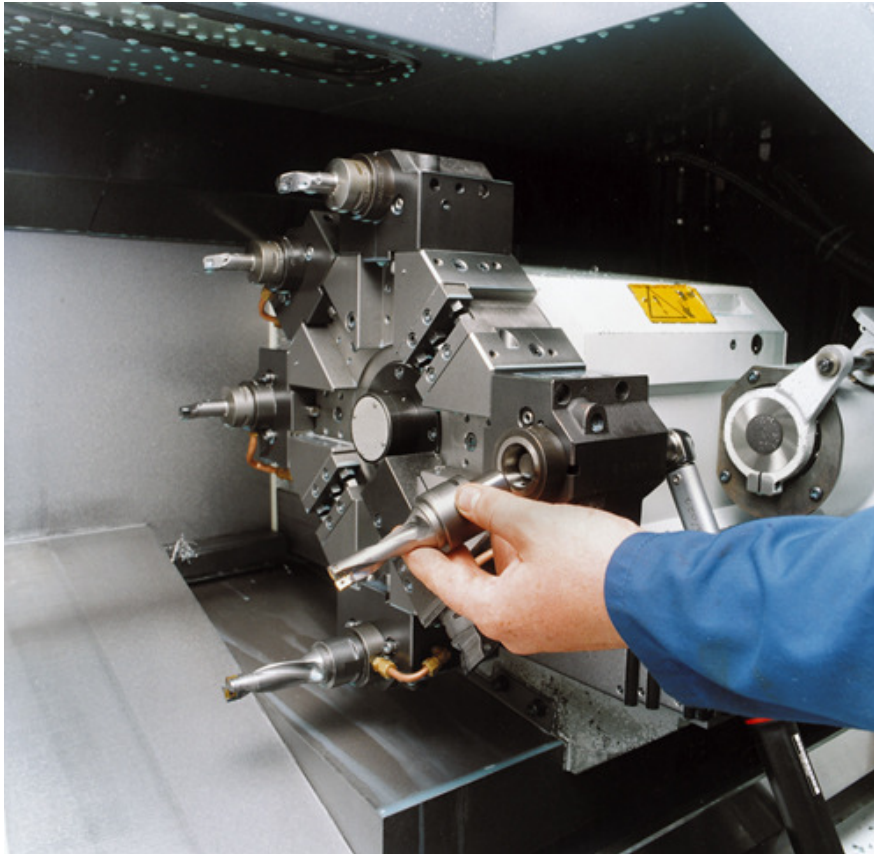


## **Set Up time / Changeover Reductions**

**Assisted by Coromant Capto® quick change tooling system**

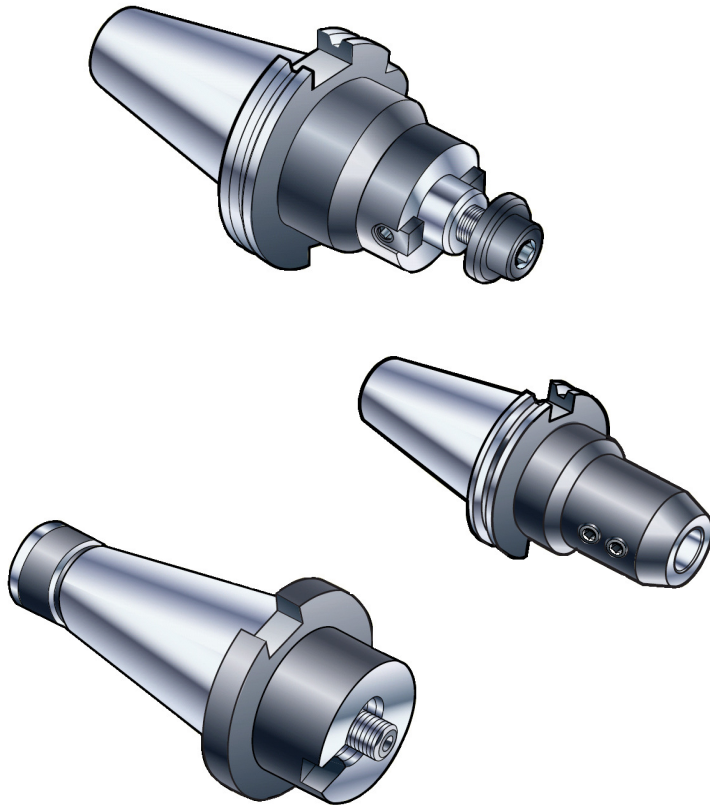
Actual Case Study

# Tool holding systems



- The tool holding interface with the machine plays a very important part in the cutting process
- Stability, time for tool changing, accuracy, flexibility, handling and storing is of vital importance for successful machining
- Compared to conventional shank tools a quick change system can increase the effective cutting time by 25%

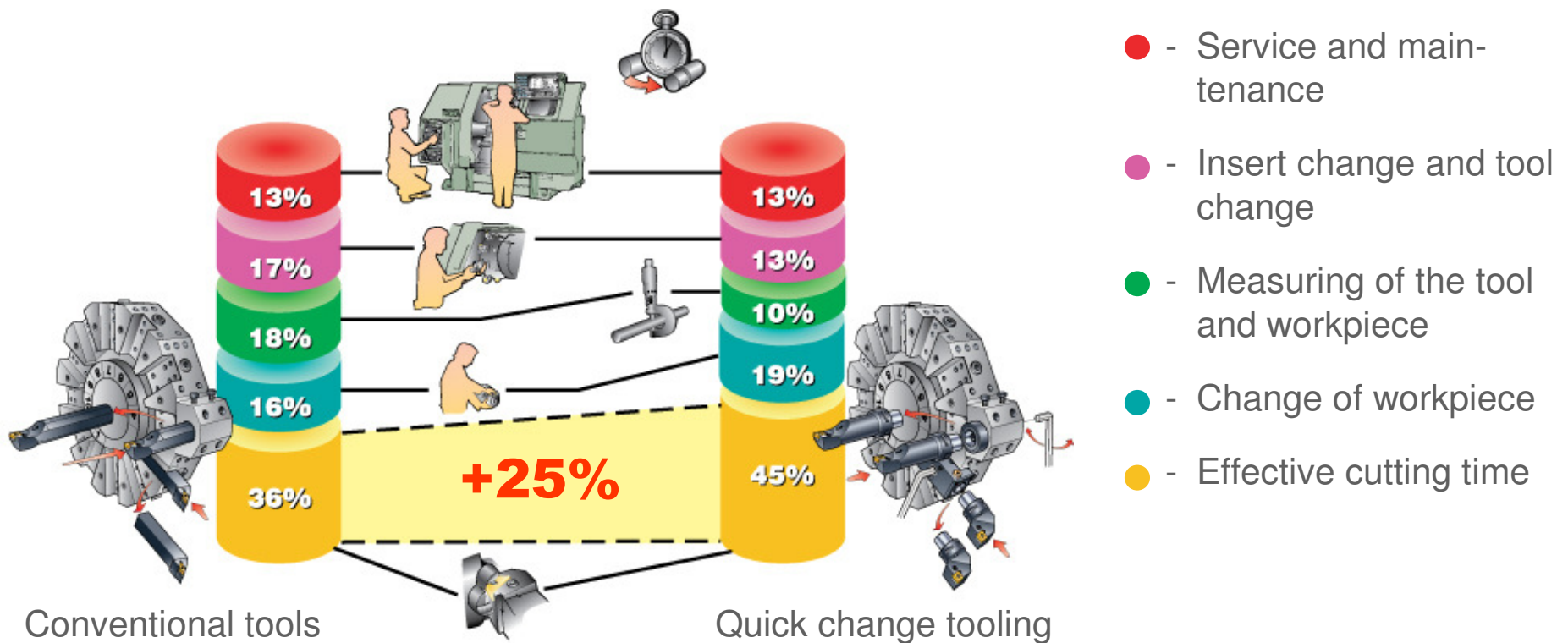
# History of machine tapers



- This style of taper was introduced 40 years ago
- The taper was the basis of most machine tool spindles, due to the long taper, giving secure contact and stability
- It is still popular today, in various sizes, using taper  $7/24$ , but it is not a modular tooling solution

# Reduce downtimes in your machines

Only 36 percent of machine time is used for metal cutting

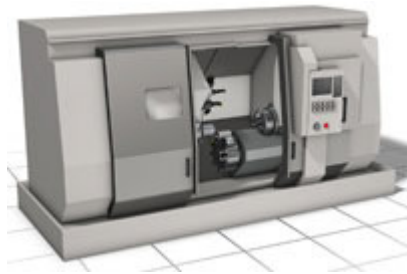


Quick change tooling offers a productivity increase of 25%

# Coromant Capto® system

One system. One solution. For the entire workshop.

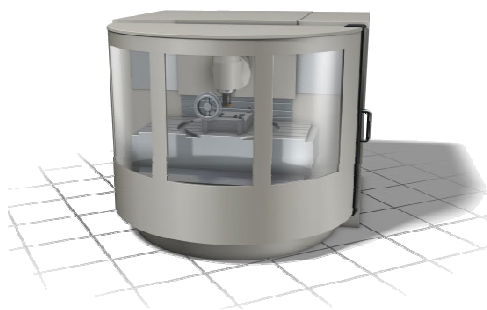
Turning center



Vertical lathes



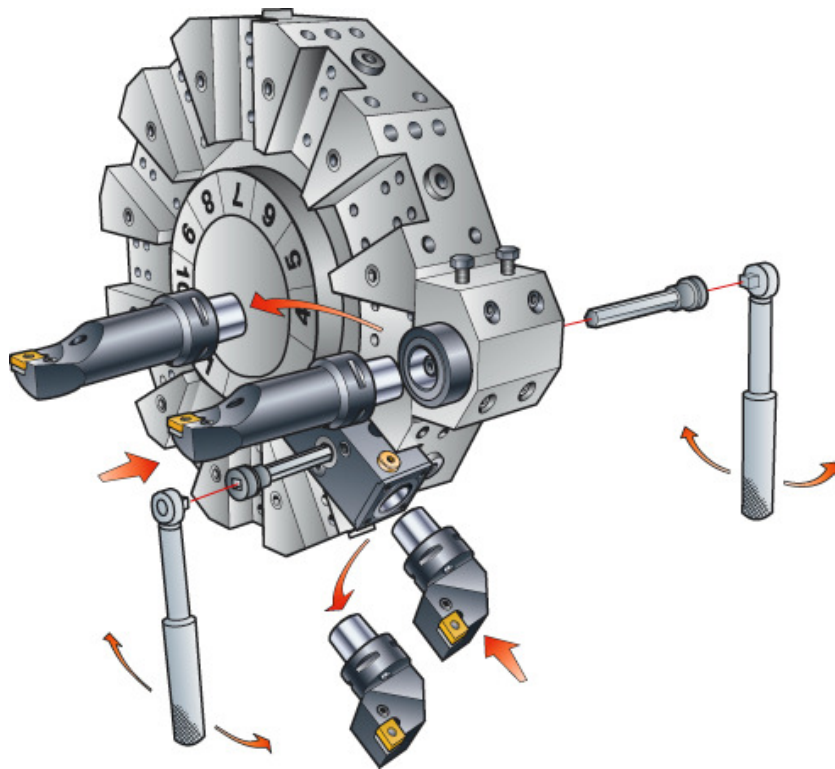
Machining center



Multi-task machines



# Quick change tooling for Turning centers



- A quick-change system offers:
  - Faster and more efficient tool changing
  - Inserts to be changed outside the machine
  - Pre-setting possibilities
- The most economical system for:
  - Small batch production, quicker set-up times
  - Operations with frequent insert changes
- Less than 180° for clamp and unclamp



# Time Study – before & after

Machine:  
**Puma 12LC**

### Conventional Tooling

Average Tools per Set Up <b>3</b> (A)	Time per Tool Change (mins.) <b>5</b> (B)	Time per Set Up (mins) <b>15</b> (A) x (B) = (C)
---	---	--

Average Number of Set Up's per shift <b>2</b> (D)	Time per Set Up (mins.) <b>15</b> (C)	Total Set Up Time (mins) <b>30</b> (D) X (C) =E
---	---	---

Average Number of Insert Indexes per Shift (mins.) <b>0</b> (F)	Time per Insert Index (mins.) <b>0</b> (G)	Total Insert Indexing Time (mins) <b>0</b> (F) x (G) = (H)
---	--	--

Average Number of Measuring Cuts per Shift <b>0</b> (I)	Time per Measuring Cut (mins.) <b>0</b> (J)	Total Measuring Cut Time (mins.) <b>0</b> (I) x (J) = (K)
---	---	---

**Total Time**  
**30**  
**(E + H + K) = (L)**

### Quick Change Tooling

Average Tools per Set Up <b>3</b> (AA)	Time per Tool Change (mins.) <b>1</b> (BB)	Time per Set Up (mins.) <b>3</b> (AA) x (BB) = (CC)
--	--	---

Average Number of Set Ups Per Shift <b>2</b> (DD)	Time per Set Up (mins.) <b>3</b> (CC)	Total Set Up Time (mins.) <b>6</b> (DD) x (CC) = (EE)
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Average Number of Insert Indexes per Shift (mins) <b>0</b> (F)	Time per Insert Index (mins.) <b>0</b> (GG)	Total Insert Indexing Time (mins.) <b>0</b> (F) x (GG) = (HH)
--	---	---

Average Number of Measuring Cuts per Shift <b>0</b> (I)	Time per Measuring Cut (mins.) <b>0</b> (JJ)	Total Measuring Cut Time (mins.) <b>0</b> (I) x (JJ) = (KK)
---	--	---

**Total Time**  
**6**  
**(EE+ HH + KK) = (L)**



# Financial Justification



## Comparison

Conventional Tool Holder Total Set Up Time (mins.)	Quick Change Tool Holder Total Set Up Time (mins.)	Set Up Time Savings
<b>30</b>	<b>6</b>	<b>24</b>
(E)	(EE)	(E) - (EE) = (M)

Conventional Tool Holder Total Insert Index Time (mins.)	Quick Change Tool Holder Total Insert Index Time (mins.)	Insert Index Time Savings (mins.)
<b>0</b>	<b>0</b>	<b>0</b>
(H)	(HH)	(H) - (HH) = (N)

Conventional Tool Holder Total Measuring Cut Time (mins.)	Quick Change Tool Holder Total Measuring Cut Time (mins.)	Total Measuring Cut Savings (mins.)
<b>0</b>	<b>0</b>	<b>0</b>
(K)	(KK)	(K) - (KK) = (O)

### Total Time Saved

**24**  
**(M + N + O) = (P)**

## Shifts/Year

Total shifts per day	# of days per week	# weeks per year
<b>3</b>	<b>5</b>	<b>50</b>
(X)	(Y)	(Z)

## Annual Savings

Total Time Savings per Shift (mins.)	Number of Shifts per Year	Total Time Savings per Year (mins.)
<b>24</b>	<b>750</b>	<b>18000</b>
(P)	(X*Y*Z)=(Q)	(P) x (Q) = (R)

Total Hours Saved per Year	Hourly Machine Burden Rate	Total Annual Savings
<b>300.00</b>	<b>108</b>	<b>32400.00</b>
(R / 60) = (S)	(T)	(S) x (T) = (U)

## Return on Investment

Quick Change Tooling Investment \$25,000	Total Annual Savings <b>\$32,400</b>	Payoff Time (in Years) Investment <b>0.77</b>
(V)	(U)	(V) + (U) = (W)

Note: Quick Change Tooling Investment includes cost of tools, peripherals (gauging, etc.) and training.

## Payoff Time (in Months) Investment

**9**

## Total 1st Year Savings

**\$7,400**

## Total Subsequent Yearly Savings

**\$32,400**