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IN-DEPTH KNOWLEDGE OF HIGH PRESSURE

COMPARATIVE RATIONAL-ISATION CALCULATIONS

INTRODUCTION

// The following calculations are based on a customer's situation. The calculations are based on a turning/milling centre that now operates in combination with combiloop CL3 and automatic reversible flow filter.

Outline data:

// Turning/milling centre

// Machine running time (with combiloop): 209 days per year / 21 hours per day

// Hourly rate for machine here: approx. € 68 per hour

EXTENSION OF TOOL LIFE

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	Characteristic	Advantage/benefit
WITHOUT COMBILOOP CL3		
Drill wear with 150,000 turned parts	107 drills (including regrinding)	
Costs per drill	€ 96.00	
Total costs for drills	107 x € 96.00	€ 10,272.00 per year
WITH COMBILOOP CL3		
Extension of the tool life here:	sevenfold	
Drill wear with 150,000 turned parts	15 drills (including regrinding)	
Costs per drill (with internal cooling)	€ 320.00	
Total costs for drills	15 x € 320.00	€ 4,800.00 per year
Potential savings with combiloop per machine		**€ 5,472.00 per year**

DRILLING WITHOUT CLEARING

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	Characteristic	Advantage/benefit
WITHOUT COMBILOOP CL3		
Clearances	required	
Production time for 150,000 turned parts	209 production days	
Costs based on the hourly machine rate	209 days x 21 hours x € 68.00	€ 298,452 per year
WITH COMBILOOP CL3		
Clearances	not required	
Time saved per item here	up to 8%	
Production time for 150,000 turned parts	192 production days	
Costs based on the hourly machine rate	192 days x 21 hours x € 68.00	€ 274,176 per year
Potential savings with combiloop per machine		**€ 24,276.00 per year**

ENERGY EFFICIENCY (ELIMINATION OF COOLING)

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	Competitor product (screw pump)	combiloop CL3 (piston pump)	Benefits
COMPARED WITH RIVAL CONSTANT PUMPS (E.G. SCREW PUMP)			
Power consumption pump with maximum output 30 l/min and 80 bar high pressure	7.0 KW	4.0 KW	
Energy saving	-	3.0 KW	
Additional energy saving by adapting the pump	-	1.0 KW	
Potential savings with combiloop per machine	**209 days x 21 hours x € 0.15**		**€ 2,633 per year**
SCREW PUMP REQUIRED ADDITIONAL COOLING:			
Additional cooling	required	not required	
Power consumption	Conversion of excess performance into heat	adjusted	
Potential savings with combiloop per machine	**209 days x 21 hours x 3.0 KW x € 0.15**		**€ 1,975 per year**

eco+ dynamic power concept

OVERVIEW OF RATIONALISATION POTENTIAL

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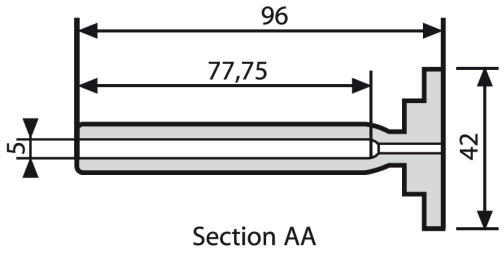
Rationalisation area	Description	Advantage	Value
High pressure	• Drill wear • Working without clearing	Sevenfold reduction 8% time saved	€ 5,472 € 24,276
Full flow or bypass filtration	• No filter changes, no consumables • Improved CL life for full flow filtration	Time and cost advantage 10% cost savings	€ 1,380 € 950
Energy efficiency	• Regulating pump effect • Cooling for constant pump	Approx. 3 - 4 kW/hour savings Does not apply to CL + CS (cost advantage)	€ 2,633 € 1,975
Process reliability	• Improved quality output • Unattended multi-shift operations possible in practice	Here, the advantage can be estimated only with caution	€ 6,000
Total		**192 production days/year 21 hours/day**	**€ 42,686**

// Not every one of these effects can be applied accumulatively at every customer location

// However, most customers will find one or two examples that they can transfer in their minds to their own situation

// Investments pay off – positive ROI achieved

DEEP-HOLE DRILLING IN-HOUSE VS. OUTSOURCING



	Characteristic	Advantage / benefit
WITHOUT COMBILOOP		Per year
Outsourcing	134,400 pieces à € 0.33	€ 44,352
WITH COMBILOOP CL3		
Drill wear per item	134,400 pieces à € 0.03	€ 4,032
Additional machine time	134,400 pieces à € 0.15	€ 20,160
Costs per item if made in-house	134,400 pieces x € 0.18	€ 24,192
Benefit from in-house production		**€ 20,160**

// Sliding headstock automatic lathe without high pressure – deep holes could not be drilled

// Drilling therefore outsourced

// This example does not illustrate the time saved by the advantage that the part is finished on the one machine.

// Example from practice:

// Part according to drawing, see fig.

// Drill hole depth: 77.75 mm

// Drill hole diameter: 5 mm

// 192 production days outputting 700 parts a day

// Total annual production approx 134,400 parts