cost**data**® calculation
software description

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1 Performance description costdata® calculation

1.1 Modules

The costdata® calculation consists of the following several modules:

- Database wages and salaries
- Database material costs
  - Metals, incl. material simulation module
  - Polymers
- Database overhead costs
- Database workplaces, incl. machine hourly rate simulation module
- Database currencies
- Calculation module
  - Cycle time module
- Share and saving database as knowledge database (My data/Our data)
- Reference databases of products and processes

1.2 Features

The software costdata® calculation provides the analysis and evaluation of the costs of components, assemblies and tools, which might be produced by the following methods:

- moulding (casting, sintering, injection moulding, extrusion, …)
- forming (pressure forming, deep drawing, forming by bending, …)
- separating (punching, shear cutting, laser cutting and laser drilling, eroding, metal cutting, drilling, milling, turning, broaching, sawing, grinding, lapping, spark eroding, cleaning, …)
- joining (welding, soldering, riveting, mounting, pressing, vulcanizing, …)
- reworking (deburring, purifying, cable assembling, quality control, composition, ….)
- coating (varnishing, galvanising, spraying, …)
- altering of material properties (hardening, annealing, preheating, …)
- miscellaneous (robots, compression moulds PU foam, cutting-grinding-washing-line, serigraphy, …)

The following analyses are available:

- cost driver analysis (calculation of the cost driver)
- relocation
- efficiency analysis
- calculation of the preproduction costs
- changes in costs (cost simulation of change in single values)
- volume calculation
- currency conversion
- breakeven analysis

- supplier analysis (development)
- overhead-covering

In addition, the standard analyzes are available:

- calculation of setup costs
- cost change (cost simulations when changing use factors)

1.3   costdata® databases/input factors

Databases, input factors and benchmarks with relevant information are part of the costdata® calculation and under the licence agreement available for the customer. The scope and content of the data are determined as part of the updates of costdata and will be updated every three (3) months and supplemented by additional data records. These updates are part of the licence agreement. As reference data, the following data are considered:

- country-/benchmark-data/overhead costs
- wages/salaries
- material (e.g. mechanical and physical properties and chemical composition)
- material prices (steels, metals, alloys and polymers/plastics)
- machine costs

Within the costdata® calculation additional databases (MyData, OurData) are included in which the user can modify, add and edit his/her own data. The implementation of an update only refreshes the databases of costdata GmbH. The data and content entered by the user himself/herself remain unaffected and must be changed -if necessary- by the user himself/herself.

1.3.1   costdata® overhead costs

The costdata® overhead costs database contains more than 4 million overhead factors of >30 industries and over 2,100 regions worldwide. The guided countries include partly tariff zones, industrial parks, outskirts, etc.

The costdata® benchmark country data contain essentially the most important structural costs of the major industrialized countries in the world. The content for each country includes the following input factors for calculation:

- social costs
- costs of space
- interest charges
- energy costs

Example selection overhead factors

1.3.2 costdata® wages and salaries

The costdata® wages and salaries currently include wages and salaries of more than 2,100 areas worldwide for 10 wage and salary groups in 15 industries. The content for each country includes the following data necessary for the calculation:

- wages and salaries
- extra pay
- incidental wage costs

Other regions will be added constantly. There are for example tariff zones, border areas, industrial parks and city areas considered.

Overview of the available 15 industries

Industry	Electro-technology	⌄
	Brewery	
	Chemistry/electroplating	
	Wire industry	
	Printing industry	
	Retail trade	
	Iron/steel industry	
	Iron/steel industry/large presses	
	Iron/steel industry/welded parts	
	Iron/steel industry/drawn sheet metal parts	
	Electro-technology	
	Electro-technology / electromechanical parts simply	
	Electro-technology / electromechanical parts high-technically	
	Electro-technology / printed circuit board assembly	
	Electro-technology / control / electrical technical partial / automat.	
	Foundry equip.	
	Foundry nature/aluminum of pressure pouring parts	
	Foundry nature/Sinters	
	Glass industry	

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Overview of the available 10 wage and salary groups

wage groups

salary groups

costdata wages
Group
Unskilled employee/inexperienced
Unskilled employee/experienced
Trained employee/inexperienced
Trained employee/experienced
Specialist/inexperienced
Specialist/experienced
Assistant foreman/inexperienced
Assistant foreman/experienced
Foreman/inexperienced
Foreman/experienced

costdata salaries
Group
Trainees 1st level training
Trainees 2nd level training
Unskilled/inexperienced office staff
Unskilled/experienced office staff
Inexperienced specialist
Experienced specialist
Specialist with specialized university education
Specialist with university education
Executives
Management

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1.3.3 costdata® material costs

The costdata® material costs currently contain a database with >27,000 material data of the most common materials of polymer and plastics, aluminium, various metallic alloys and steels for 8 economic areas (Europe, North and Central Asia, North America, East Asia, South America, South Asia, South Africa, Southeast Asia).

Furthermore the costdata® material costs contain the prices per ton as well as the properties of the material (e.g. mechanical and physical properties and chemical composition). There is the possibility of programming an interface to existing ERP systems, to transmit such data.

- Material price in € per tonne
- Chemical composition
- Mechanical properties
- Standard references and international names
- Typical applications

Material Number	Name	Standard	Price
x.xxxx	H-24	NBR 6189	13,017.544 €/t
1.3350	W6Mo6Cr4V2	GB/T 9943	10,350.428 €/t
1.xxxx	Arcos 320	Arcos Industries, LLC	6,030.198 €/t
1.4563	X1NiCrMoCuN31-27-4 (ISO)	ISO 16143-3	5,659.431 €/t
1.xxxx	AVESTA 904L Welding wire	Outokumpu	5,465.349 €/t
1.4841	X15CrNiSi25-20	SEW 470	4,927.510 €/t
1.xxxx	CF-3MA	Waukesha Foundry Co., Inc.	3,899.949 €/t
1.4912	X7CrNiNb18-10 (EU)	DIN EN 10088-1	3,883.783 €/t
1.4837	Grade HH33	ASTM A 708	3,796.449 €/t
1.xxxx	Carpenter VIM-VAR M-50 High Speed Steel	Carpenter Technology Corporation	3,689.212 €/t
1.4949	X3CrNiN18-11	DIN 17459	3,665.270 €/t
1.xxxx	AVESTA FCW 309L-PW	Avesta Welding	3,528.899 €/t
1.4307	X2CrNi18-10	ISO 9329-4	3,527.701 €/t
1.4309	ZG03Cr18Ni10N	GB/T 2100	3,525.356 €/t
1.4542	X5CrNiCuNb16-4 (EU)	DIN EN 10088-4	3,183.093 €/t
1.xxxx	BÖHLER FOX EAS 2	Böhler Schweißtechnik Austria GmbH (BSGA)	2,932.226 €/t
1.xxxx	440-XH Alloy	Carpenter Technology Corporation	2,482.106 €/t
1.xxxx	436		2,431.465 €/t
0.9610	GX300NiMo3-Mg		2,404.682 €/t
1.4113	Type 434	ASTM A 240	1,970.109 €/t
1.xxxx	AL 453	Allegheny Technologies Inc.	1,814.648 €/t
5.1.02.03	PA 6.6 Compound Color assorted	DIN EN ISO 1043-1:2001	1,710.000 €/t
5.1.02.03	PA 12 Pouder White	DIN EN ISO 1043-1:2001	1,500.000 €/t
1.2510	100MnCrW4	DIN 17350 , EN ISO 4957	1,319.694 €/t
1.6579	G35CrNiMo6-6	EN 10293	1,283.252 €/t
x.xxxx	4517 (BRA)	NBR NM 87	1,216.210 €/t
1.0546	Q345q-D	GB/T 714	1,146.699 €/t
1.5403	SBV1B	JIS G 3119	1,146.524 €/t
1.6228	15NiMn6	SANS 50028-4	1,073.953 €/t
1.0490	S275N	SANS 50025-3	1,056.049 €/t
x.xxxx	3115 (ARG)	IRAM IAS U 500 600	989.833 €/t
1.7220	ML35CrMo	GB/T 6478	926.522 €/t
1.7271	23CrMoB3-3		926.440 €/t

Example record material

The material simulation module allows to make concretions on the material data. The user thus receives indication values for the price changes in relation to regional market effects, volume effects and semi-finished product effects. The simulation uses all contained steel and non-steel alloys within the material database. The simulation gives the user significantly more concrete data for materials and can thus adapt his calculations to the conditions of the suppliers. Scenarios for suppliers in different country regions or purchase quantities can be mapped and increase the accuracy of the calculation.

Details	Chemical Composition	Properties	Simulation

Current Material	**1.xxxx DC03EK AFCS**
Material price	651.06 €/t
Region	Europe
Semis	Ingots
Volume Discount	1 t
Material Thickness	1 mm
Price of simulation	651.06 €/t

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1.3.4 costdata® workplaces

The costdata® workplaces currently contain the data from > 10,500 machines with detailed information, prices and simulations for the usual production processes for 8 economic areas (Europe, North and Central Asia, North America, East Asia, South America, South Asia, Southern Africa, Southeast Asia). The data of the machines containing among other things machines for the following assembly methods:

- moulding (casting, sintering, injection moulding, extrusion, …)
- forming (pressure forming, deep drawing, forming by bending, …)
- separating (punching, shear cutting, laser cutting and laser drilling, eroding, metal cutting, drilling, milling, turning, broaching, sawing, grinding, lapping, spark eroding, cleaning, …)
- joining (welding, soldering, riveting, mounting, pressing, vulcanizing, …)
- reworking (deburring, purifying, cable assembling, quality control, composition, ….)
- coating (varnishing, galvanising, spraying, …)
- altering of material properties (hardening, annealing, preheating, …)
- miscellaneous (robots, compression moulds PU foam, cutting-grinding-washing-line, serigraphy, …)

Relating to every machine you will find information about e.g. energy demand, floor space, numbers of employees, etc. as well as typical features of the associated assembly method (e.g. pressing force, closing force, etc.).

Each workplace-record may be imported to the calculation and there it is changeable or adjustable. Thus it is possible to calculate with daily precision a machine-hour rate or the process cost of a product accurately.

Example record machine

Within the machine database, the machine user-specific information are available to the user by direct selection of a machine. The machine hourly rate simulation module is also able to determine the result of a machine hourly rate without a complete costly installation of a calculation. A comparison of machine hourly rates for different countries or under different conditions can be simulated within seconds.

Country	Germany	☐ Company: neues Unternehmen
Region	East - (industrial park)	
Hours per year	0.000 h	
Cycletime (min)	0.000 min	
Currency	Euro	
Course factor to €	1.000 € = 1€	

Group: costdata

Name: Mouldmaster 1200

CNC gantry machining center
Table dimensions: 1.200x600 mm
Table load capacity (max.): 1.000 kg
X axis: 1.100 mm
Y axis: 600 mm

Time of purchase: Select a date [15]   Purchase value: 99.900 T€ ☐ as basis of the overheads costs

Depreciation base	99.900 T €	
+ Installation	13.287 T €	
- Residual value	9.840 T €	
/ Amortization period	15.000 years	

= Investment	6.890 T € / year				=	6,889.770 € / year
+ Maintenance	113.187 T € / year	*	3.000 %		=	3,395.601 € / year ☐ Direct input
+ Insurance	99.900 T € / year	*	0.520 %		=	519.580 € / year
+ Inputed interest	113.187 T € / year	*	3.360 %		=	1,901.537 € / year
+ Footprint	93.280 € / year / m²	*	7.130 m²		=	665.086 € / year
+ Proportional ways	665.086 € / year	*	15.000 %		=	99.763 € / year
= Costs per year						13,471.337 € / year
/ Hours per year						0.000
= Costs per hour						0.000 € / h 0.000 € / h
+ Electricity	0.130 € / kWh	*	25.000 kW *	66.000 %	=	2.145 € / h
+ Gas	0.000 € / m³	*	0.000 m³		=	0.000 € / h
+ Water	0.000 € / m²	*	0.000 m²		=	0.000 € / h
+ Compressed air	0.000 € / m³	*	0.000 m³		=	0.000 € / h
+	0.000 €	*	1.000		=	0.000 € / h
= Operating costs						0.000 € / h 0.000 € / h
hour rate				☐ Direct input		0.000 € / h
/ Parts per hour						0.000
= Total						0.000 €

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1.3.5   costdata® currencies

The default currency is Euro. The costdata® currencies contain all major currency exchange rates and their progress at a glance. New currency exchange rates can be generated and updated manually daily and any time by the user. At a touch of a button the data records in costdata® calculation can be converted in any other currency of costdata® currencies.
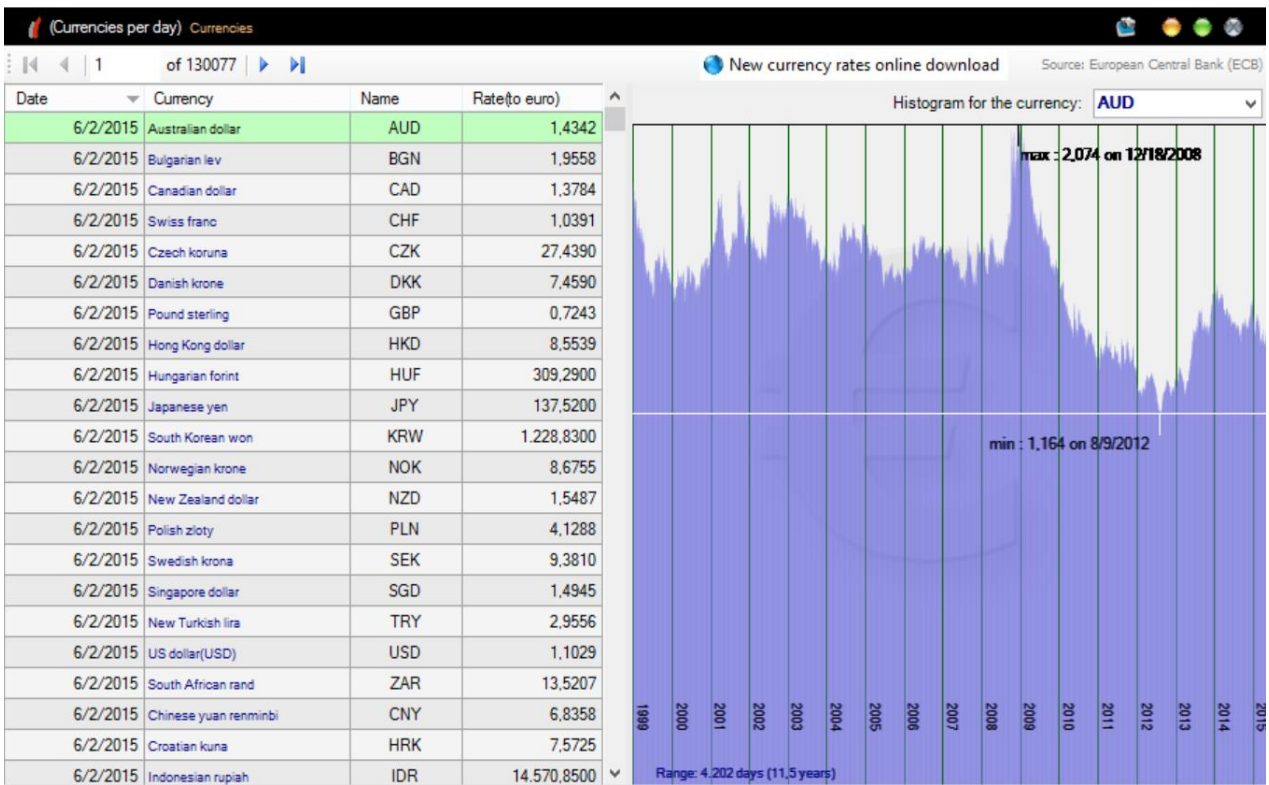
Example currencies

1.3.6   Reference database of products and processes

This reference database allows you to import ready-made products and processes that can be easily modified to calculate the desired product or process.

Bending	
1. Bending, guide plate of Al Mg Si 0.5	0.41 €
2. Frame panel of Al MG Si 0,5	3.00 €
3. Support panel of Al Mg Si 0,5	1.78 €
Casting in lost wax casting	
Casting in lost wax casting	163.67 €
Casting in sand mold	
BOM Casting in sand mold, turbocharger housing with mech. machining	0.00 €
Casting in sand mold, aluminium blank 1.1KG	8.52 €
Casting in sand mold, machine housing 1780 KG	1,608.97 €
Casting in sand mold, turbo charger housing	10.87 €
Cataphoretic painting	
CNC-Machining	
Cold extrusion	
Die-Casting	
Die-Casting and CNC-Machining	
Electronics	

The processes consist of common production methods.

Artificial aging	
Artificial aging	90.00 €/h
Assembly	
Assembly (Punching, turning, welding, riveting assembly, tripping device)	32.70 €/h
Assembly (Tooling, die cast parts, gearbox housing)	82.45 €/h
Assembly and solder 2 copper conductors to stator core inside (Module Asynchronous Motor)	29.23 €/h
Assembly slide shoe and inspection (Injection molding outside door handle unpainted made of Durethan BKV 20 H 2.0)	30.47 €/h
Assembly with a seal carrier	40.79 €/h
Autom. Assembly of rotor, shaft and plastic seal (Module Rotor Mount Asynchronous Motor)	25.27 €/h
Automation connectors assembly line (LAZPIUR, Automation connectors assembly line)	168.16 €/h
Cable connectors assembly line (Assembly line for cable connectors 10 meters long)	68.36 €/h
Clip Assembly (2C Injection Molding Holder and Assembly)	28.67 €/h
Final assembly line incl. electr. testing and packaging (Module Engine Control Unit)	60.26 €/h
Final assembly line including packaging (Module inside car door handle)	278.08 €/h
Loader module for cable connectors assembly line (TE CONNECTIVITY)	46.85 €/h
Mounting motor holder (Module Motor Mount Asynchronous Motor)	25.43 €/h
Pull up the collector, glue it and dry it (Module Anchor Electric Motor)	15.48 €/h
Unclip connecting wires in connector, place rotor in stand and screw together with module motor holder (Module Asynchronous Motor)	29.15 €/h
Assembly Brush Bridge Electric Motor	
Assembly Electronic Engine	
Bending	
Blasting	
Broaching	
Bundling	

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1.4 Cycle time module

The cycle time module includes technology programs in the following categories:

category	program
general	pick and place
	data entry
	string damping
	check torque specified
	going
	putting gloves on
	characteristics
	reading
	non-productive machine times
	machining
	oils and fats
	place
	cleaning
	transporting by air hoist
	open the packing
	using tool
preposition	preposition
coating (painting, coating, galvanising, etc.)	chromating Zn_Fe Cr 6 free
	painting, automat
	painting, electrostatic
	painting, cabin
operating	control element (lever, crank, …)
	handswitch or footswitch
	open or close a splash and chip safeguarding
	cutting tool, switching on and off
drilling	drilling
	tapping, fine thread
	tapping, regular thread
clips working	clips adjusting
	clips attachment
	clips screw in
turning	cutting WSP
	external turning WSP
	internal turning WSP
die-casting	die-casting
deposit	deposit / surface <= 0,25 qm
	deposit / surface > 0,25 qm und <= 1,5 qm
	deposit / surface > 1,5 qm
mounting	mounting
milling	bevel gear milling
	milling gooves
	end mill
	worm wheel milling
	face milling
	vertical roll milling
	rack milling
gas welding and hard soldering	movement, gas welding and hard soldering
	welding time alone, gas welding and hard soldering
grip	grip with handheld magnet, surface <= 0,25 qm
	grip with hand or handheld magnet, surface > 0,25
	grip with hand or handheld magnet, surface > 1,5 qm
	grip with hand, surface <= 0,25 qm
grip and insert	grip and insert
hand held vehicles	bicycle

	manual lift truck
	handcart
	wheelbarrow
	sack truck
hand held engine-driven vehicles	pallett truck
handling container	driving a container
	carry a container
retrieval	retrieval
plumbing work	plumbing work
	clamp on tube
	tube on pipeline
glue	glue
manual arc welding	movement, manual arc welding
	welding time alone, manual arc welding
engine-driven vehicles	d-seat-forklift truck
	e/d-vehicle
	d-seat-forklift truck
	lift truck
	reach truck
insertion of normed components	hinges, springs, rings
	sheets, splints, cable ties
spot-welding	movement, spot-welding
	welding time alone, spot-welding
broaching	broaching
reaming	reaming
sawing	band saw
grinding	cylindrical grinding, outside
	cylindrical grinding, inside
	level grinding
	spur gear-profile grinding
	spur gear –generating grinding
screwing work	tapping screws
	screw in
	mechanical screwing
	insert screws
	screwdriver
	drive socket
gas-shielded welding	movement, gas-shielded welding
	welding time alone, gas-shielded welding
welding	laser
	welding MAG
	welding MIG Aluminium
	welding WIG Aluminium
visually check	visually check
locking and releasing	adjust
	locking and releasing
	locking and releasing, manual
	tensioning components
die casting	die casting e-function
punching	coil punching
	roll punching
	punching, manually inserting
	cutting
	deep-drawing
	transfer press 6300 – 30000 kN
change material properties (hardening, annealing, etc.)	inductive hardening
	inductive hardening, camshaft
thermic cutting	flame cutting

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	wire-cut EDM
	laser cutting
	plasma cutting
transfer	transfer / surface <= 0,25 qm
	transfer / surface > 0,25 qm and <= 1,5 qm
preliminaries	up- and uncoupling of trailer
	entering or exiting
	manual adjusting of fork
	taking and taking off of fork extension
	opening and closing
	safety of cargo
	decant of container
gear shaping	gear shaping
put away – stacked in slide	put away – stacked in slide
put away with grip	put away with grip / surface <= 0,25 qm
	put away with grip / surface > 0,25 qm und <= 1,5 qm
	put away with grip / surface > 1,5 qm
put away without grip	put away without grip / surface <= 0,25 qm
	put away without grip / surface > 0,25 qm und <= 1,5 qm
	put away without grip / surface > 1,5 qm
tool changing	insert and unclamp drill
	lathe tool holder
	drill slip bushes
	changing the insert
	tool in tailstock
additional duties	walking of furhter metres
	removing magnet
	emptying drawer
	turning around components

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1.5   Reports

The costdata® calculation provides the following default reporting funktion:

- Company Details
- Overhead Factors
    - Product Details
        - Product Costs (Fixed Product)
        - Material
        - Purchased Parts
        - Manufacturing
        - Manufacturing (Overview)
        - Manufacturing (Chart)
            - Investments
            - Labour Costs
            - Set-Up Costs
            - Tooling Costs
        - Special Direct Costs
        - Freight, Packaging, Customs
        - Price Overview

The reports can be printed in PDF, Excel and Word format.

Creating custom reports

1.6   Languages

The costdata product cost analysis software is applicable in German and English. Other languages can be requested anytime.