3D® **SYSTEM**

BENDING POINTS INDICATOR v1.2

User Guide

Publikacja i rozpowszechnianie tylko za zgodą:

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2. INTRODUCTION

2.1 SYSTEM REQUIREMENTS

In order to obtain the technical assistance in the field of software's usage, following requirements must be met:

➜ Microsoft Windows 7/10;
➜ Corel Draw X7;
➜ Corel Draw X8;

It is assumed for a given package, that the user owns only one version, or decides to use only one version of the above mentioned software. Due to a nature of access to Corel Draw software, during the launching of the Bending Point Indicator software only one version can be running! You cannot switch between Core Draw windows when the software is running, as it might result with errors in the software and achieving incorrect results, or in not-responding of Corel Draw software.

It is allowed to use other software when running BPI[1] software, under condition, that computer's capabilities allow for that. Software itself does not have excessive hardware's requirements. BPI software should work on every computer which will be using Corel Draw software. Time of performed calculations depends on computer's efficiency.

It is also possible to use the BPI software on other versions of Windows software, and with the following versions of Corel Draw software:

➜ Corel Draw X4;
➜ Corel Draw X5;
➜ Corel Draw X6.

However, in this case 3D SYSTEM Company will not be able to provide technical service on the BPI software.

New macro may work under Winows XP system, but requires downloading newest amendments needed to install .NET Framework.6. Due to a change of technology, it may work slower than previous versions, that is why changing operating system into e.g. Windows 7/10 is recommended.

In newer operating systems, set up file should automatically download and install .NET Framework 4.6 (in English version) and libraries VC++ needed to start the software. In case of encountering problems, please contact technical support department.

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[1] Abbreviated name of the „Bending Point Indicator" software

Macro may not work under *Windows Vista*! Changing operating system into Windows 7/10 is recommended.

2.2 SOFTWARE'S APPLICATION

"Bending Points Indicator" software was created as an alternative solution against very expensive and ineffective automatic benders presented on trade shows. Excessive price of mechanical devices has narrowed the number of potential users, that is why 3D SYSTEM Company tried to meet the expectations of clients and created a software that indicates bending points and replaces traditional manual measures with a measuring tape. Introduction of the software proposed by 3D SYSTEM Company into the production process of building spatial signs, reduces the time of production to the similar time as when using special machines. Creation and preparation of a file, machine calibration and launching requires similar amount of time as marking bending points and bending profile. Therefore 3D SYSTEM Company proposed to its client, even those who work with spatial signs rarely, relatively cheap instrument supporting the process of building channel letters.

Newest version of BPI software allows to order 3D-Profile with printed bending points on it. Thanks to this solution, realization of projects will be less time consuming than with a use of automatic benders. Printed markings totally eliminate measuring and marking process, which generated most errors.

Option of "Cost calculator" is a big asset of the „Bending Points Indicator" software, and it allows for a fast (even during a phone call with a potential client) creation of project's costs estimate. "Cost calculator" option allows to calculate the usage of particular materials, with an indication of price and quantity. "Cost calculator" is a solution for professionals managing the production process. We are planning to introduce a new option in the „Bending Points Indicator" software which will help arrange the led modules in spatial signs.

2.3 SOFTWARE'S DESCRIPTION

"Bending Points Indicator" software was designed to indicate bending points on aluminum profiles (3D-Profile, 3D-Edge Profile) and replaces classic measurements with a use of measuring tape. "Bending Points Indicator" software significantly accelerates the production process of building channel letters, and eliminates errors done by employees who do the measurements of letter's fronts with a measuring tape. Indication of bending points is done directly in the window of the Corel Draw software. Software requires working on a single project on 1 page, or on several projects, each on 1 page. Calculations are done basing on curves opened directly in the Corel Draw software. Curves imported from software other than Corel Draw may contain system errors and can lead to receiving incorrect data. One should make sure that elements (imported from software other than Corel Draw) are visible as curves, and not as e.g. embedded objects. _"Shapes surrounding"_ option of CorelDraw software may be helpful here.
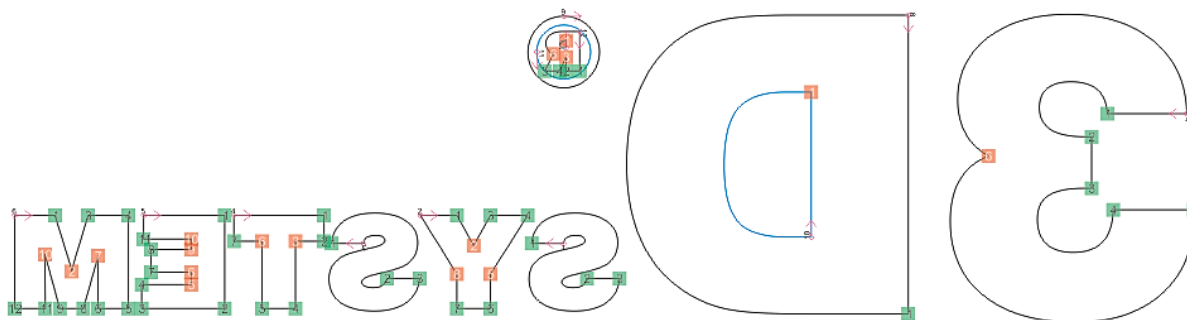

Pict. 2.1. Corel Draw Function „surrounding shapes"

Calculations are documents addressed to professionals dealing with creation of channel letters. All data included in the table should be read according with a principle "from left to right", and that is also how bending points should be marked on aluminum profile. Each line refers to one shape- curve. Columns refer to given values:

- first– number of the curve

- second – quantity of profile needed to assemble entire letter, together with an overlap.

- rest – distance between bending points on aluminum profile

Below You will find a preview of the window with data.

	Obwód +2cm	1	2	3	4	5	6	7	8	9	10	11	12	Koniec
1	382,18	22,41	179,97	202,87										362,18
2	289,21	25,57	49,80	74,00	100,25	148,97	173,10	196,69	220,82					269,21
3	382,18	22,41	179,97	202,87										362,18
4	277,08	63,30	81,38	101,44	148,61	172,20	219,37	239,01						257,08
5	389,97	56,90	122,14	180,42	197,19	231,87	240,57	268,73	284,62	312,78	320,11	353,42		369,97
6	451,03	28,26	65,27	102,22	130,54	195,78	217,23	242,12	268,41	284,94	315,33	344,33	365,79	431,03
7	1015,89	55,78	174,58	210,74	347,00	403,61	717,49							995,89
8	755,21	209,55												735,21
9	177,82													157,82
10.	313,43	101,60												293,43
11.	138,71													118,71
12	131,41	27,70	37,25	43,04	49,82	60,28	73,54							111,41
13.	36,77	5,09												16,77

gen. 2013-09-23 23:33

suma: 4,74 m
Uwzględnia 2cm na zakładkę

Pict. 2.2. Appearance of the basic table with shapes, based on which calculations were done.

In order to do calculations, BPI software in few steps does the conversion of data saved in Corel Draw software into a format of a table containing all necessary calculations. Each of eight steps can be found in tabs, which will be described in later part of the User Guide.

You will find a training animation on the www.3dsystem.pl website, which illustrates how to read the table with data (bending points).

The software includes the "Cost calculator", which allows for an easier and faster creation of an estimate of a client's project. "Cost calculator" option includes the following information:

➜ time of producing of the project

➜ quantity of materials needed to produce the logo, i.e. PMMA, PVC, adhesives, LED modules

➜ cost of creation of the logo

Software also allows to automatically order profile with printed bending points on it.

3. SOFTWARE'S MAIN WINDOW

3.1 SOFTWARE'S WIDNOW

Software's main window is provided with function tabs, which allow to calculate the project. Parameters of software's settings can be found in the **"Options"** tab, whereas settings of calculation's indictors can be found in the **"Configuration"** tab.

Bending Points Indicator ₍v1.2₎ :: „Wskaźnik Punktów Gięcia"

Instrukcja obsługi programu
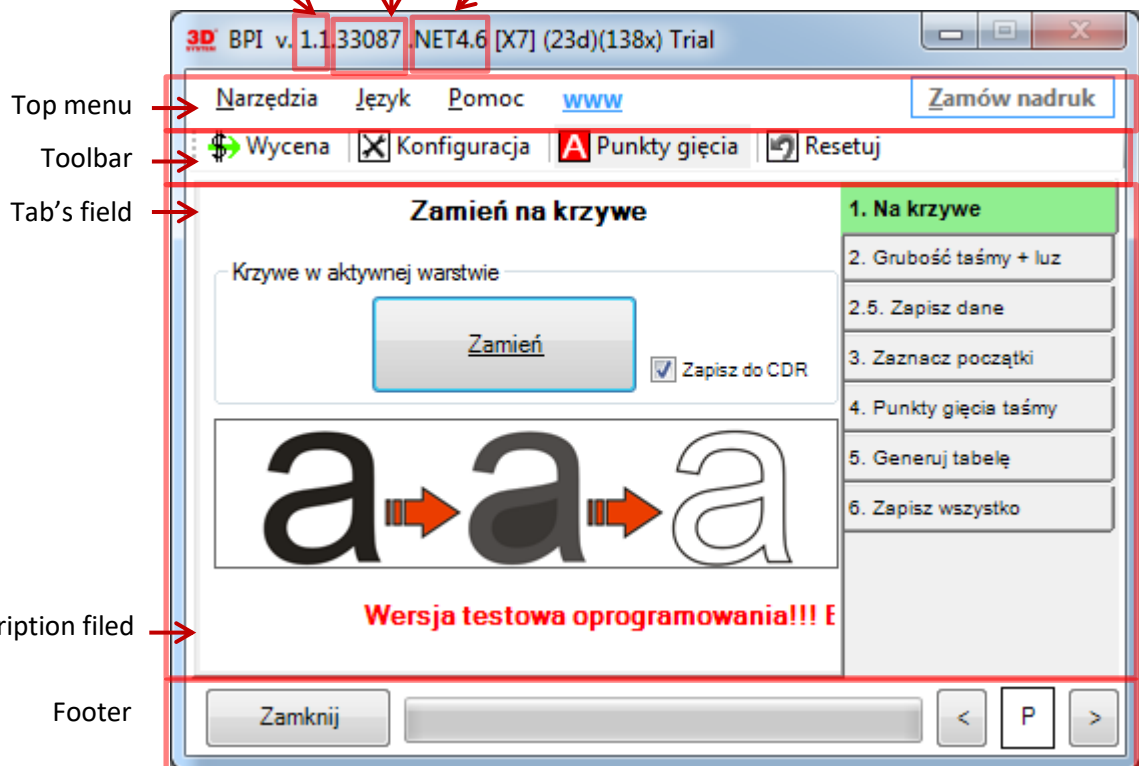
Pict. 3.1. Division of software's window for functional tabs

➜ Top menu – software's menu which contains additional functions of the software;
➜ Toolbar – contains most commonly used functions;
➜ Tabs' field – contains buttons and options allowing to perform calculations;

➔ Message's field- in this field messages from software's manufacturer may be displayed, e.g. about promotions. Red color of message indicates important information.

➔ Footer – contains system's closing button, navigation between tabs and universal progress bar.

4. MENU

4.1 TOOLS

Appearance of the tools tab is shown on 4.1 picture.
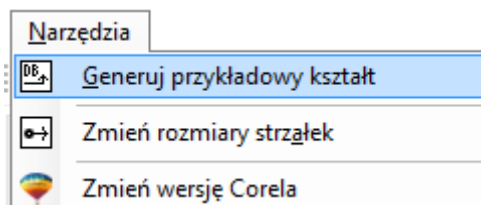
**Pict. 4.1.** Appearance of the tools tab

„**Tools tab**" has 3 functions: „Generate sample shape"' „Change size of arrows", and „Change version of CorelDraw software".

➔ **Generate sample shape**- draws in sample logo saved in software to a currently opened document.

➔ **Change size of arrows**– allows to change size of all additional markings, which appear by curves (arrows marking beginnings and squares with numbers of bending points). This function can be used in the automatic calculations (pauses calculations and rest of work should be done manually), or in step 4.3, while marking beginnings.
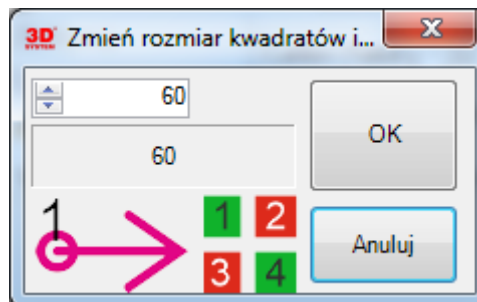
Pict. 4.2. Change of arrows' size and squares describing bending points.

Software asks user whether entered values of additional markings are correct, when performing calculations. This is one of free automatic options of checking correctness of performed calculations (see Pict. 4.3).
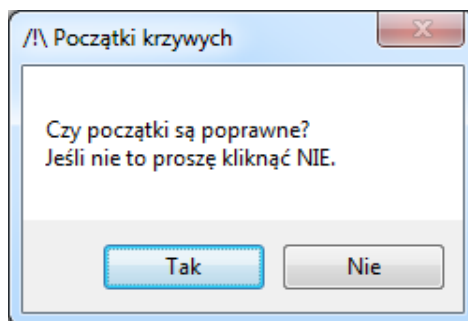
Pict. 4.3. Message displayed during automatic calculations

"NO" option should be selected by user, when additional markings are considered to be too small, or too big, and when user does not accept automatically selected parameters. **"Change size of arrows"** window will show up again then. Change of parameters is done by percentage increase of a parameter, and simultaneously changes size of arrows on the screen.

Example: If we increase parameter of a value of 60 by 50% (parameter will increase to value of 90), we will also observe increase of additional markings by 50% on the screen.
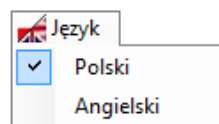
➜ **Change version of CorelDraw software**

Pict. 4.4. Change version of CorelDraw software

4.2 LANGUAGE

"Language" menu allows to select language of the software, and displayed messages in the software (Polish, English, or any other added to the software).
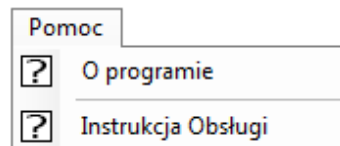

Pict. 4.5. Appearance of the "Language" menu

Language selected after installation of the software depends on the values selected in the language field of the registration form.

Menu → LANGUAGE

3D ®
SYSTEM

4.3 HELP

"Help" menu provides information about the software and allows to download User Guide.

Pict. 4.6. Help menu

➔ **About software** – displays information about the held license of the software, and allows to read license terms acceptable for the end-user during installation.

➔ **User Guide** – after clicking this field, user will be directed to the website where the User Guide in a given language can be downloaded from.
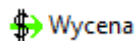
4.4 PRICING

„**Pricing**" button starts a fast process of costs calculation with a single click. It places a detailed table with costs of building logo as an outcome.

Kalkulacja kosztów 2016-05-19 12:02				
materiały	ilość	zużycie	koszty	waluta
Profil-3D szer. 60mm	26,79m	- -	264,95	PLN
Klej płynny nr 1	67ml	67ml	7,51	PLN
Klej gęsty Plex-9021	179ml	179ml	23,04	PLN
Plexi opal 4 mm Setacryl 2002	9,91m²	- -	790,50	PLN
PCV 10 mm	9,91m²	- -	458,65	PLN
H-40 cm - Led czerwony 3R	536x	0,72 W	1 130,96	PLN
Frezowanie frez 4 mm	53,58m	- -	133,95	PLN
Zasilacz 60W IP67	8x	463,1 W	400,00	PLN
Suma kosztów			3 209,56	PLN
Robocizna			2 170,00	PLN
Suma: Koszty + robocizna			5 379,56	PLN
szacowany czas produkcji	1 os.		21h 42min	

Pict. 4.6. Table with a sample calculation

NOTE: Another CorelDraw versions should not be opened during automatic calculation and switching between already opened windows should not be performed. If it is possible, computer should not be used during calculation, at least processes that slow down work of the processor.

Pict. 4.7. „Pricing" button from the toolbar

Software can display control messages during automatic calculations. Sometimes logo can contain errors, or simply do not fit shape size defined in shapes size configuration.

BPI software contains complex module of finding errors in analyzed logo. In case of finding any error, appropriate message will be displayed. Movies explaining how to deal with errors in logo can be found on YouTube- on 3D System's business channel.

https://www.youtube.com/user/krzysiek3dsystem

Exact description of pricing process is in the chapter **Błąd! Nie można odnaleźć źródła odwołania.** Pricing.

4.5 CONFIGURATION

„**Configuration**" menu is used to set software's parameters and parameters of **"Pricing"** and **"Bending points".**

NOTE: Changes are done by double-clicking the lettering, which is then modified. Currency is applied pictorially for future development of the software's functions.

X Konfiguracja
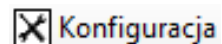
Pict. 4.8. „Configuration" button from the toolbar.

Window of software's configuration (Picture 4.9) can be divided into 3 parts:

➔ **Options tree** – in this part user selects software's options;
➔ **Software's configuration field** – in this part user changes software's configuration;
➔ **footer** – Save changes button saves only global changes, i.e. changes referring to entire configuration field, apart from „costs calculator" (configuration of additional materials).
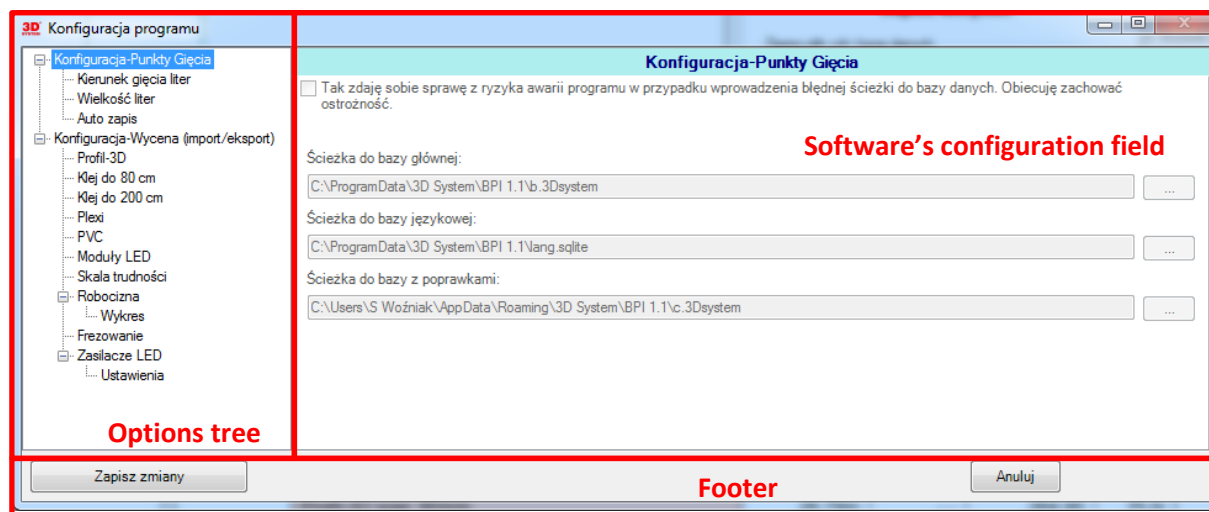
Pict. 4.9. Software's configuration window.

Picture 4.9 shows the window of global configuration settings (Software's configuration field). Paths to database are shown in information purpose, and cannot be changed.

Change the direction of bending profile option allows to do calculations in reverse direction than advised direction of bending profile (Pict. 4.10) - direction in which profile will be wound around letter's face.

NOTE: Ordering profiles with printed bending points is available only for a default direction of bending, which is in right.
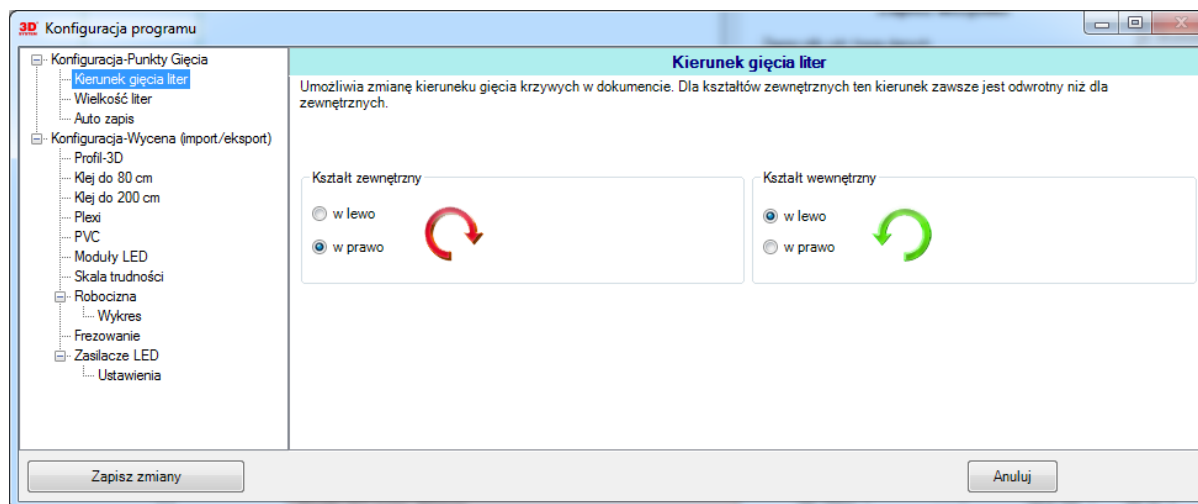
Pict. 4.10. Change of direction of bending profile.

„Size of letters" parameter is responsible for limiting size of curves (letters) the software has to control during performed calculations.
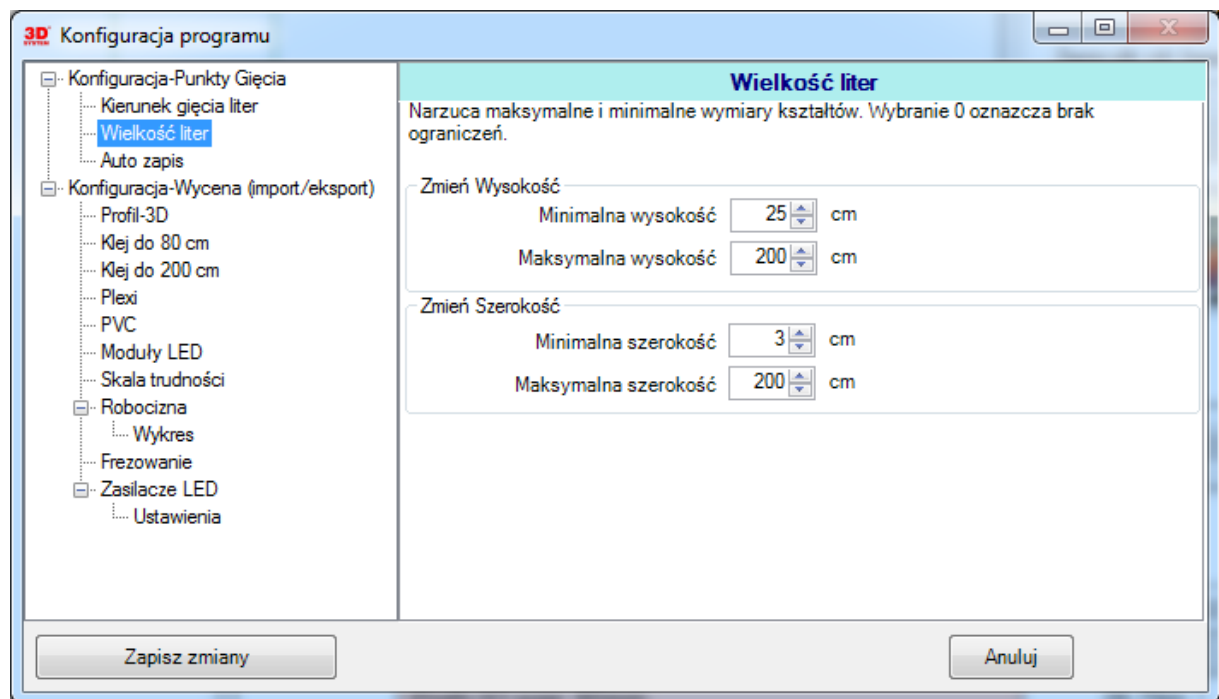
Pict. 4.11. Change of limitations regarding size of curves.

Auto save option refers to the last eighth step of calculations. If none of the fields will be chosen, window allowing to set the destination place of saving CorelDraw file and data base file will show up.
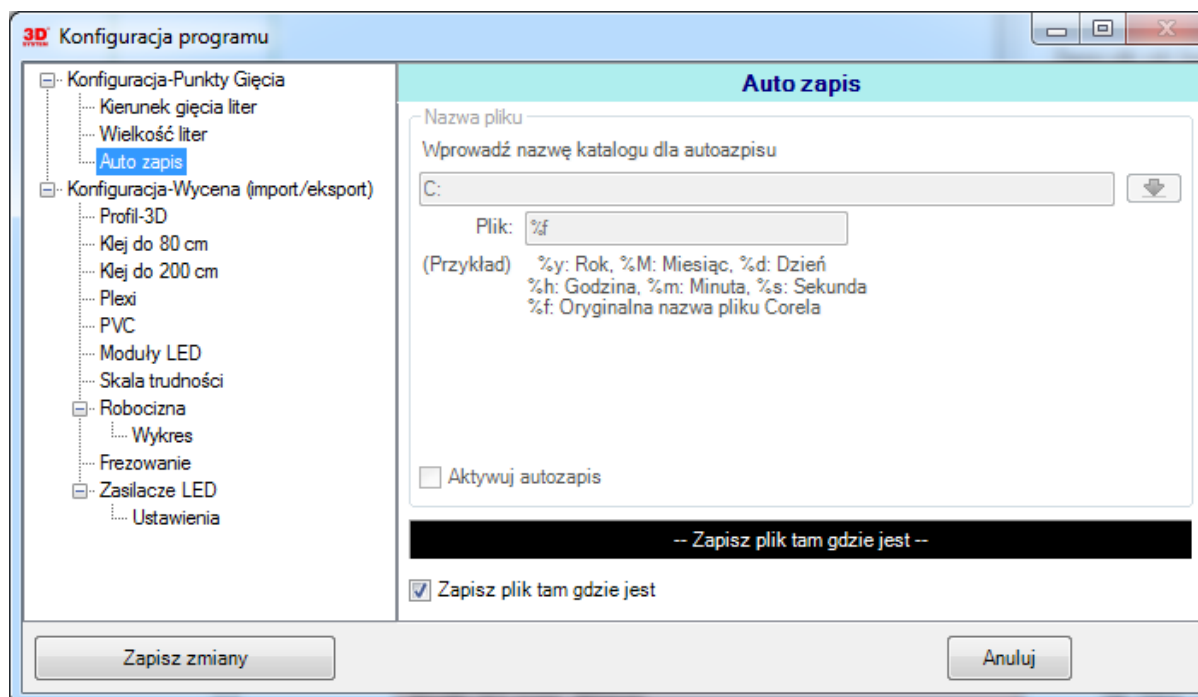

Pict. 4.12. . Selection of method of saving CorelDraw file and data base in the last calculation step.

   "Pricing configuration (import/export)"- additional function allowing to export pricing configuration and import it e.g. to another computer, or saving it in case of reinstallation of software, or operating system. "Default" button allows to import current price list from 3D System's server. Whereas "Delete" button is used to delete current configuration in order to replace it with an imported configuration (when restoring default settings all changes entered to configuration are lost). Importing without deleting will result in adding new positions to already existing configuration.
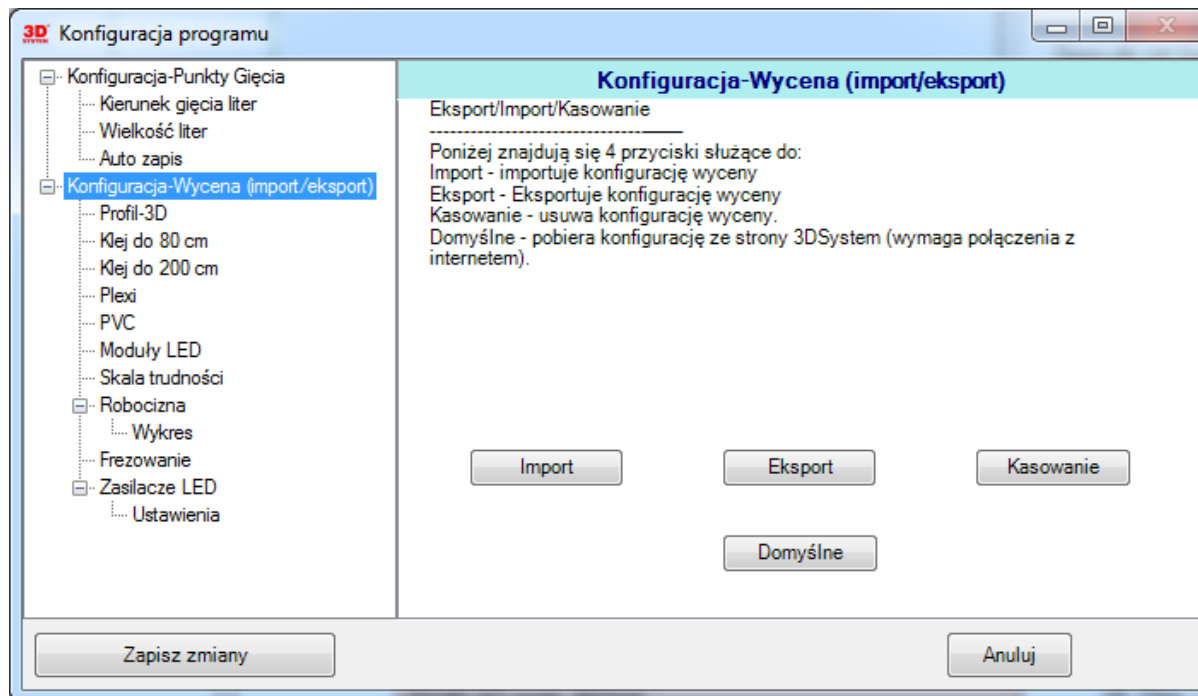
Pict. 4.13. Import/Export configuration data.

„**Cost of profile"** – it is a function which is responsible for updating prices of "3D-Profiles". Allows to add another positions (only numerical data) to "Costs calculator", e.g. price of 100mm silver mirror profile.
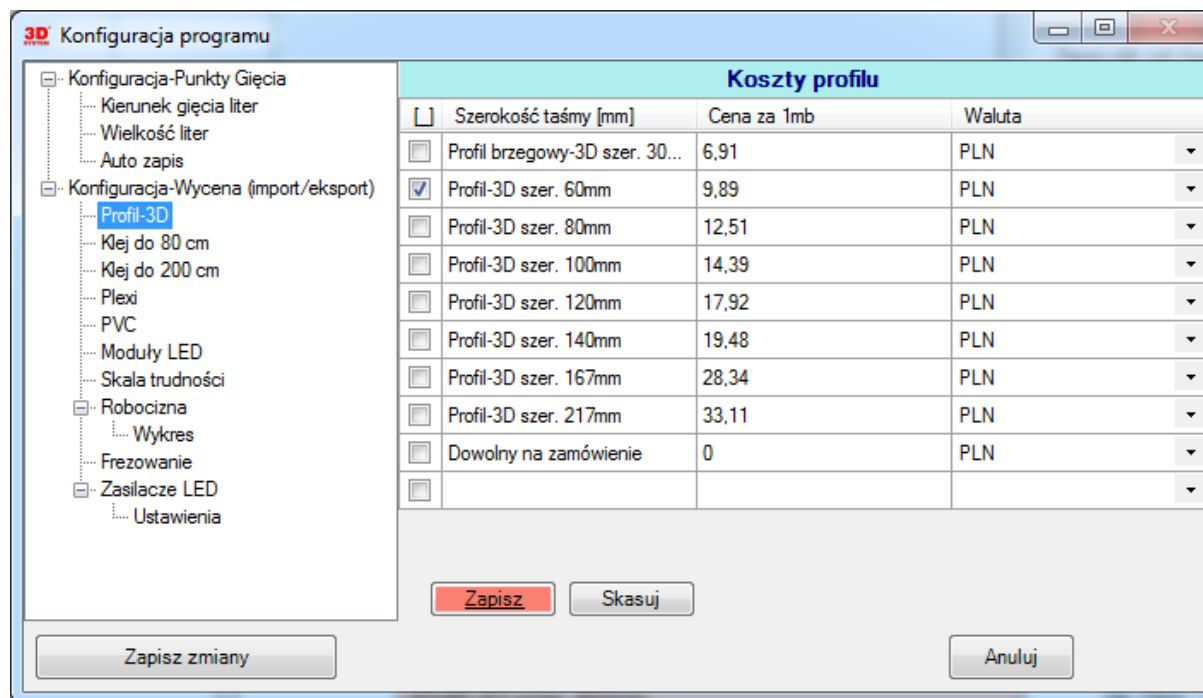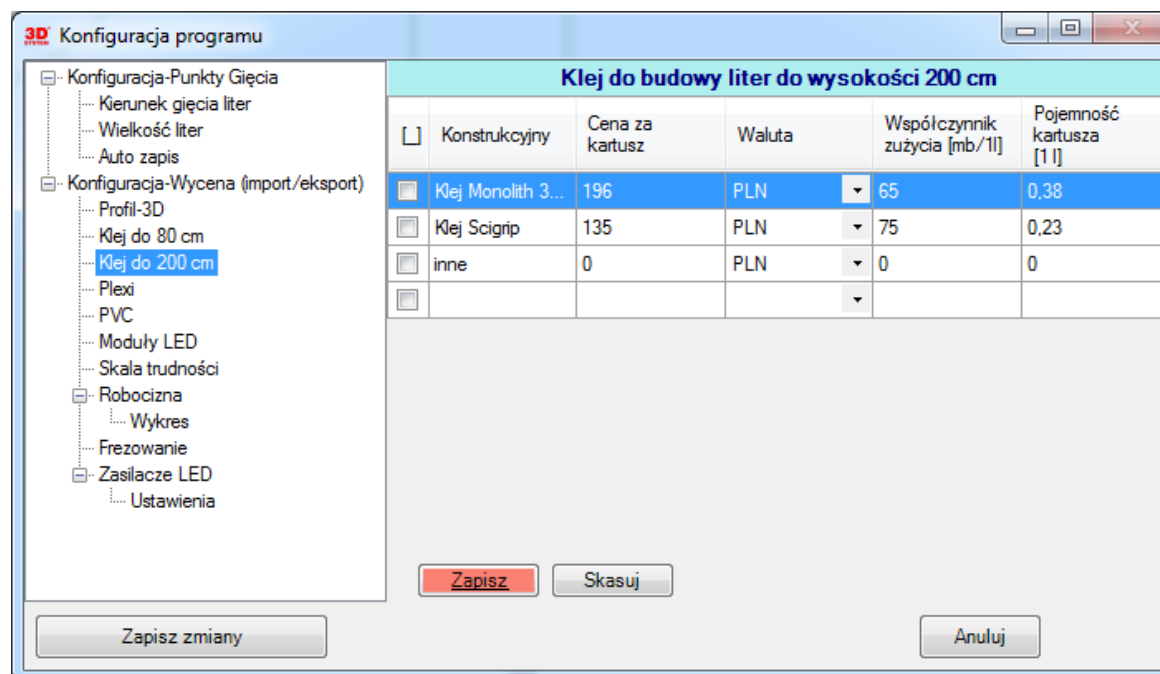
Pict. 4.14. Costs calculator: Cost of profiles.

„**Glue for letters up to 80cm"** – option which allows to update prices of adhesives. It is allowed to add new positions, under condition of setting data regarding efficiency of glue- how many meters of joint can be obtained from 1L of glue.
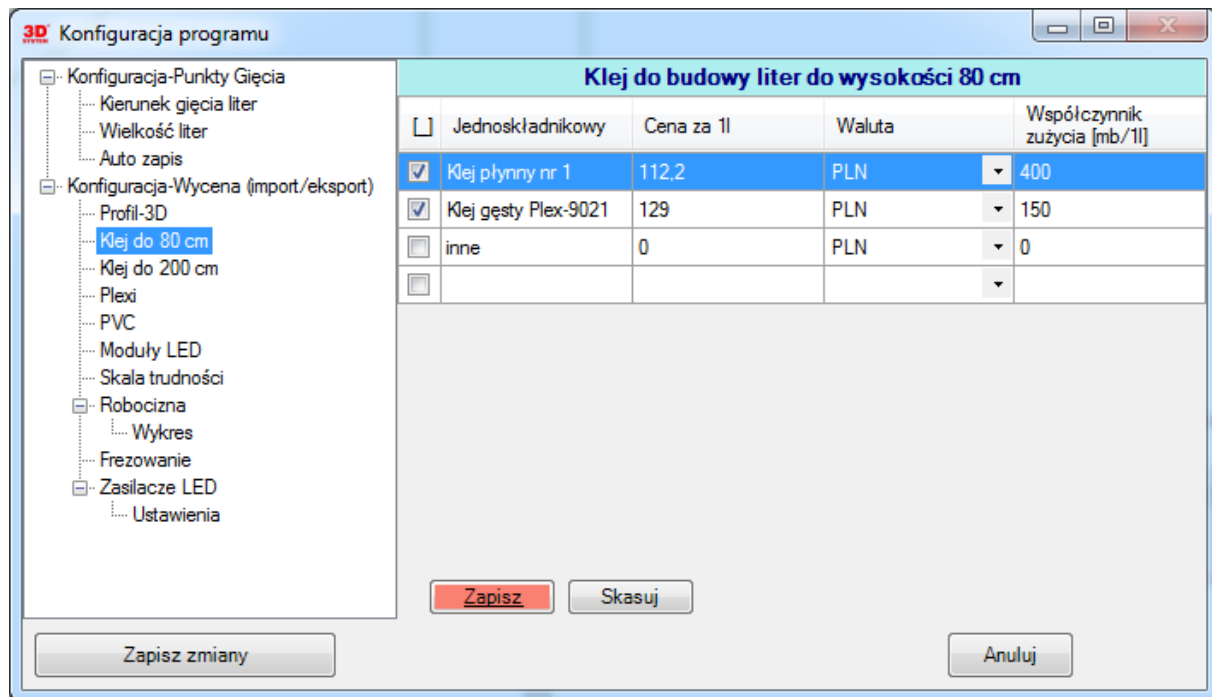
Pict. 4.15. Costs calculator: Cost of glue for letters up to 80cm.

„**Glue for letters up to 200 cm**" - option which allows to update prices of adhesives. It allows to add new positions, under condition of setting data regarding efficiency of glue- how many meters of joint can be obtained from 1L of glue.
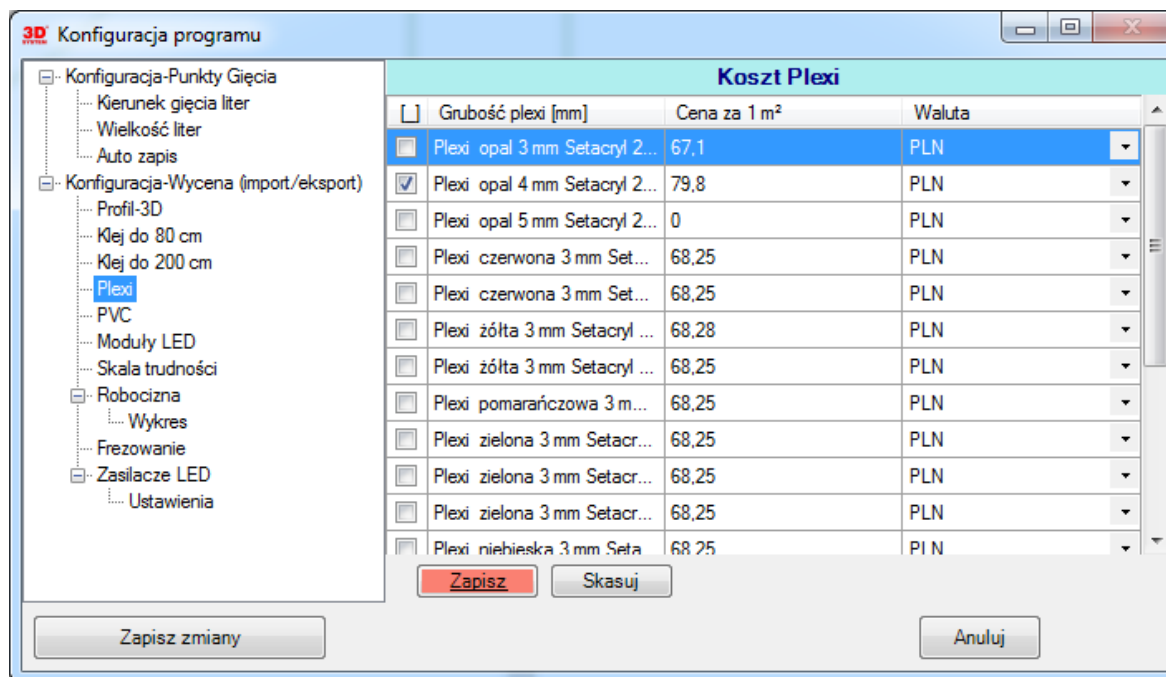

Pict. 4.16. Costs calculator: Cost of glue for letters up to 200 cm.
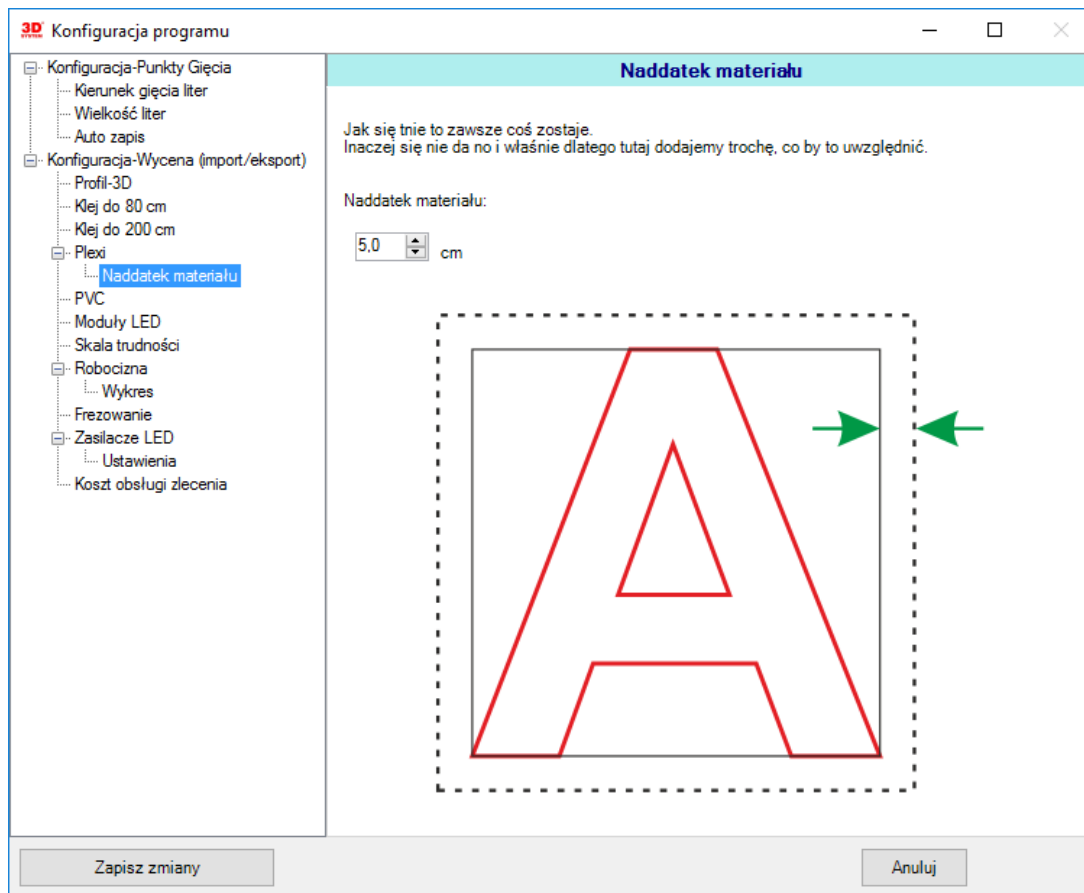
„**PMMA"** - option which allows to update prices of PMMA and differentiates the materials according to thickness. Allows to add new positions.

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Pict. 4.17. Costs calculator: Cost of PMMA.

„**PMMA" -> Material surplus** – option, which allows to include surplus of material for CNC cutting. When cutting shapes from "PMMA' and "PVC", part of material is outside the proper shape is lost due to space required between shapes arrangement of shapes on a sheet destined for cutting. "**Material surplus"** option allows to include distances in calculation of required material. This setting affects the quantity of required "PMMA" and "PVC"

to opcja, która pozwala na uwzględnienie naddatku materiału na obcinanie. Przy wycinaniu kształtów z „plexi" i „PCV", część materiału poza obrębem właściwego kształtu, jest tracona ze względu na wymagany odstęp pomiędzy kształtami rozmieszczonymi na płycie przeznaczonej do cięcia. Opcja „**naddatek materiału**" pozwala na uwzględnienie tego zachowania w obliczeniach ilości wymaganego materiału. Ustawienie wpływa na ilość wymaganej „plexi" i „PCV".

Rys. 4.18. Cost calculator: Material surplus.

„**PVC**" **"** - option which allows to update prices of PVC and differentiates the materials according to thickness. Allows to add new positions.
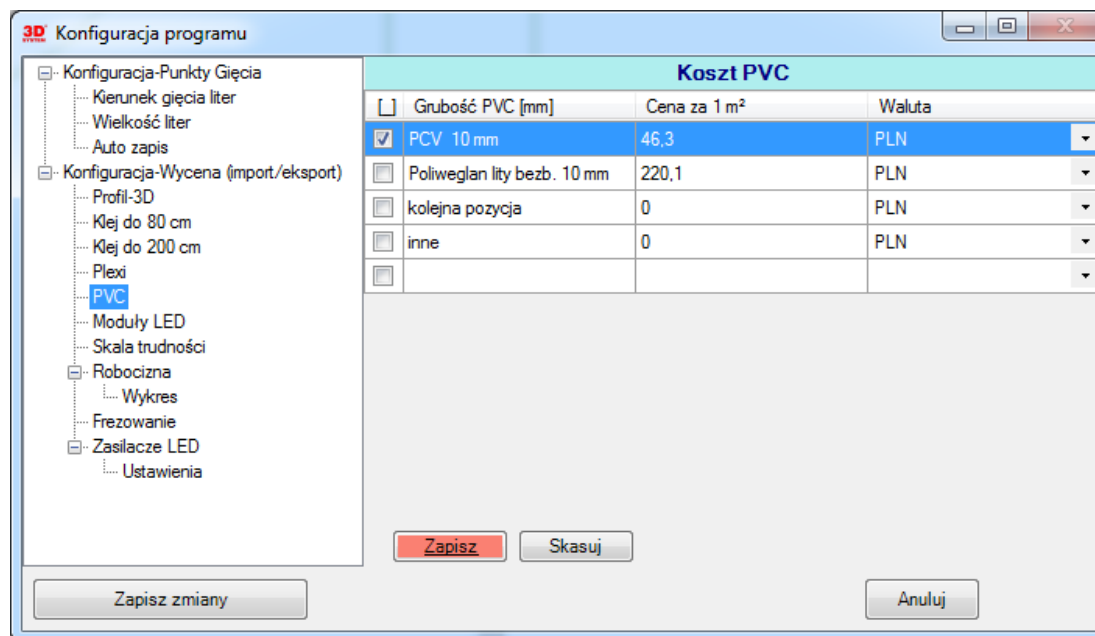
Pict. 4.19. Costs calculator: Cost of PVC.

Software calculates usage of materials in m² (square meters- PMMA and PVC) basing on maximal size of shapes (see example below). Shape's height is rounded to size of full format, for shapes bigger than half of format's size. It is a result of arrangement of shapes on format for CNC milling later on. Such way of calculations shows real usage of material.
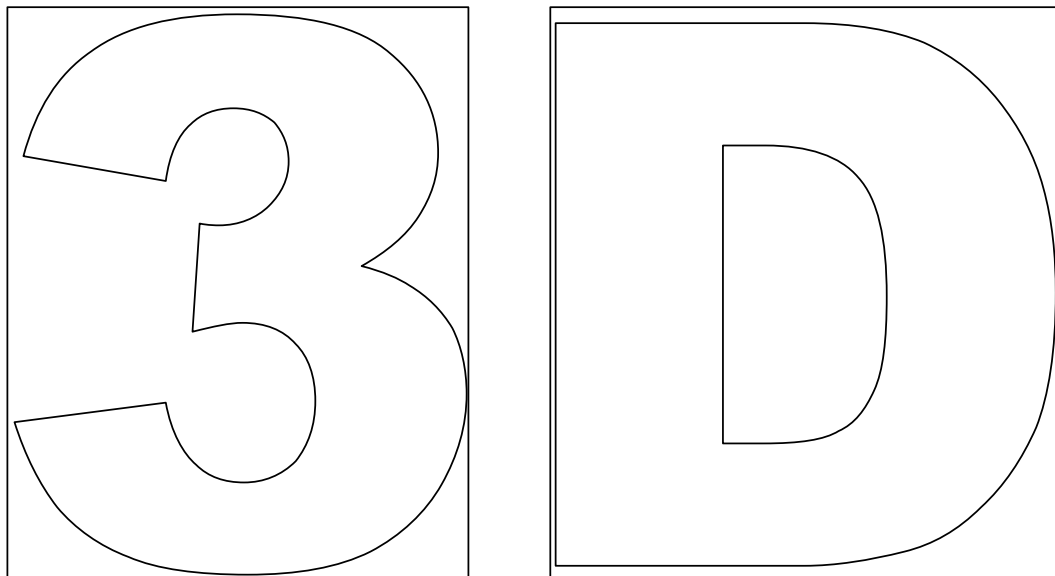
Pict. 4.20. Method of calculating usage of PMMAand PVC.

„**LED modules**” – option which allows to update prices of LED modules. Defines position according to number of diodes in a module. Allows to add new data. Last column „number of modules per 1m² is a rate of usage of LED modules according to letter's surface. This parameter needs calculation (by workshop attempts) of number of LED modules needed for 1m², depending on the color of given LED modules. Value of the calculation should be entered into the "number of LED modules per 1m²" position.

LED modules – one of elements of illumination system, which also includes wiring, power suppliers, etc., that is why value entered into "number of LED modules per 1m²" position should be a sum of all illumination costs divided by the number of LED modules. In sum- cost of 1 LED module should be increased by the cost of all other illumination materials adequately.

NOTE: We are working on a function of the software presenting placement of LED modules in letters. Information about availability of the new option will be posted on the following website: www.3dsystem.pl/program
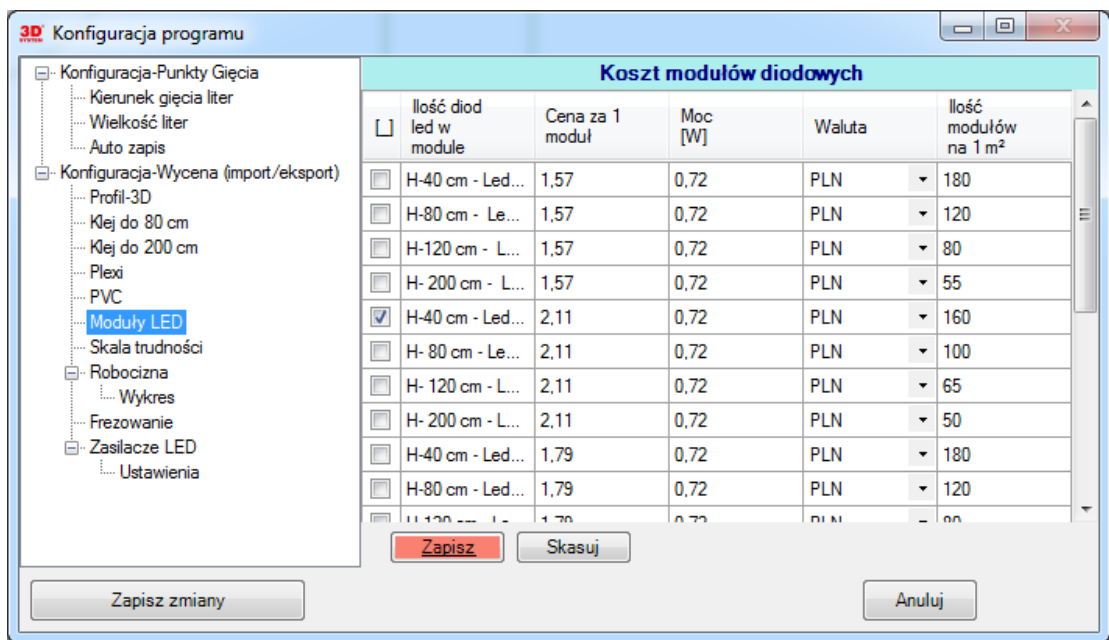
Pict. 4.21. Costs calculator: LED modules.

Software shows usage of LED modules basing on the surface of letters (see example below).
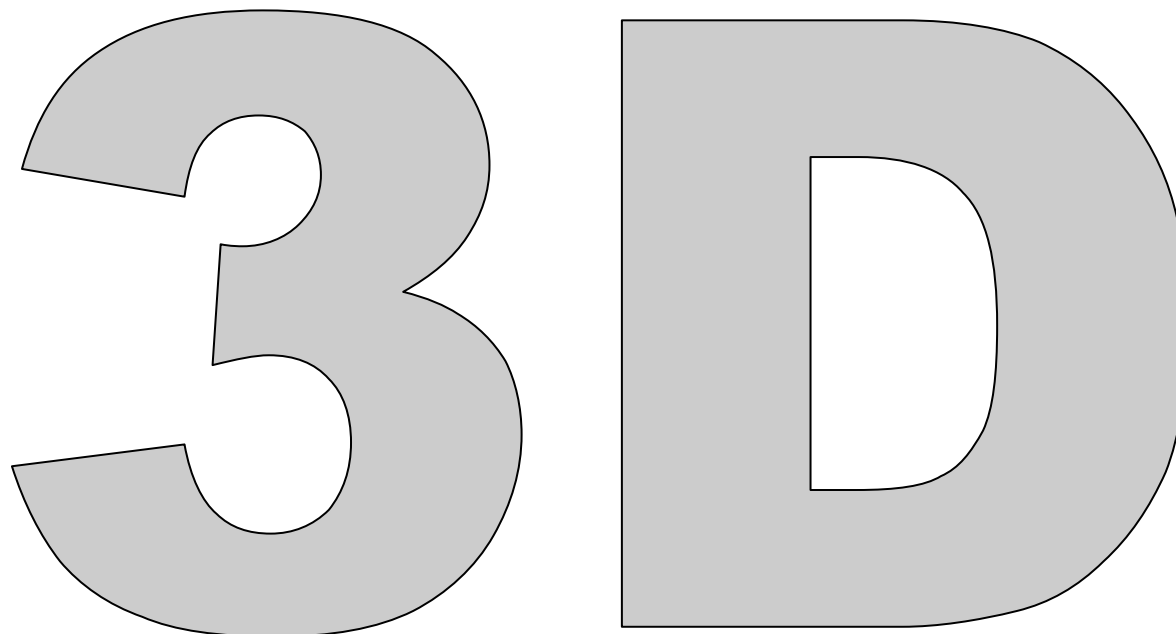
Pict. 4.22. Method of calculating usage of LED modules.

   "Difficulty level". Basic time of production of each shape is calculated basing on its height. "Difficulty level" parameter is responsible for increase of production time, and cost of labor at the same time, and is expressed 0-100% percentage scale.

   For instance: standard style letters have basic time of production, meaning scale of difficulty is assumed as 0%. Serif font letters are more difficult and time of production should be assumed increased at our discretion. In example below increasing time of production by 50%, or 150% of basic time, was assumed. In turn round shapes, smooth without clear bending points, will be assumed as more time consuming. In this case level of difficulty is set for 100%.

   Modifications include percentage graduation (see picture below).
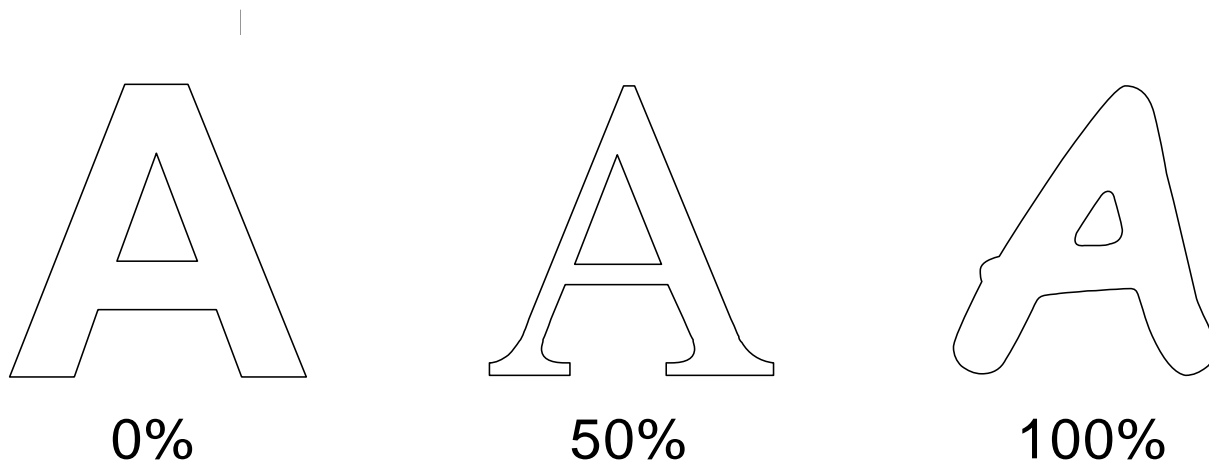
Pict. 4.23. Sample difficulty level in producing letters.

   „**Calculation of internal shapes factor**" in turn is responsible for decreasing scale of difficulty (and time of production) of internal curves. It result from the fact, that internal shapes are most often simpler. For instance, capital letter "A" has 2 shapes- internal and external. Its external shape has 8 bending points, and internal shape only 3. Software collects only height of shape until production time. Discussed factor additionally allows to include that internal shapes are most often less complicated.
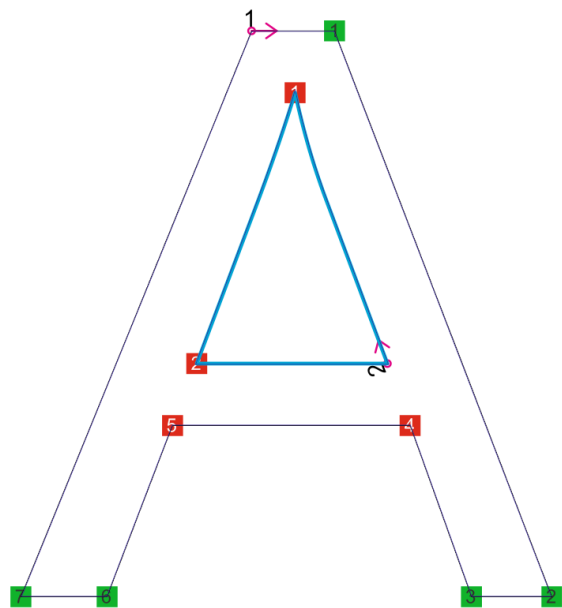
Pict. 4.24. Cost calculator: Simple internal shape is marked in blue.
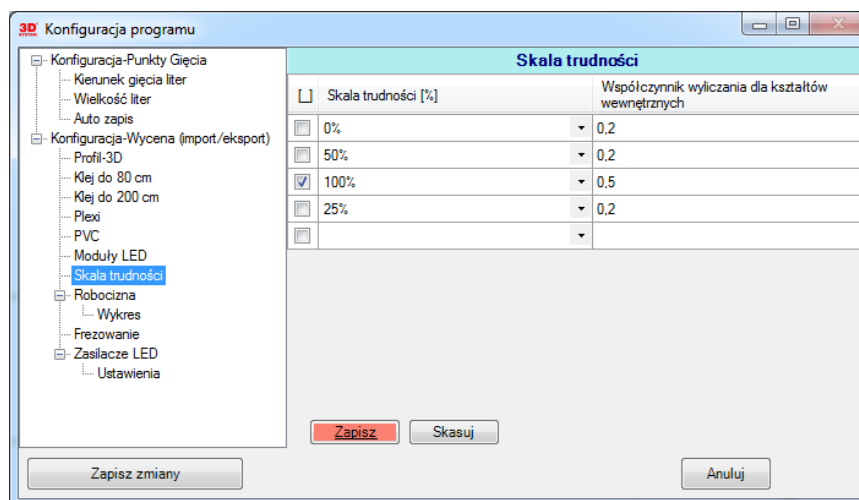
Pict. 4.25. Costs calculator: Estimated time of producing letter.

„COST OF LABOR"

„**Costs of LABOR**" - parameter for specifying costs of project realization/order, basing on cost of man-hour. Allows to add new positions. Costs of project realization/order are set with help of two parameters: **„number of employees"** and **„cost of man-hour".**

„**Number of employees**" – this parameter allows to define number of employees working on a given logotype. Production time will be divided by the number of employees working on a given prototype (2 employees will finish making logo twice faster, however we have to pay both of them). Time calculated in such way will be shown in the pricing table, in the "Estimated production time" position.

„**Cost of man-hour**"- parameter which specifies cost of labor per hour of 1 employee.
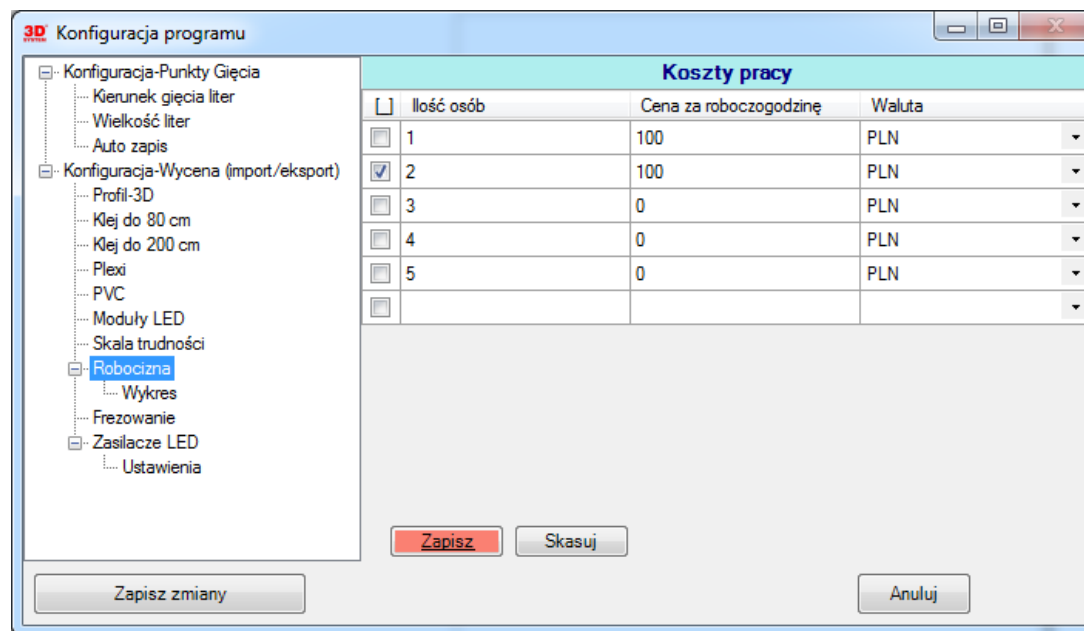
Pict. 4.26. Cost calculator: Cost of labour.

"Chart"- chart which visualizes specifying time needed to accomplish shape/letter according to its height.

3 points specifying time of realization of single letter according to its height should be set on the chart. Most often, there is 1 optimal size in the company, e.g. 1 hour of labor is needed to finish letter 50cm high. Its parameters are entered in the green field.

The smaller the shape, the closer bending points are placed to each other, thus the more difficult is the letter to make. That is why time of labor increases, e.g. for letter 20cm high it will be 120min.

The bigger the shape, the more wooden wedges need to be used to fit the profile, and it is harder to put the letter on the table. That is why time of labor increases, e.g. for letter 2m high it will be 180min.

After entering those points, curve will be created, from which software collects times of labor depending on height of shape. Software analyzes all shapes one after another, and for each of them collets height, which is later compared to the chart. For instance, for above parameters and 30cm high shape basic time of realization will be 100min. (green line on picture below). Orange lines show calculations for shape 150cm high.
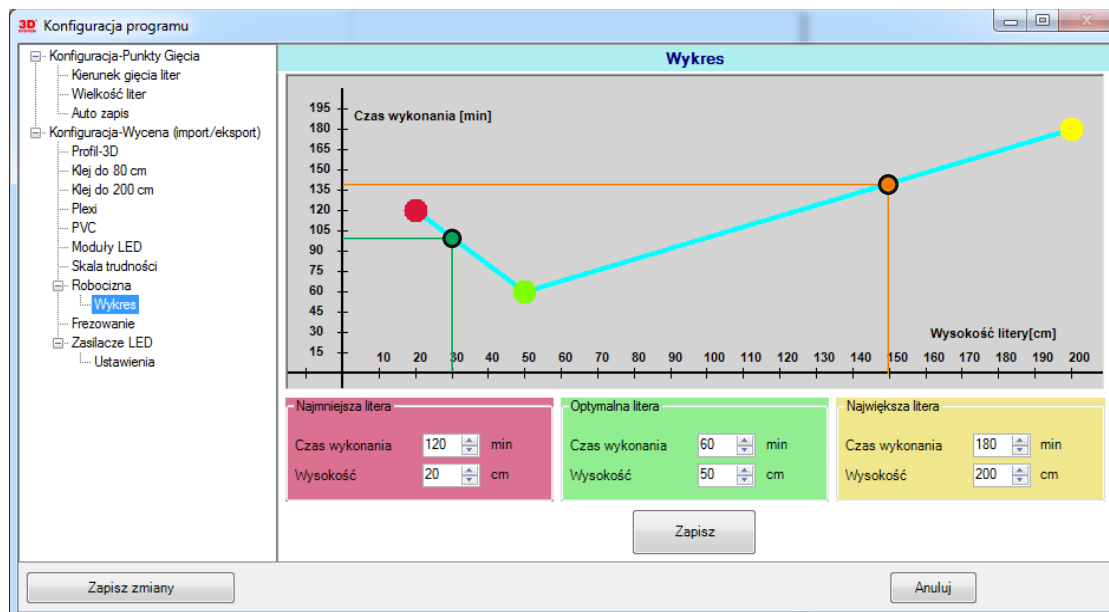
Pict. 4.27. Chart: Method of specifying basic time of realization for each shape.

„**CNC cutting**" – option which updates prices of cutting according to used cutting bit.

„**Price per 1 meter"** is multiplied by perimeter of shapes. When we cut both letters' fronts and backs, software will automatically multiply cost of cutting by 2 (if PMMA and PVC was chosen in materials). There is a possibility of adding own positions.
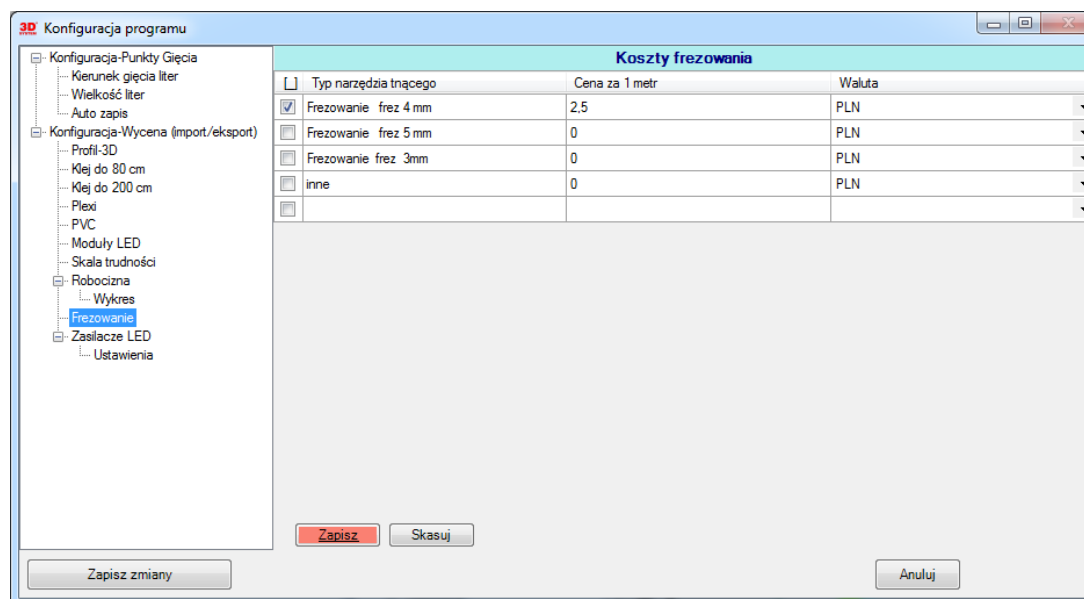
Pict. 4.28. Cost calculator: Cost of cutting.

"**LED power supplies"** – here we choose type of power supply we want to use to supply LED modules in illuminated logo.
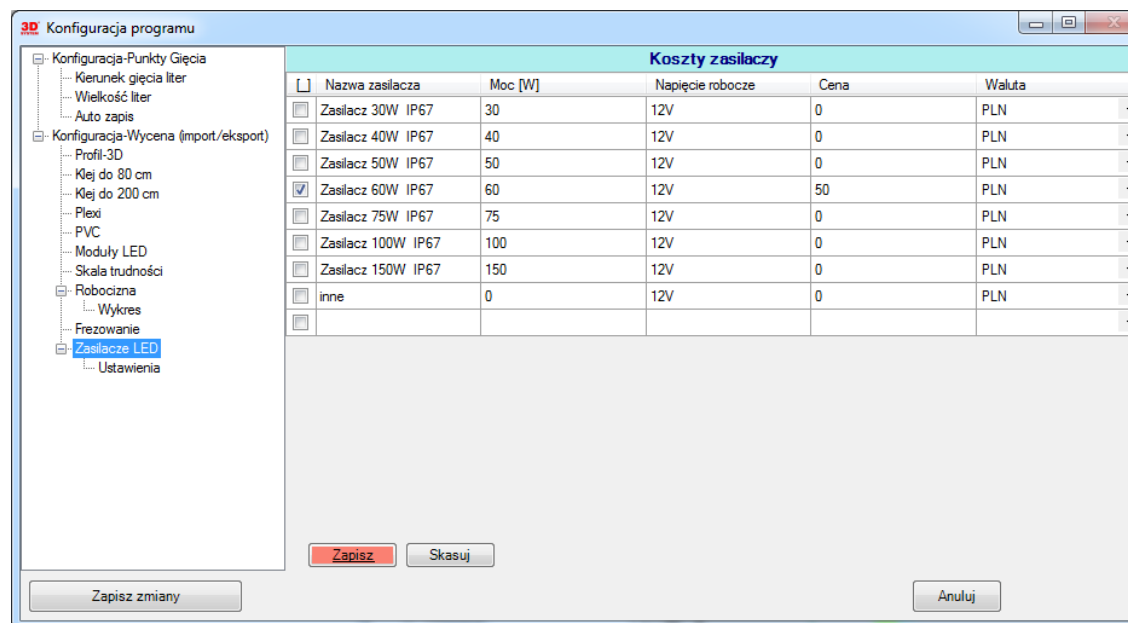
Cost. 4.29. Cost calculator: cost of power supplies.

When calculating number of power supplies required, software include overall power needed by LED modules, increased by surplus of power set in the **"Settings"** menu.
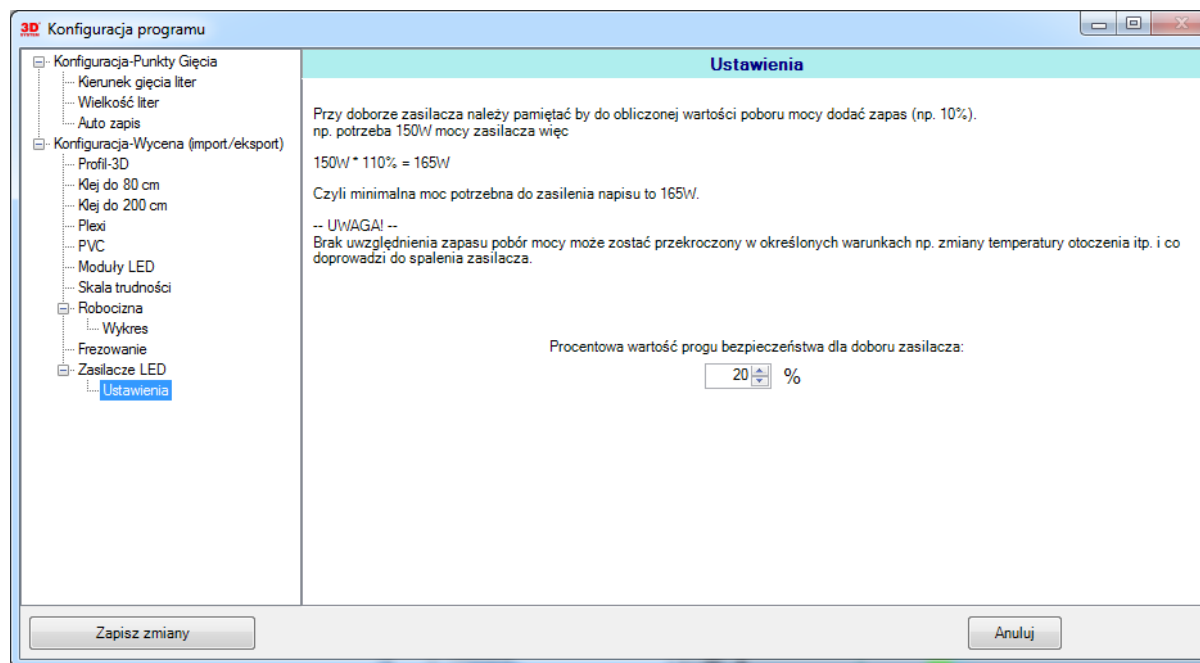
Pict. 4.30. Surplus settings for power supply cost calculator.

„**Project's service chargé"**– this position allows to include service charge of a project in a pricing. Apart from labour costs and CNC cutting, which are included in separate positions, here You can include other costs, e.g. graphic processing of a logo, preparing logo for CNC cutting, etc.
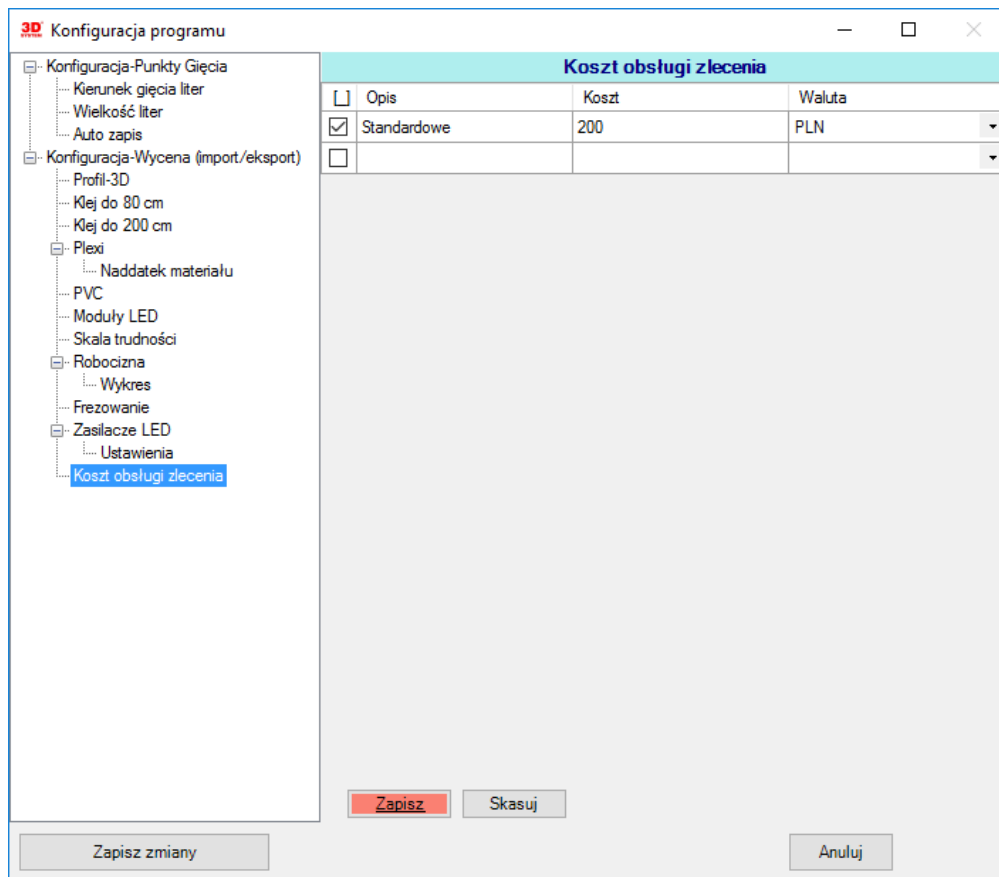
Pict. 4.31. Cost calculator: Project's service charge.

4.6 BENDING POINTS

„**Bending Points**" button starts all calculating procedures with a single click, until the appearance of save file to disc window.

> **NOTE: Another CorelDraw versions should not be opened during automatic calculation and switching between already opened windows should not be performed. If it is possible, computer should not be used during calculation, at least processes that slow down work of the processor.**
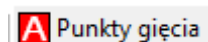
Pict. 4.32. „Automatic calculation" button from the toolbar.

Software may display control messages during automatic calculations. If there is a need of stopping calculations and applying adjustments, e.g. overlapping shapes, calculations should be re-started after applying adjustments, Order of taken steps is precisely specified. It means, that when going back to step 3, all following steps should be performed in order to achieve correct result. Attempt of going back below step 3 is tied with a necessity of repeating all calculations (click Reset button).
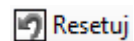
Pict. 4.33. „Reset" button

Software's tabs showing following steps are shown in Pict.4.34.
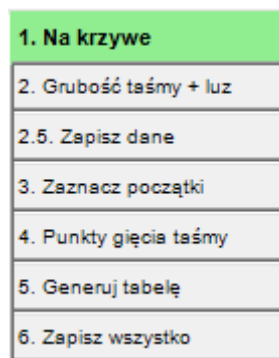
Pict. 4.35. Software's tabs showing following calculation steps.

4.6.1 Control windows displayed during calculations

First control- information about size of curves. This message will be displayed, when values set in software's tab **"Configuration"** will cause given function, it is when project consist data inconsistent with 3D System's system of building letters- sign is lower than 20cm, higher than 200cm, or narrower than 3cm. More information about parameters can be found in **"Configuration", "Global configuration",** and **" Maximal size of curves" tabs**

Ignoring of message can be achieved by clicking „Yes" option.
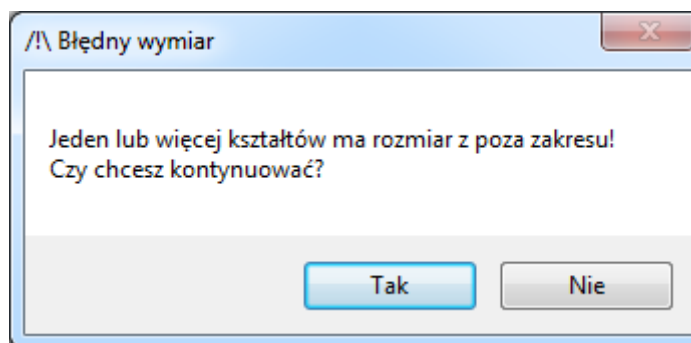
Pict. 4.36. Message about inconsistent size of one of shapes.

Second control- information about size of additional markings applied by software in order to:

➜ Setting point of beginning, from which letter's front will be wrapped with 3D-Profile;

➜ Indicating bending points by arranging green and red squares in places of bending 3D-Profile.

When automatic markings of curves are too small, or too big, „No" option should be chosen, which will result of displaying again „Change size of squares" window. Change of parameter's size is achieved by percentage increase of this parameter, which results in change of arrows' size on screen at the same time.

Example: When we increase parameter 60 by 50%, so when we increase its value up to 90, we will notice increase of additional markings by 50% on the screen.
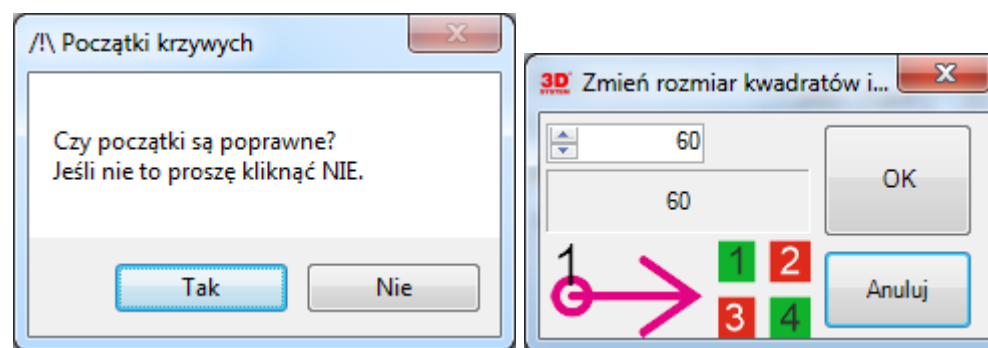
Pict. 4.37. Size change of arrows marking beginnings of curves.

4.7 RESET

„**Reset**" button– function of returning to the project prior beginning of calculations.
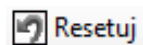
Pict. 4.38. „Reset" button

4.8 CLOSE

„**Close**" button is used to close Bend Point Indicator software.
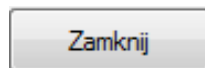
Pict. 4.39. „Close" button

Due to internal security of the software, and because of saving data concerned with placement of the window before closing, „X" button from software's window was blocked.

4.9 TRANSPARENCY „P"

   „**P**" button is used to set transparency of software's window. When this function is turned on software's window is active and executing commands is possible.

Pict. 4.40. „P" button and navigation buttons.

Additional navigation buttons are used to navigate between given calculation steps.

5.SOFTWARE'S FUNCTIONAL TABS

5.1 „INTO CURVES" TAB
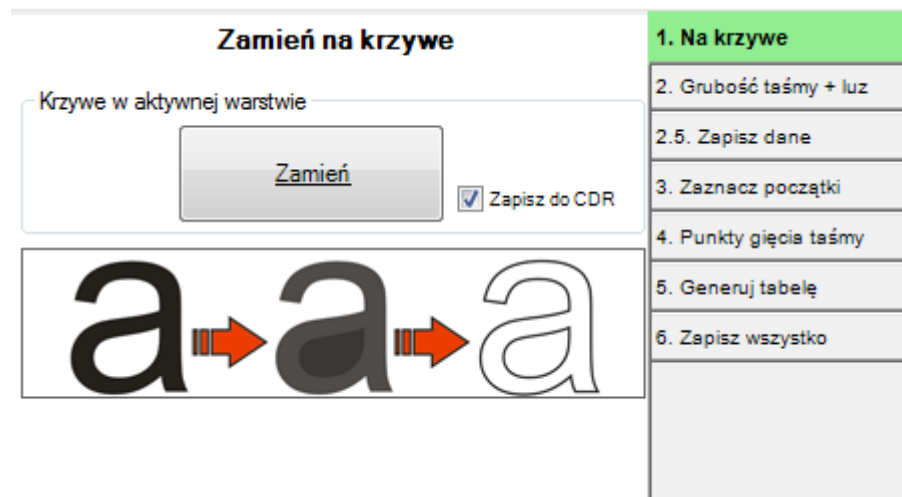
Pict. 5.1. „Into curves" tab.

Tab's field consists of four options:

➔ **Change** – launches mechanism of changing shapes into curves;

➔ **Save to CDR** – this option allows to return to original shape prior to change into curves. When this option is not selected, reset cannot be done!

    „Into curves” option converts projects into set of curved lines and rejects color fill. This function is activated by **„Change”** button. When curves change their size after the conversion, it is an indication of errors in curves. Errors occur when importing curves from software other than CorelDraw. In such case, curves imported from software other than CorelDraw should be re-created in CorelDraw software by choosing *"Create new object surrounding marked objects"* function.

krzywe wyjściowe

3D System

krzywe prawidłowo przekształcone przez program

krzywe nie prawidłowo przekształcone

Pict. 5.2. Examples of possible changes done by the software.

Given option allows for a fast conversion of curves imported from other software into curves saved from foundations by CorelDraw. All objects must be separated before launching this option.
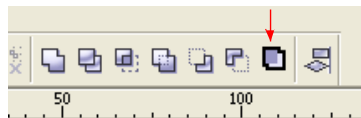
Pict. 5.3 "Create new object surrounding marked objects" CorelDraw function.

When there are no irregularities apart from project's centering on a computer screen after **„change into curves"** step is performed, and logo remains centered on the screen, step 2 **„Thickness + Clearance"** should be performed.

5.2 „THICKNESS + CLEARANCE" TAB

Pict. 5.4. "Thickness + Clearance" tab.

   „Thickness + Clearance" tab adds an outline for calculation purposes, which takes into account widths of „3D-Profies". **„Thickness + Clearance"** option is activated by **„Add"** button.

> **NOTE**: Default parameters were chosen by 3D System company based on numerous tests and provide better results when wrapping shapes with a "3D-Profile"
>
> Appropriate change of the above parameters can allow to use BPI software to calculate bending points for other materials, like polycarbonate for instance.

"Thickness of profile" parameter- it is real thickness of 3D Profile. We do not recommend changing this parameter.

External clearance- clearance between 3D profile and wrapped letter's front, for external shapes. Such selected value allows to easily wrap shape without creating excessive gaps.

Internal clearance- clearance for internal shapes due to technological reasons was set to bigger value.

"Diameter of milling bit"- recommended diameter of milling bit for cutting letter's fronts and backs. 3D Profile when bended arranges in a way that harmonizes with a shape obtained by cutting with a 4mm milling bit. It is also possible, however not recommended, using milling bits of other diameters. Appropriate value should be entered in the "Diameter of milling bit" field.

"Default" button uploads default values of parameters.

After launching **„Add"** option change of project into mirror reflection is performed on the screen and new shape is placed in red color (outline of given curves in zoom). It is circuit of 3D-Profile. Below correct software's performance is shown.
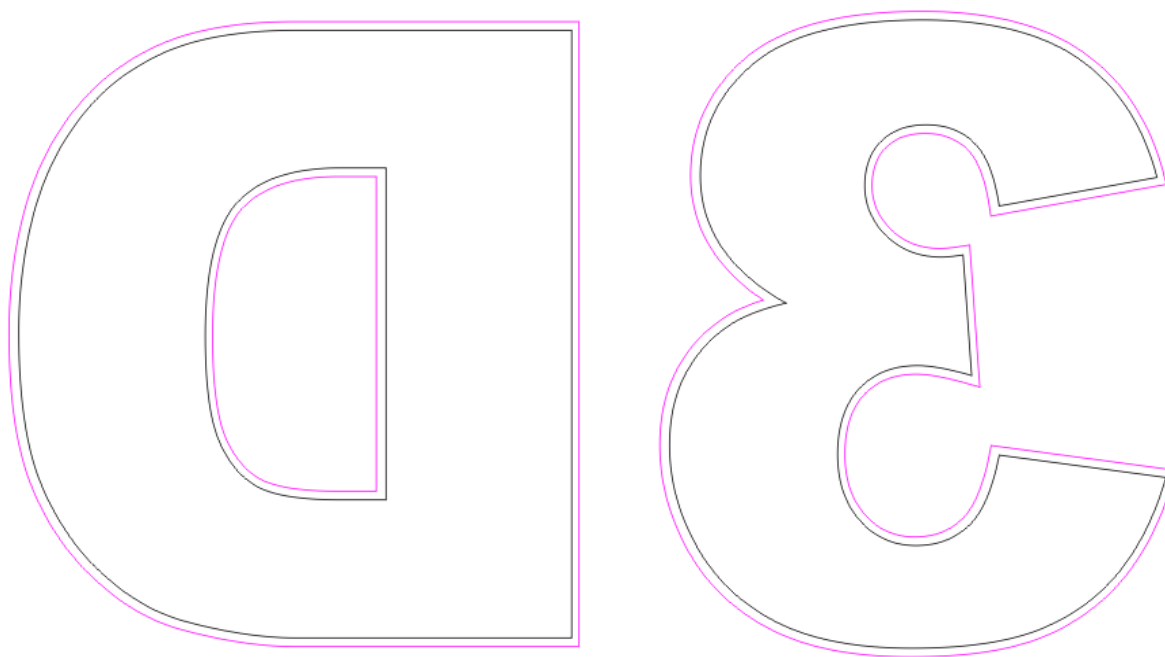
Pict. 5.5. Original curve and outline.

When there are no irregularities after **„Thickness + Clearance"** step is performed, next step **„Save data"** should be performed (2.5). This action will be performed automatically by the software.

NOTE: Returning to step 1 from the step 2 cannot be performer. The only option available is to return to the beginning of the project by clicking **„Reset"** button.

5.3 „SAVE DATA" TAB
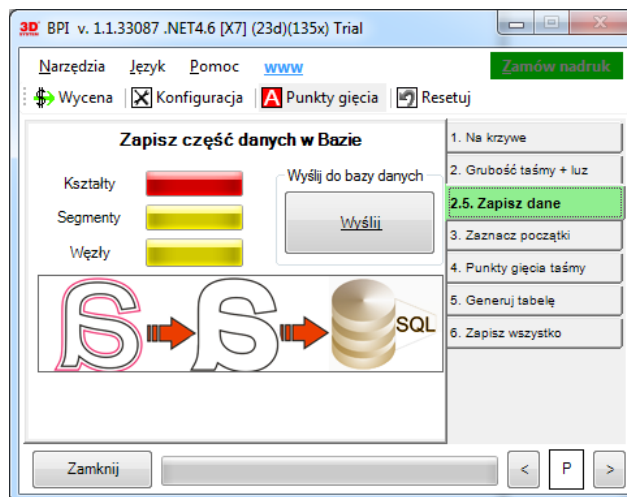
Pict. 5.6. "Save data" tab.

„Save data" tab saves and processes all information, calculated in Corel Drwa, in data base of BPI software. This step cannot be skipped under any condition.

After **„Sava data"** step is performed, software will automatically move to **„Mark beginnings"** tab.

5.4 „MARK BEGINNINGS" TAB
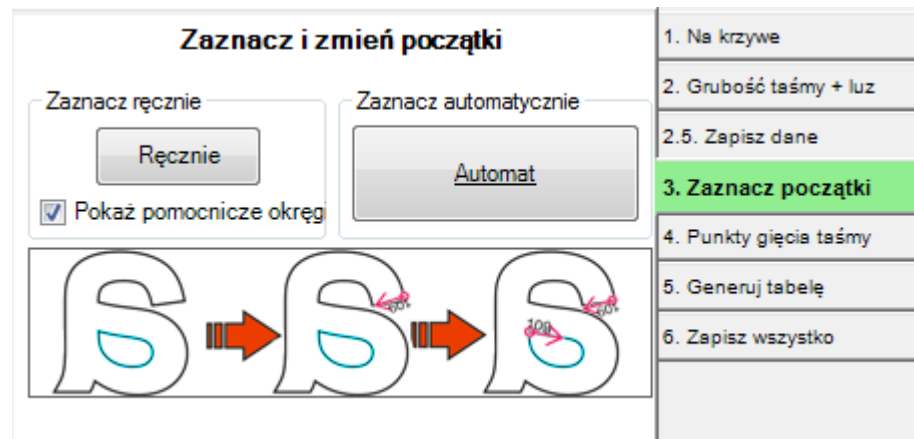
Pict. 5.7. „Mark beginnings" tab.

„**Mark beginnings**" tab is used to indicate beginning of profile, which is a place, from which wrapping of letter's front with a profile begins. Software allows to choose the direction of winding profile- left or right This option is available in **"Configuration"** tab, in **"Direction of bending letters"** parameter from **"Main configuration"** function. It is a global setting used in all beginnings simultaneously. There is no possibility of changing direction of wrapping for single shapes.

"Mark beginnings" function is launched by the **"Auto"** button, which automatically indicates beginnings according to following rules: external curve- left point from higher points, internal curves- lowest point (below picture with indicated beginnings can be found).
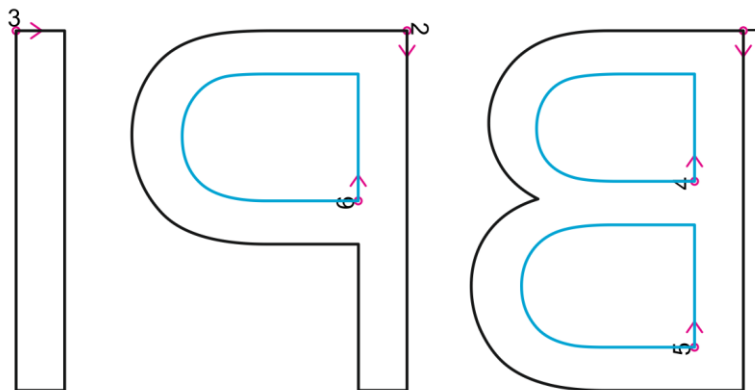
Pict. 5.8. Sample of marked beginnings.

Individual indication of beginnings can be performed manually by undertaking following steps:

- marking of corrected curves;

- choosing **„Manual"** button with the **„Show auxiliary circles"** marked option.

Software will display auxiliary circles in places which are considered to be beginnings. Clicking on the given circle indicates appropriate beginning. Further changes are performed automatically.
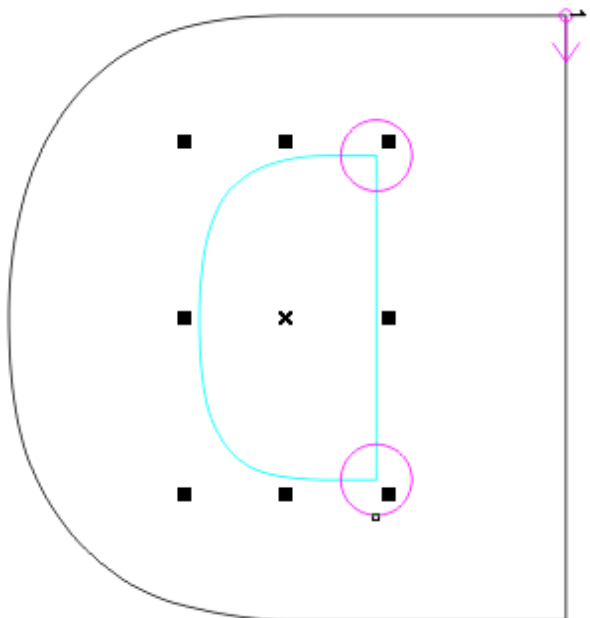
Pict. 5.9. Auxiliary circles visible when changing beginnings.

Second method of manually marking beginnings can be done by:

- marking **„Show auxiliary circles"** option;

- selection of a curve with a modified beginning;

- clicking **„Manual"** button;

- displaying nodes of the curve;

- clicking the point of the curve's node;

- indicating new beginning.

Because of small points (nodes) of a curve (see picture below) it is the most difficult variant of changing beginnings manually.

Project can be zoomed in or out by clicking computer mouse circle during rotation.
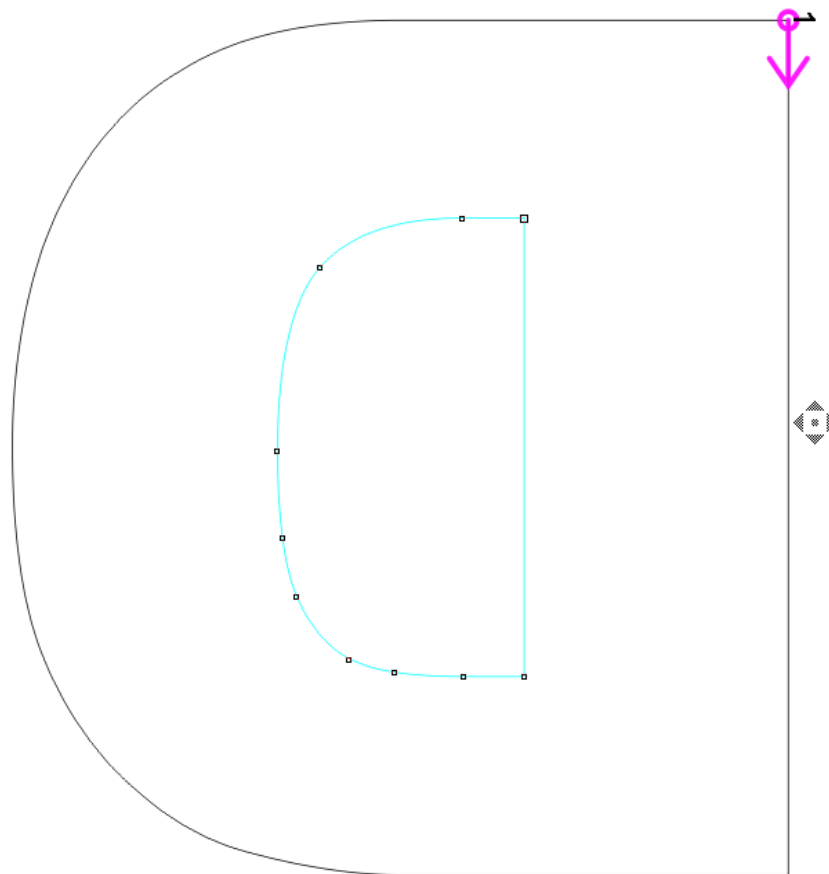
Pict. 5.10. Real distribution of points on a curve.

NOTE: Beginning on a curve can be indicated only on the place of a node. Setting additional node in the project before performing calculations might not succeed, because the software has a set function of eliminating needless points, especially on straight sections. We do not recommend adding new nodes.

After automatic executions of this step, software will automatically move to **„Profile's ending points"** tab. **„Profile's ending points"** tab must be clicked in manual mode.

5.5 „PROFILE'S BENDING POINTS" TAB
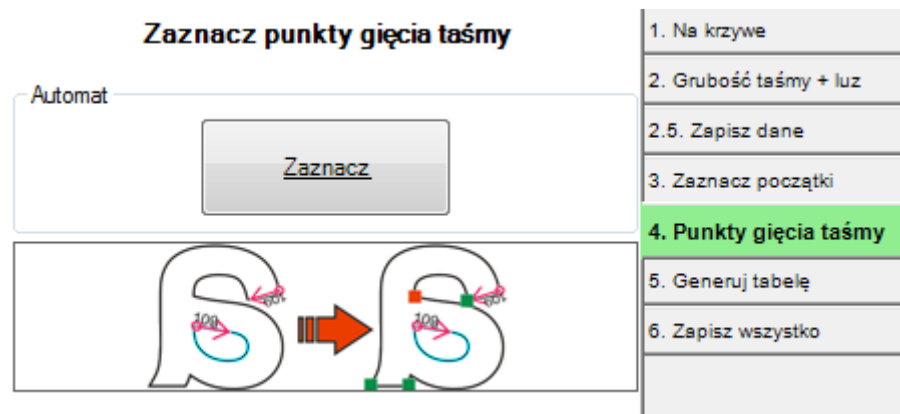
Pict. 5.11. „Profile's bending points" tab.

   „Profile's ending points" tab marks bending points on all places of the curve, where sharp deflection of curves to each other. This function is launched by clicking **„Mark"** button. **„Profile's bending points"** function is fully automated and cannot be modified.

The most common reason of formation of errors in marking bending points in wrong points, is a faulty prepared curve, or faulty imported curve from different software. Error can be found when bending point is placed in unexpected place. Faulty point should be removed from primary shape (reset) by exact magnification of a curve and rounding unnecessary edge. Software does not recognize rounded edges and that is why it does not indicate bending points on such edges.

   After this step is performed, software will automatically move to **„Generate table"** tab.

SOFTWARE'S FUNCTIONAL TABS → „PROFILE'S BENDING POINTS" TAB

5.6 „GENERATE TABLE" TAB

Rys. 5.12. „Generate table" tab.

„Generate table" module creates a table basing on performer calculations, which includes numeric data referring to bending points. Values indicated in the table should be shifted on a profile using a measure, or better with an automatic order option.. **„Generate table" function** is launched with a **„Generate"** button. Table is always generated automatically under the project, in full-length of a logo. Height of a table is set automatically.

Table consists of the following data:

- top of table – date and hour (when calculations were performed); information used in archiving offers or projects

- first column – numbers of given curves, which are assigned to appropriate curves in project;

- second column – length of particular sections of 3D-Profiles needed to create given separate letters, including a 2cm surplus for an overlap at the end of profile;

-next columns (e.g. from 1 to 6; see picture below) – profile's bending points, which have to be exactly shifted on profile using a measure (measure should be immobilized in order to avoid any movements and faulty marking on the profile); 3D Profile ordered automatically can be delivered with already printed bending points on it.

- last column – last bending point of profile, after which 2cm of profile should be left for an overlap

NOTE: In case absence of profile needed for an overlap, marking of a profile should be stopped and classic method of marking profile with a measuring tape should be performed.

- rows – information about data referring to next curves, letters or shapes.

NOTE: Points where profile should not be filed with metal file are marked in red color. Points where profile should not be filed should be marked on profile differently in order to avoid erroneous filing.

Training animation can be found on 3D System's website, in the Building letters" tab. It shows the method of shifting bending points on a profile.

gen. 2013-09-23 23:33													
Obwód +2cm	1	2	3	4	5	6	7	8	9	10	11	12	Koniec
1	382,18	22,41	179,97	202,87										362,18
2	289,21	25,57	49,80	74,00	100,25	148,97	173,10	196,69	220,82					269,21
3	382,18	22,41	179,97	202,87										362,18
4	277,08	63,30	81,38	101,44	148,61	172,20	219,37	239,01						257,08
5	389,97	56,90	122,14	180,42	197,19	231,87	240,57	268,73	284,62	312,78	320,11	353,42		369,97
6	451,03	28,26	65,27	102,22	130,54	195,78	217,23	242,12	268,41	284,94	315,33	344,33	365,79	431,03
7	1015,89	55,78	174,58	210,74	347,00	403,61	717,49							995,89
8	755,21	209,55												735,21
9	177,82													157,82
10.	313,43	101,60												293,43
11.	138,71													118,71
12	131,41	27,70	37,25	43,04	49,82	60,28	73,54							111,41
13.	36,77	5,09												16,77
suma:	4,74 m													
	Uwzględnia 2cm na zakładkę													

Pict. 5.13. Sample table obtained during calculations.

After this step is performed, software will automatically move to **„Save all"** tab.

5.7 „SAVE ALL" TAB
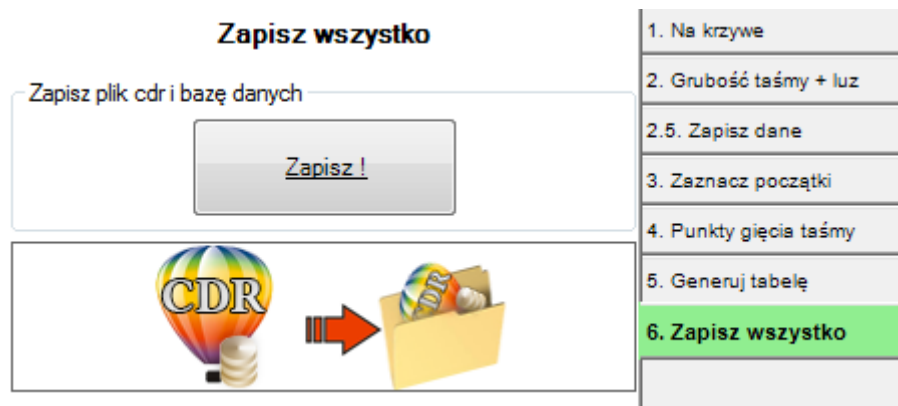
Pict. 5.14. „Save all" tab.

„Save all" module is responsible for saving calculations to a file on user's computer.

6. PRICING

„**Pricing**" module allows to create project's estimate basing on entered prices of materials, cost of man-hour, and number of people. This option also estimates time of realization of a project.

„**Pricing**" function is launched with a „**Pricing**" button in software's main window. Software automatically performs calculations and generates the table with costs (see picture below). Correct results are obtained only in case of updating appropriate parameters in the **"Configuration"** tab, from the **"Auxiliaries Configuration"** tree each time. Given parameters are part of the overall result. Calculations of „**Pricing**" can be modified. In order to make corrections, correct parameters in **"Auxiliaries Configuration",** and again click the „**Pricing**" button. Software will re-calculate costs basing on a new parameters from "**Auxiliaries Configuration". "Save all"** option should be selected after performing calculations.

The table contains information about quantity of materials needed for a project's realization, costs of labour and estimated time of production. Below explanation of 2 examples can be found (**"Glue for letters up to 200cm**" and **"LED modules")**, which illustrate distribution of data in the table and calculation of used materials.

Cost of materials

Usage of materials / Power of LED modules / Power drawn from power supply

Quantity of needed materials

materiały	ilość	zużycie	koszty	waluta
Kalkulacja kosztów 2014-06-16 12:28				
Profil-3D szer. 80mm	30,69m	- -	383,91	PLN
Klej płynny nr 1	77ml	77ml	8,61	PLN
Klej gęsty Plex-9021	205ml	205ml	26,39	PLN
Klej Monolith 342-1	2x	473ml	392,00	PLN
Klej Scigrip	2x	410ml	270,00	PLN
Plexi 4 mm + folia	6,18m²	- -	6,18	PLN
PCV 10 mm	6,18m²	- -	6,18	PLN
H-80 cm - CITI Led 3W biały LG 8000K	563x	0,72 W	1 086,59	PLN
cięcie frez 5 mm	30,69m	- -	30,69	PLN
Zasilacz 60W IP67	9x	486,43 W	442,98	PLN
Suma kosztów			2 653,53	PLN
Robocizna			15,40	PLN
Suma: Koszty + robocizna			2 668,93	PLN
szacowany czas produkcji	2 os.		5h 7min	

Pict. 5.17. Sample table with results of calculations.

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SYSTEM

7. SOFTWARE MOVES AUTOMATICALLY TO ANOTHER TAB „SAVE ALL", AFTER PERFORMING THIS STEP

ORDER PRINTING OF BENDING POINTS ON 3D PROFILE

Newest version of BPI software has additional tool to automatically order 3D Profiles. Sending e-mails, or calling our company is not necessary. After calculating bending points, required quantity of profile can be ordered automatically, and additionally adequately described marking of bending points will be printed on ordered profile.
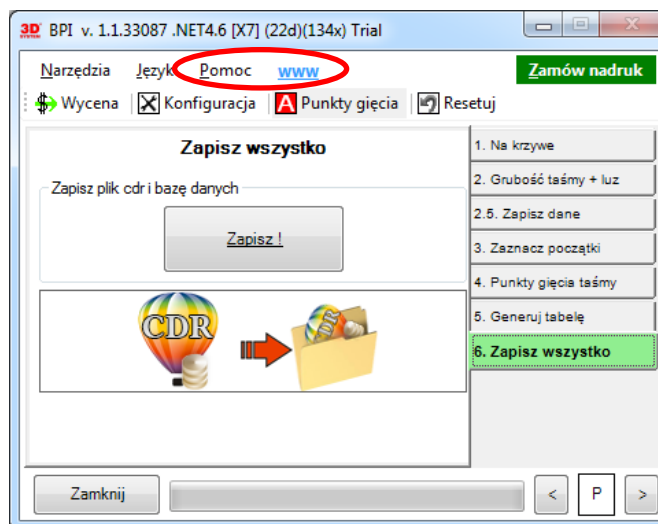
Pict. 7.1. Order

In order to move to order form, "Order printing of bending points on profile" button should be clicked. Ordering is available only after calculation of bending points.

Pict. 7.2. "Order printing of bending points on profile" form

We complete following data in the form:

➔ Name of project- enter name of logo. It will be printed on ordered profile (if we choose narrow profile, it is better the name is short, so it fits on profile).

➔ Type of ordered profile- in first place we choose width of profile. If we need atypical size, we mark "Other" and write details in **"Remarks"** field. Then choose appropriate color. We mark "Other" for custom colors, and write details in **"Remarks"** field. When choosing custom color we advise ordering White Matt profile, and painting it with an appropriately chosen paint.

➔ Remarks- all remarks regarding order, including all additionally ordered materials. Automatic order sends only information about ordered profile. Power supplies, adhesives, etc., must be added in the „Remarks" filed.

➔ Quantity- here we enter multiplicity of ordered logo

At the end we click "Order printing of bending points on profile" button in order to send an order.

Entering "Purchaser's data" may be required with a first order. Order's confirmation will be sent on given e-mail.

Wiadomość generowana automatycznie, prosimy na nią nie odpowiadać.

Potwierdzenie zamówienia taśmy z naniesieniem nadruku.

Dane projektu:

PROJEKT:	
Nazwa:	Logo 3D System
PROFIL-3D:	
Szerokość [mm]:	120
Kolor:	czerwony RAL 3020
Długość [m]:	28
Uwagi:	Dodatkowo 2 kleje monolith

Dane zamawiającego:

Imię i nazwisko:	Stefan Woźniak
Telefon:	661610352
Email:	biuro@3dsystem.pl

PRODUCENT SYSTEMU DO BUDOWY LITER PRZESTRZENNYCH

3D SYSTEM, 02-147 Warszawa, Paluch 24, NIP: 812-119-42-66
Tel.+48 22 350 71 11, +48 22 350 71 12, fax. +48 22 221 32 29
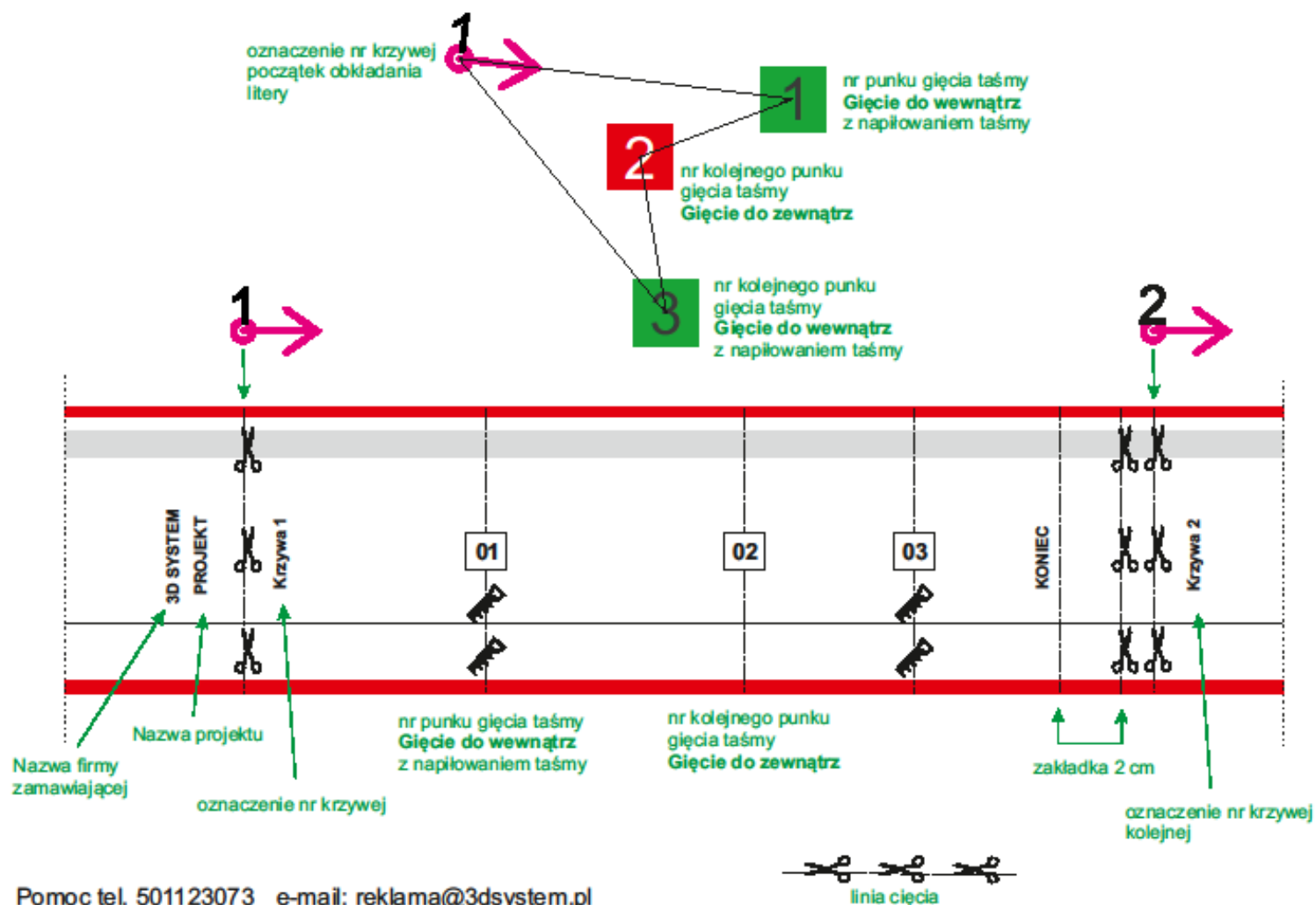zamowienia@3dsystem.pl, biuro@3dsystem.pl

Pict. 7.3. Example of order's confirmation

8. MARKINGS ON PROFILE

Ordered profile will have markings of bending point printed on it. Their meaning is described on the graphic below.

Legenda oznaczeń nadruku na „Profilu-3D"

oznaczenie nr krzywej
początek obkładania
litery

1 nr punku gięcia taśmy
Gięcie do wewnątrz
z napiłowaniem taśmy

2 nr kolejnego punku
gięcia taśmy
Gięcie do zewnątrz

3 nr kolejnego punku
gięcia taśmy
Gięcie do wewnątrz
z napiłowaniem taśmy

3D SYSTEM
PROJEKT

Krzywa 1

01   02   03

KONIEC

Krzywa 2

Nazwa firmy
zamawiającej

Nazwa projektu

oznaczenie nr krzywej

nr punku gięcia taśmy
Gięcie do wewnątrz
z napiłowaniem taśmy

nr kolejnego punku
gięcia taśmy
Gięcie do zewnątrz

zakładka 2 cm

oznaczenie nr krzywej
kolejnej

linia cięcia

Pomoc tel. 501123073   e-mail: reklama@3dsystem.pl
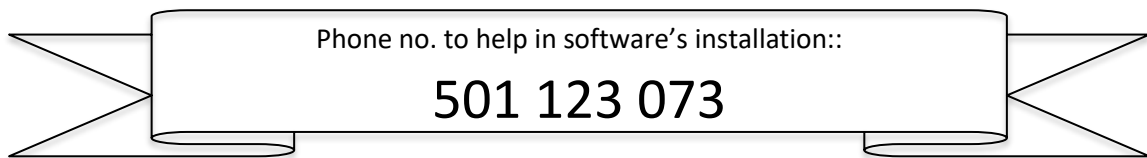
9. HELP & TECHNICAL SUPPORT

9.1 HELP & TECHNICAL SUPPORT

Help support of the software is available only for following CorelDraw versions: X7 and X6. Notes on the encountered problems with the software, or the calculations, should be sent on the following e-mail address help@3dsystem.pl, with an exact description of the irregularities. Help department will answer e-mails as soon as possible. In case of problems which can be solved by the User Guide, e-mails will not be answered.

3D System Company is open for any suggestions regarding improving the software. 3D System employees will carefully consider proposed suggestions and decide about introducing them in the new version of the software.

3D System Company invites to acquainting with a training animation on the www.3dsystem.pl website, in the "Building letters" tab.

Training clips regarding BPI software can be found on YouTube website, on company's channel: https://www.youtube.com/user/krzysiek3dsystem

Phone no. to help in software's installation::

501 123 073

CONTACT DATA:

3D SYSTEM Paluch 24 str. 02-147 Warsaw Poland EU VAT no.: PL 812-119-42-66	Tel.: +48 22652 60 11, +48 22652 60 12.

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10. BRAND AND TRADEMARKS:

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