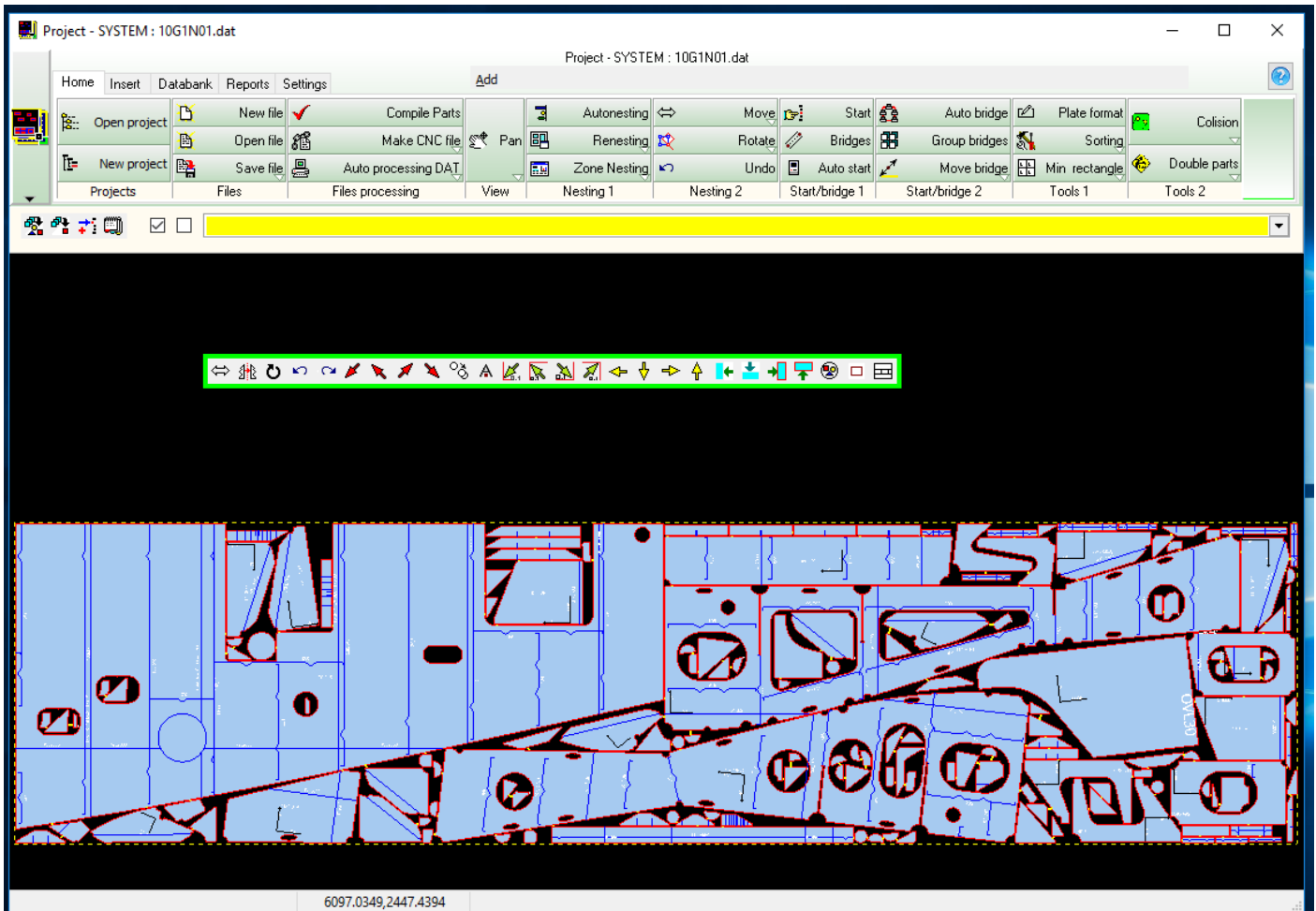


AutoNesting

Overview



The **AutoNesting** is a Windows OpenGL application designed to make parts nesting and to generate numerical code for cutting machine.

The purpose of this document is to present and explain the AutoNesting concept and to give a general overview of the AutoNesting system. The document covers the main application functions, features and concepts in AutoNesting, but for the purpose of clarity, explanations have been simplified.

The AutoNesting system contains the next modules:

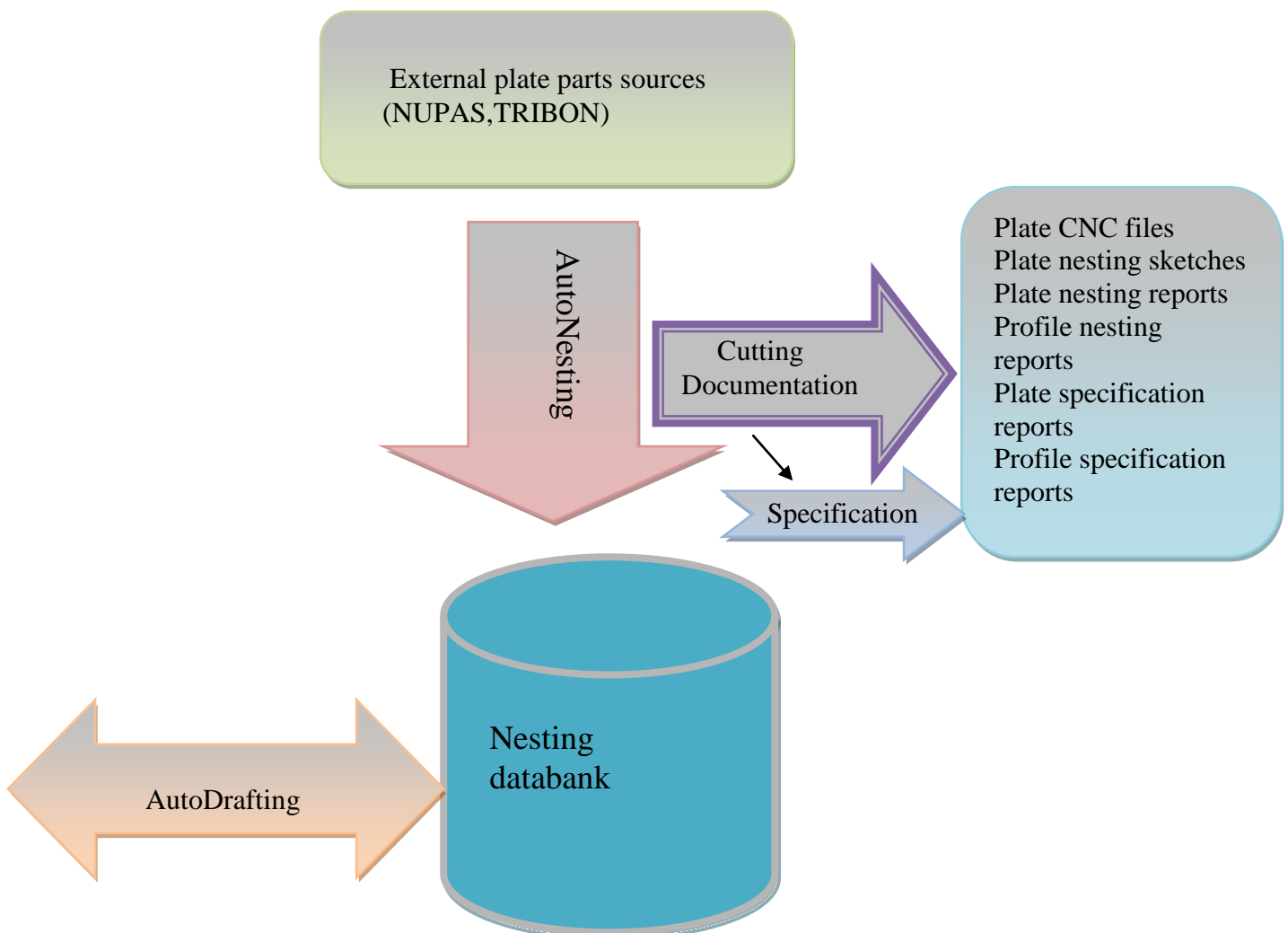
- **AutoDrafting** -> 2D drafting editor
- **AutoNesting** -> plate and profile nesting and cnc files generation
- **Specification** -> report generator for plates, profiles specification, technological process
- **ViewCNC** -> essi,g-code file viewer and cutting simulator

This nesting system has a lot state of art tools which make possible the next features:

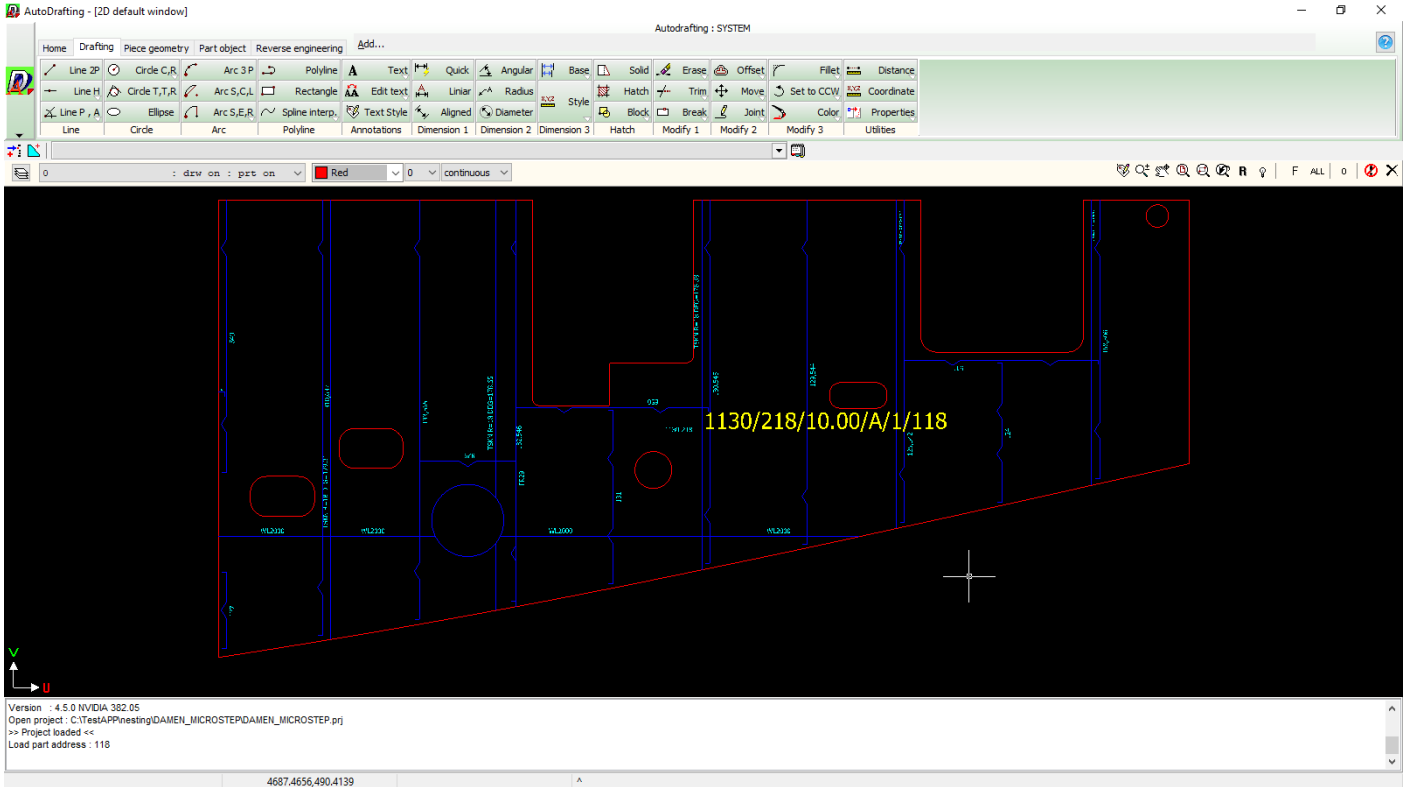
- ✓ A network working style
- ✓ A database advanced filter for input parts
- ✓ Zooming and panning in real time
- ✓ Drafting for plate parts
- ✓ Powerful nesting of parts ; manual or automat
- ✓ Starts and bridges ; manual and automat
- ✓ Renesting
- ✓ Double nestings
- ✓ Customizable postprocessor included; Numeric cod in ESSI,G-CODE file format , plasma and oxi-gas machine
- ✓ Panel Line postprocessors
- ✓ Beveling plasma and oxi-gas ; labeling , blasting code generation, variable plasma bevel
- ✓ Burning sketch
- ✓ DXF interface for export nested sheets , burning sketch and parts
- ✓ DXF , GEN , INI interface for importing parts (NUPAS ,AVEVA, TRIBON and AutoCAD)
- ✓ Reports in Excel csv file format

All that operations are made in interactive mode and the application checks the user action.

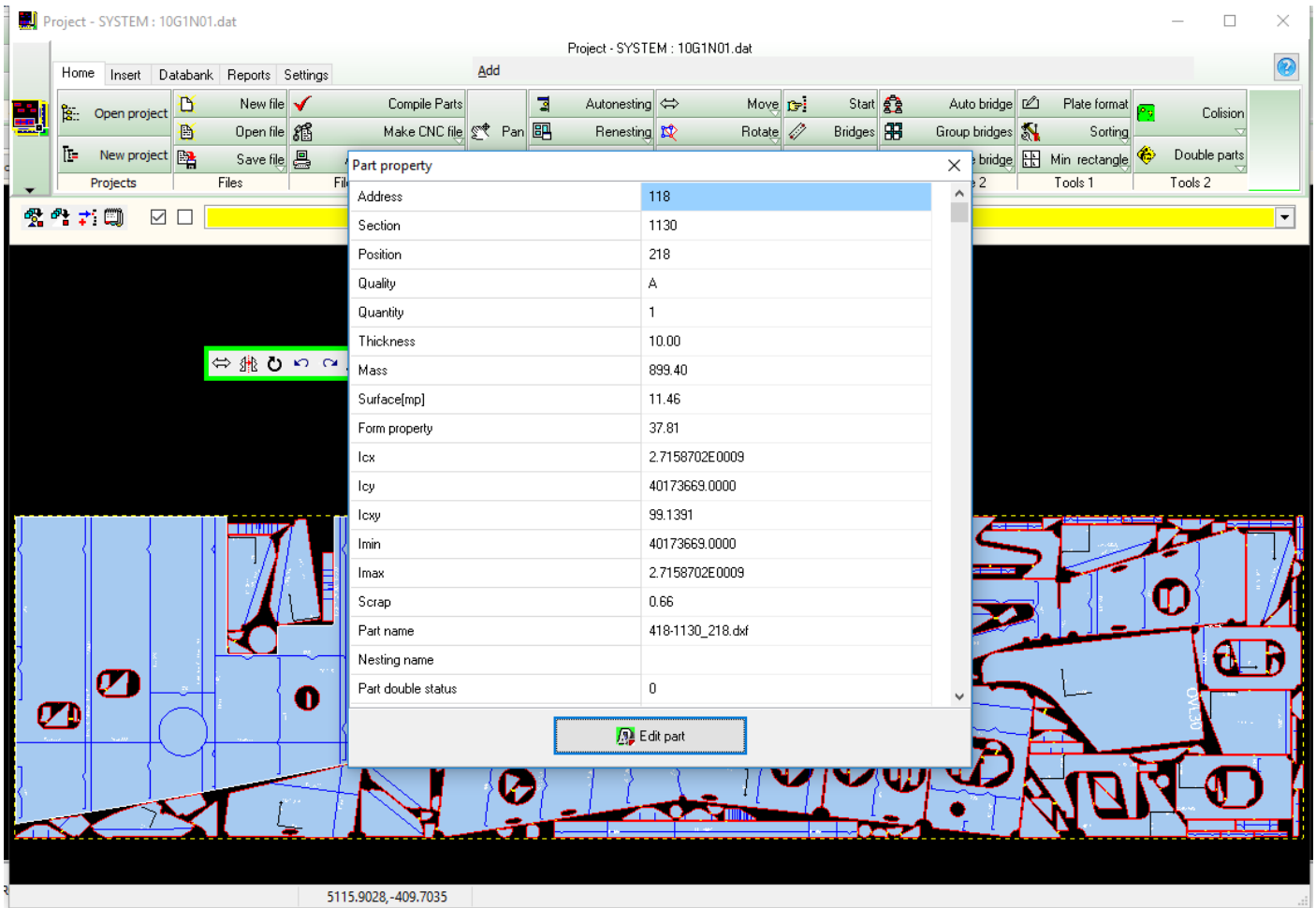
✚ The application working sketch



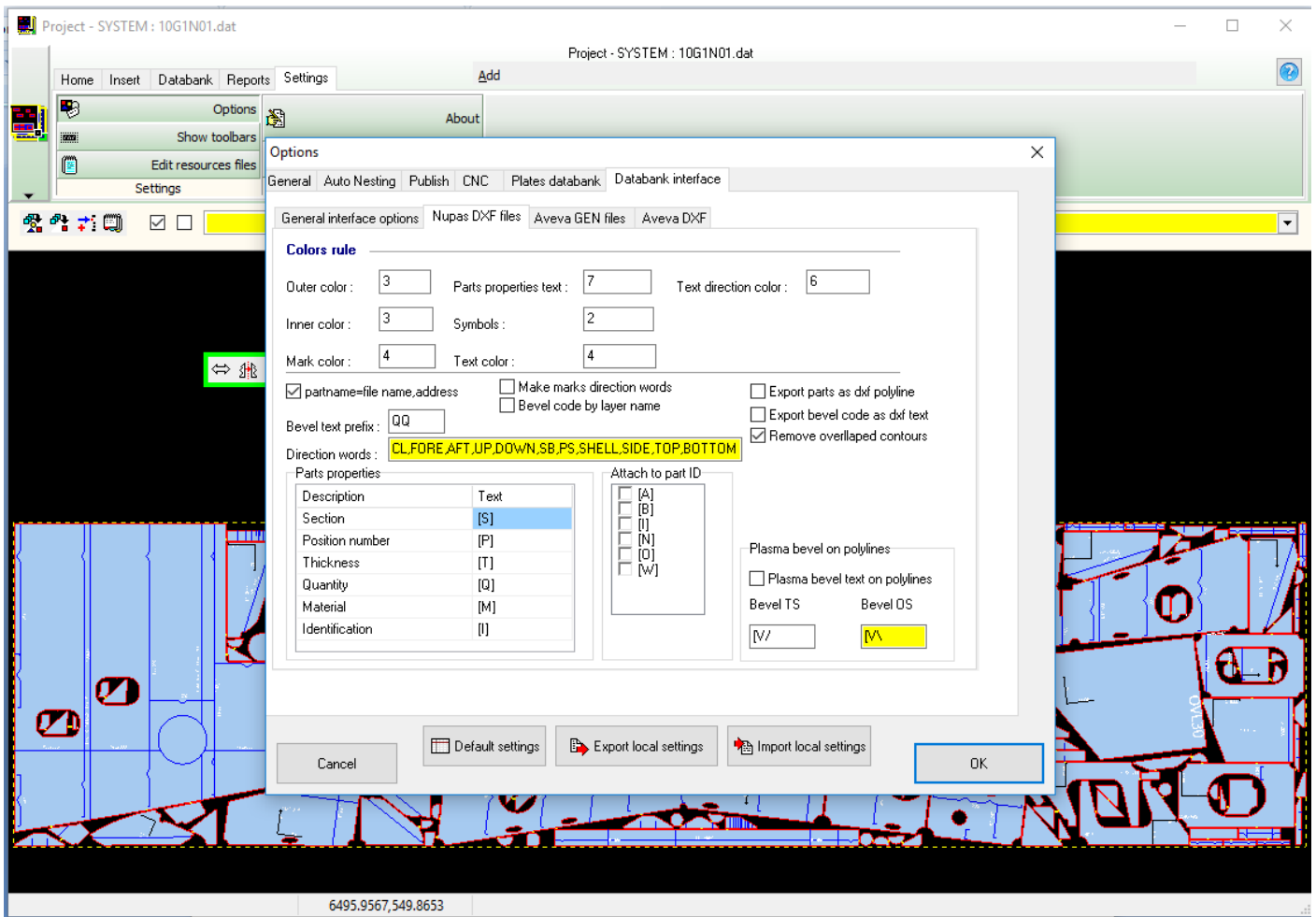
Screenshot



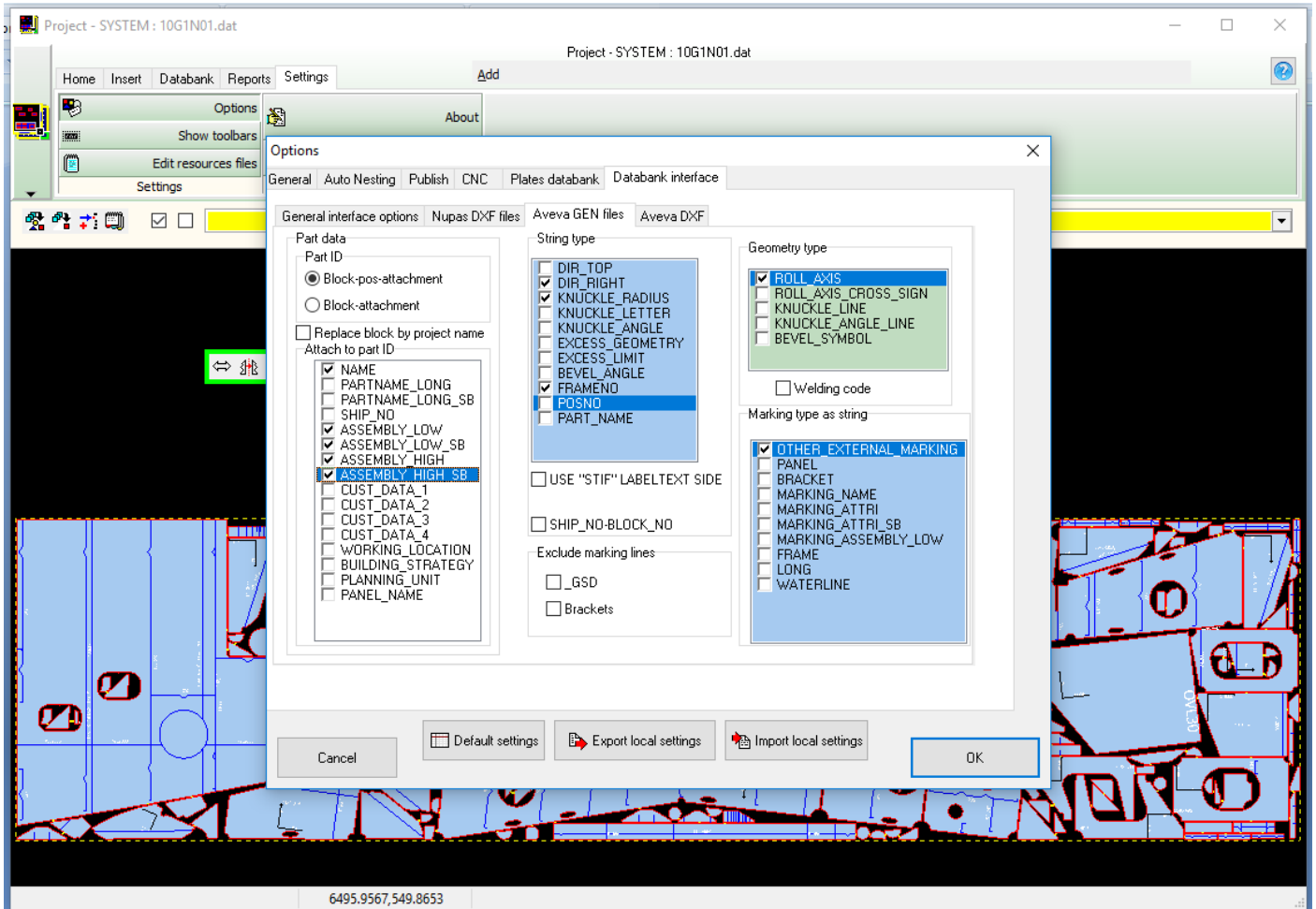
AutoDrafting , parts imported from nesting databank



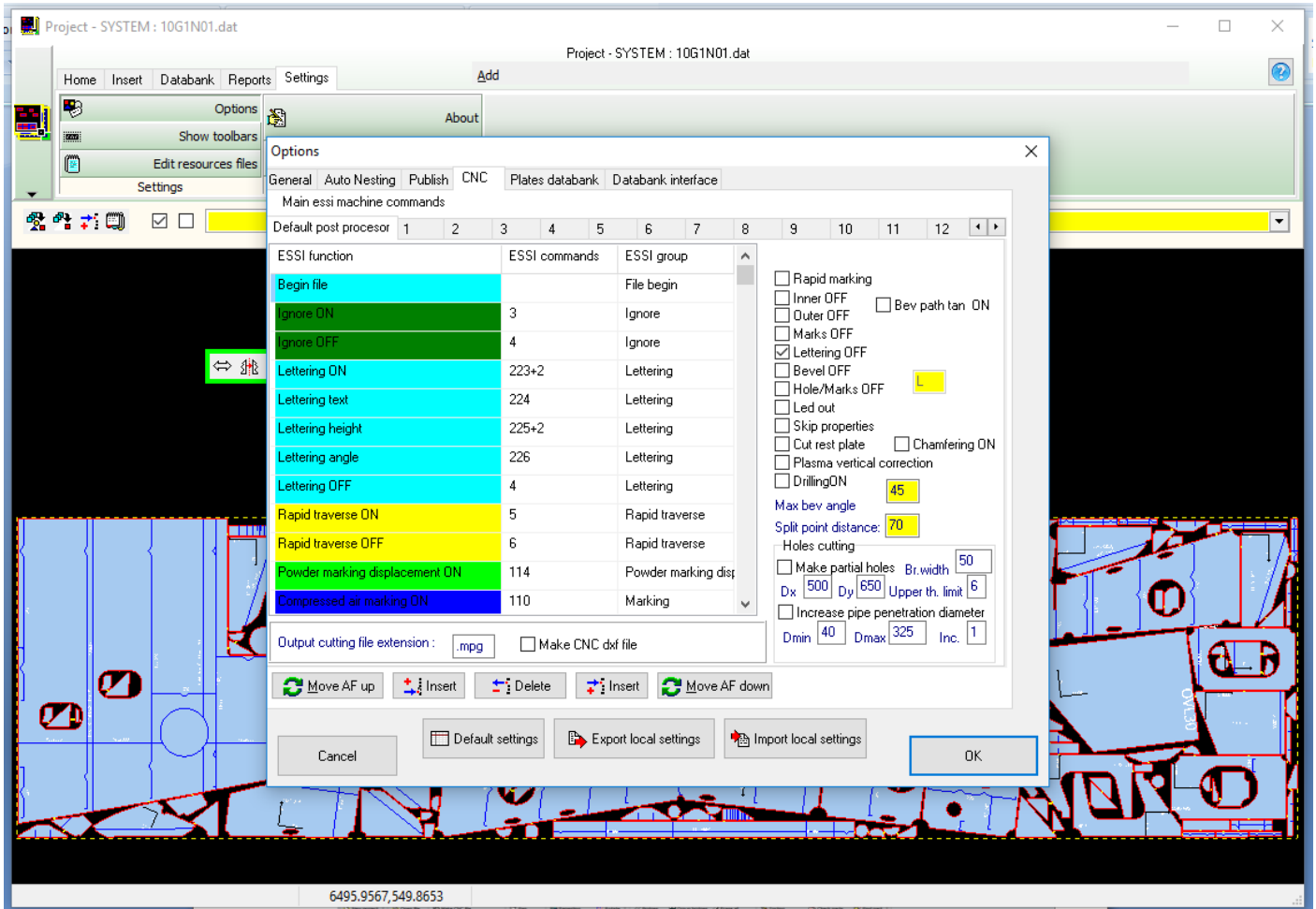
AutoNesting , launch AutoDrafting for selected part , press edit part button



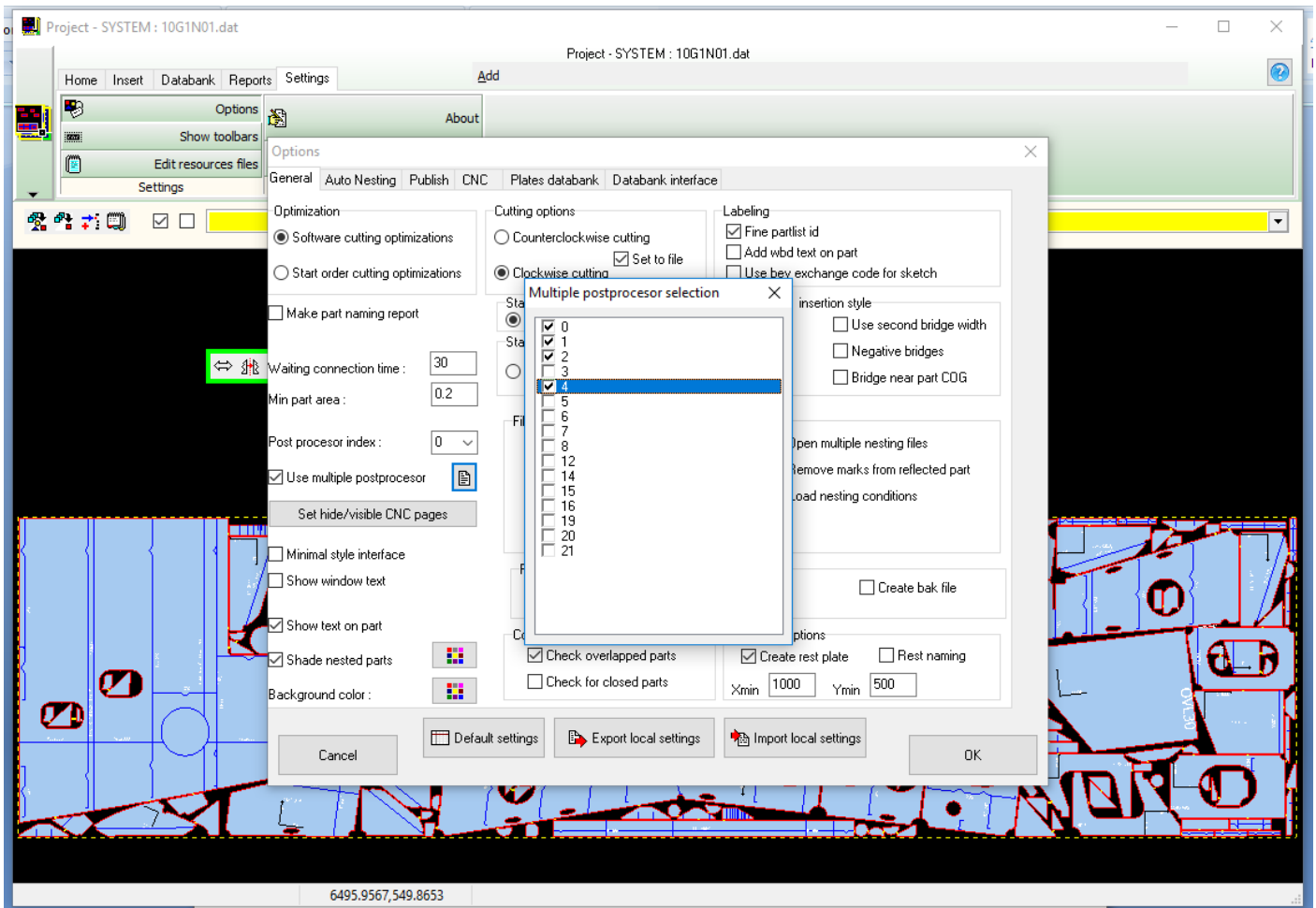
AutoNesting, NUPAS dxf interface settings



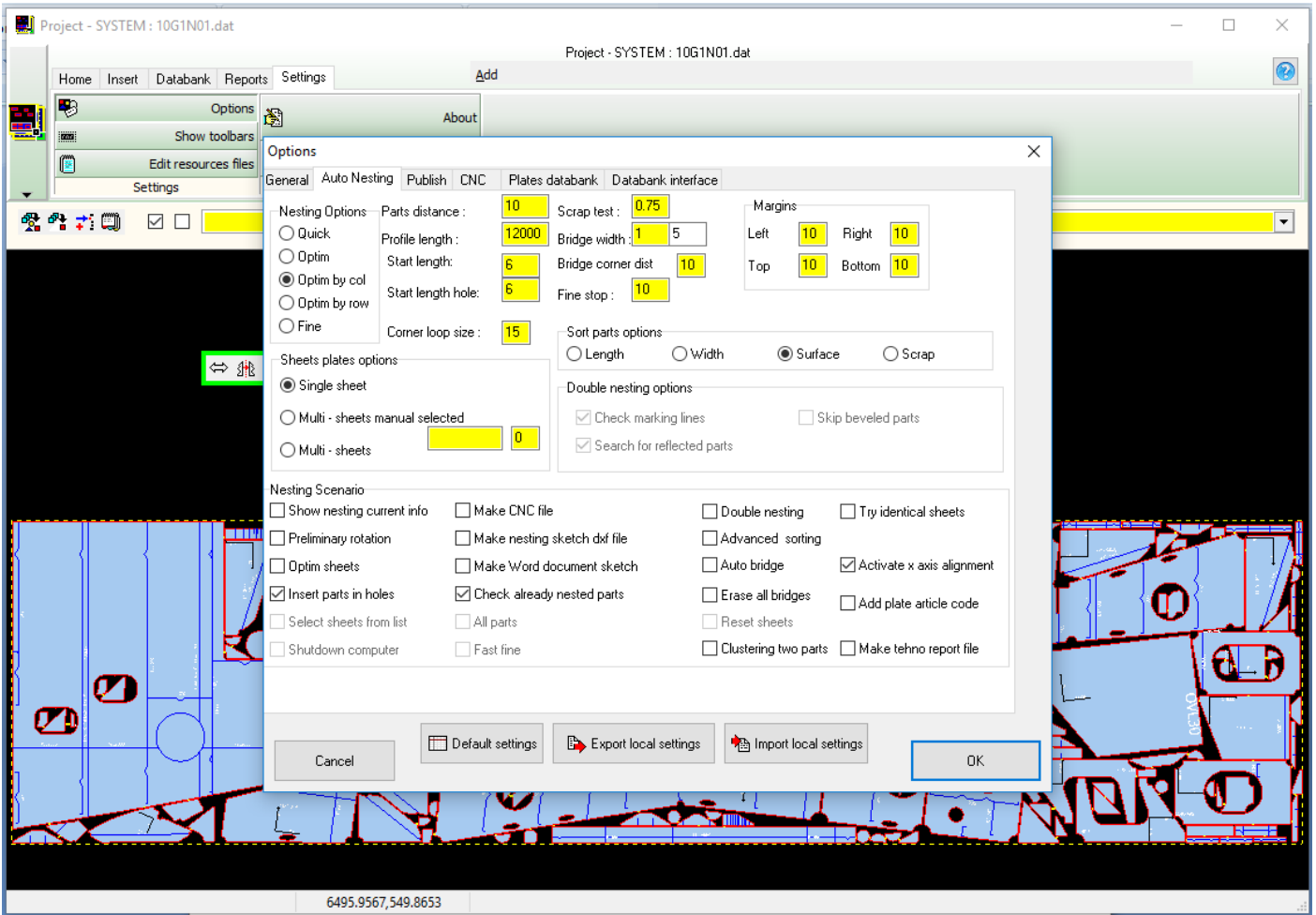
AutoNesting , AVEVA gen file interface



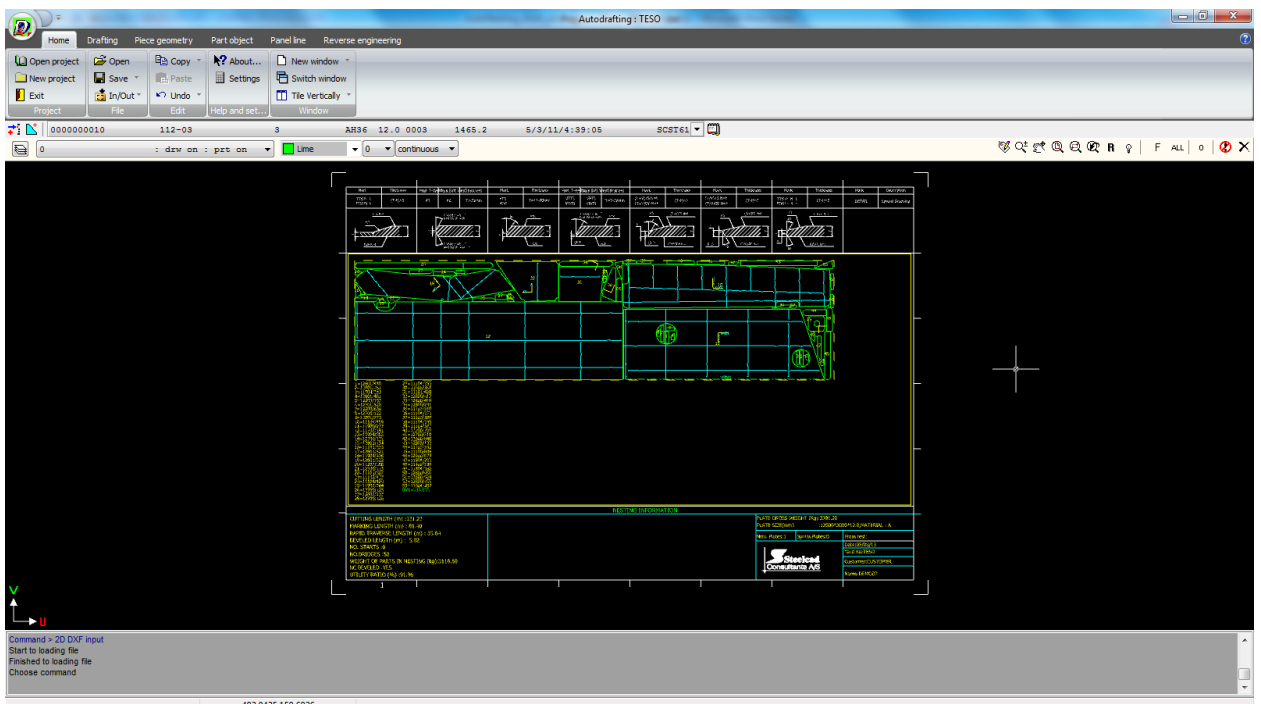
AutoNesting , CNC page settings for multiple postprocessors



Use multiple postprocessors in same time for cnc output



AutoNesting , autonesting page settings for automatic nesting



AutoDrafting , dxf nesting sketch made automatically by AutoNesting

Section	Position	Quantity	Material	Thickness	Weight	Nestings	Nested pcs.
112-02	5	2	A	12	680.6	TEST19.dat	1
112-02	5					TEST20.dat	1
118-02	5	2	A	12	680.6	TEST20.dat	1
118-02	5					TEST21.dat	1
11203	140	1	A	12	5.4	TEST02.dat	1
11203	142	1	A	12	15.2	TEST16.dat	1
11203	193	1	A	12	11.5	TEST14.dat	1
11203	195	1	A	12	11.5	TEST20.dat	1
11203	198	1	A	12	11.5	TEST20.dat	1
11203	211	1	A	12	12	TEST16.dat	1
11203	214	1	A	12	11.7	TEST16.dat	1
11203	217	1	A	12	11.6	TEST20.dat	1
11203	229	1	A	12	31.2	TEST24.dat	1
11203	232	1	A	12	21.5	TEST25.dat	1
11203	235	1	A	12	31.5	TEST20.dat	1
11203	238	1	A	12	13.8	TEST18.dat	1
11203	258	1	A	12	4.5	TEST21.dat	1
11203	264	1	A	12	4.5	TEST20.dat	1
11203	266	1	A	12	4.5	TEST20.dat	1
11203	275	1	A	12	31.2	TEST24.dat	1

Nesting reports of nested parts , csv file

Nestings	Plate size	Section	Position	Nested pcs.	Material	Th	Weight	Total weight
TEST01.dat	12000*3000*12.0	11100	276	1	A	12	1.6	1.6
		11100	283	1	A	12	181	181
		11100	288	1	A	12	2	2
		11100	632	1	A	12	91	91
		11101	175	1	A	12	9.6	9.6
		11102	180	1	A	12	990.5	990.5
		11103	262	1	A	12	6.4	6.4
		11103	379	1	A	12	2.6	2.6
		11103	419	1	A	12	2.2	2.2
		11203	284	1	A	12	13.9	13.9
		11402	232	1	A	12	38.5	38.5
		11402	390	1	A	12	52.6	52.6
		11402	402	1	A	12	52.2	52.2
		11404	196	1	A	12	32.4	32.4
		11504	355	1	A	12	5.9	5.9
		11702	240	1	A	12	1231.3	1231.3
		11901	255	1	A	12	1.7	1.7
		11901	604	1	A	12	61.6	61.6
		11904	353	1	A	12	244.7	244.7

11904	420	1	A	12	6.4	6.4
12100	115	1	A	12	1.1	1.1
12100	117	1	A	12	1.2	1.2
12100	522	1	A	12	2	2
12100	523	1	A	12	2	2
12100	540	1	A	12	2	2
12100	541	1	A	12	2	2
12100	603	1	A	12	2	2
12100	604	1	A	12	2	2
12100	623	1	A	12	2	2
12100	624	1	A	12	2	2
12101	540	1	A	12	2	2
12101	542	1	A	12	2	2
12200	421	1	A	12	1	1
12200	422	1	A	12	1	1
12200	470	1	A	12	1	1
12201	481	1	A	12	1	1
12500	349	1	A	12	3	3
12500	355	1	A	12	3	3
12500	518	1	A	12	3.9	3.9
12500	600	1	A	12	3.9	3.9

Nesting reports of nested parts by nesting , csv file

The screenshot shows the 'Materials specification' window for 'Project - TES0'. The main data table is as follows:

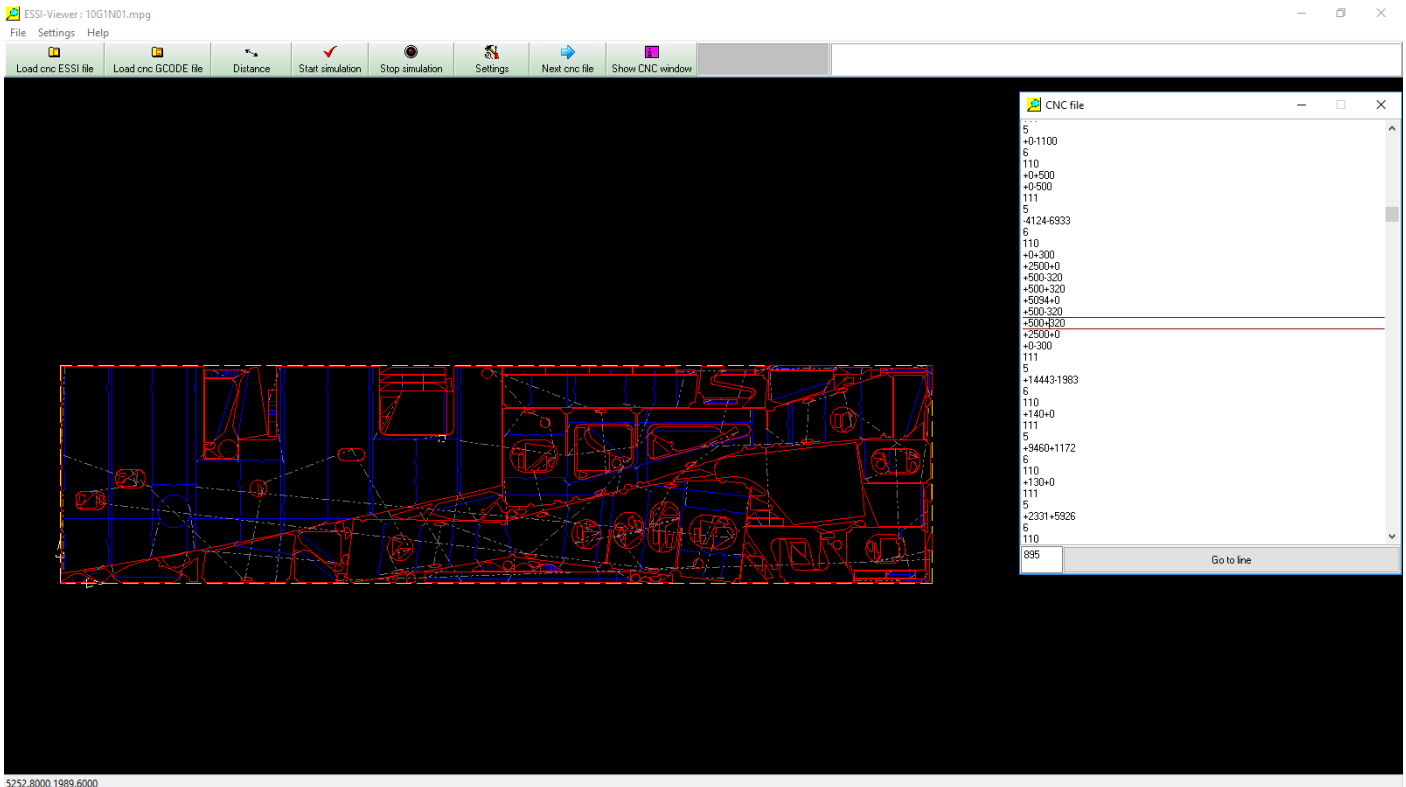
Index	Section	Type	Dimension	Material	Quantity	Weight	Total Weight	Utility factor[rest factor]	Time	Cutt length	Cutt bevel length	Mark length	Run length	Nested parts weight	Scrap weight	No.starts	Nesting name	ID.
		PLA	8.0*2800*11	A	1	1758.41	1758.40	82.96	82.4	194.36	0.00	37.42	63.61	1458.40	299.67	15	08N09.mpg	
		PLA	15.0*2800*	A	1	3956.41	3956.40	82.81	227.	275.43	0.00	107.88	76.91	3277.00	452.90	147	15N01.mpg	
		PLA	15.0*1516*	A	1	227.24	227.24										15N01R3	
		PLA	8.0*2800*11	A	1	1758.41	1758.40	82.96	82.4	194.36	0.00					5	08N09.mpg	
		PLA	15.0*2800*	A	1	3956.41	3956.40	82.81	227.	275.43	0.00					47	15N01.mpg	
		PLA	8.0*2800*11	A	1	1758.41	1758.40	82.96	82.4	194.36	0.00					5	08N09.mpg	
		PLA	15.0*2800*	A	1	3956.41	3956.40	82.81	227.	275.43	0.00					47	15N01.mpg	
		PLA	8.0*2800*11	A	1	1758.41	1758.40	82.96	82.4	194.36	0.00					5	08N09.mpg	
		PLA	15.0*2800*	A	1	3956.41	3956.40	82.81	227.	275.43	0.00					47	15N01.mpg	

A 'Report options' dialog box is open, showing filter settings for 'plate' and 'profile' sections, materials, and dimensions. It also includes checkboxes for report options: Scrap, Time, Cutt length, Mark length, Run length, Bev. cut length, Painting surface, Scrap weight, and Excel link.

Specification , sheet nesting plate data are loaded from cnc or nesting file

	Dimension	Material	Quantity	Weight	Total Weight
1	5.0*1000*5000	A	1	196.25	196.25
2	6.0*1364*3198	A	1	205.45	205.45
3	6.0*1800*12000	A	5	1017.36	5086.8
4	6.0*1800*11000	A	1	932.58	932.58
5	6.0*2000*11500	A	8	1083.3	8666.4
6	6.0*2000*11000	A	8	1036.2	8289.6
7	6.0*2000*12000	A	2	1130.4	2260.8
8	6.0*2100*9500	A	1	939.64	939.64
9	6.0*2100*12000	A	5	1186.92	5934.6
10	6.0*2500*11500	A	11	1354.13	14895.43
11	6.0*2500*11000	A	6	1295.25	7771.5
12	6.0*2500*12000	A	5	1413	7065
13	6.0*2600*12000	A	14	1469.52	20573.28
14	6.0*2700*12000	A	4	1526.04	6104.16
15	6.0*2800*12000	A	15	1582.56	23738.4
16	6.0*2800*11000	A	4	1450.68	5802.72
17	6.0*2800*11500	A	6	1516.62	9099.72
18	6.0*2900*11000	A	26	1502.49	39064.74
19	6.0*2900*12000	A	34	1639.08	55728.72
20	6.0*2900*10000	A	6	1365.9	8195.4

Specification , reports in Excel



ViewCNC essi /g-code

Benefits

- **Flexibility** , can export cnc files for different kind of cutting machine (marking,cutting,beveling,lettering,blasting)
- **Man hours reduced by automatic nesting of parts , automatic starts and bridges insertion**
- **Man hours reduced by automatic export of cutting documentation (cnc files and nesting sketches)**
- **Integration** , that means parts from different design systems can be stored in a single database
- **Easy to use and user customizable interface**



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