

SOFTWARE SOLUTION for industrial plant engineering

PROCESS DESIGN suite
PLANT DESIGN suite
ELECTRICAL DESIGN suite



ESApr

PROCESS DESIGN suite

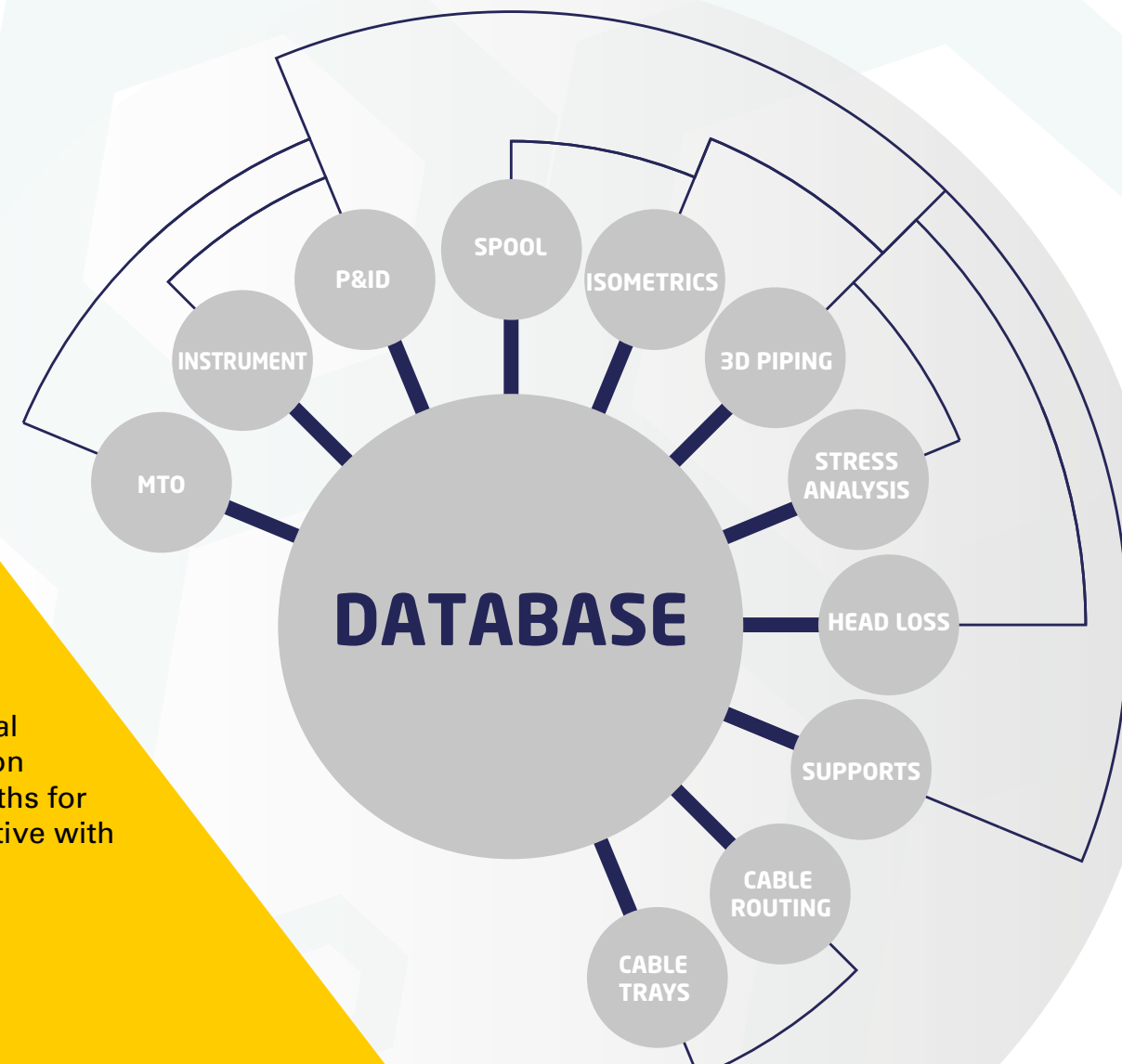
PLANT DESIGN suite

ELECTRICAL DESIGN suite

ESApr is the new generation suite of software for plant design, integrated with the AutoCAD/BricsCAD graphic engine. Based on MS SQL database, *ESApr* allows to design industrial facilities from the conceptual phase up to the realization, installation and revamping, up to the fluidynamic and structural analysis. Used in the Oil & Gas, chemical and petrochemical, pharmaceutical, food, steel, energy and power generation sectors, *ESApr* is suitable for the design of plants of any size and for both individual designers and large work groups. ESAin main concern has always been to create programs easy and intuitive to manage, an essential element to guarantee a quick and profitable return on investment. Unlike other products that require months for training and set-up, with *ESApr* the user is productive with just a few days of training.

Main Features

- Immediate set up of new projects
- Multi-user architecture for concurrent engineering
- Fully customizable environment
- Quick learning
- AutoCAD® and BricsCAD® graphic engines
- MS SQL Server database
- IFC export according to the BIM standard
- Interoperability with other software
- Compliance with industrial standards
- Consistency of process data with the 3D model
- Integration with point cloud from laser scanner



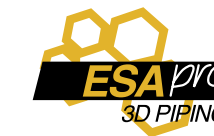
The comprehensive solution for plant design



PROCESS DESIGN

PLANT DESIGN

ELECTRICAL DESIGN



ESApr

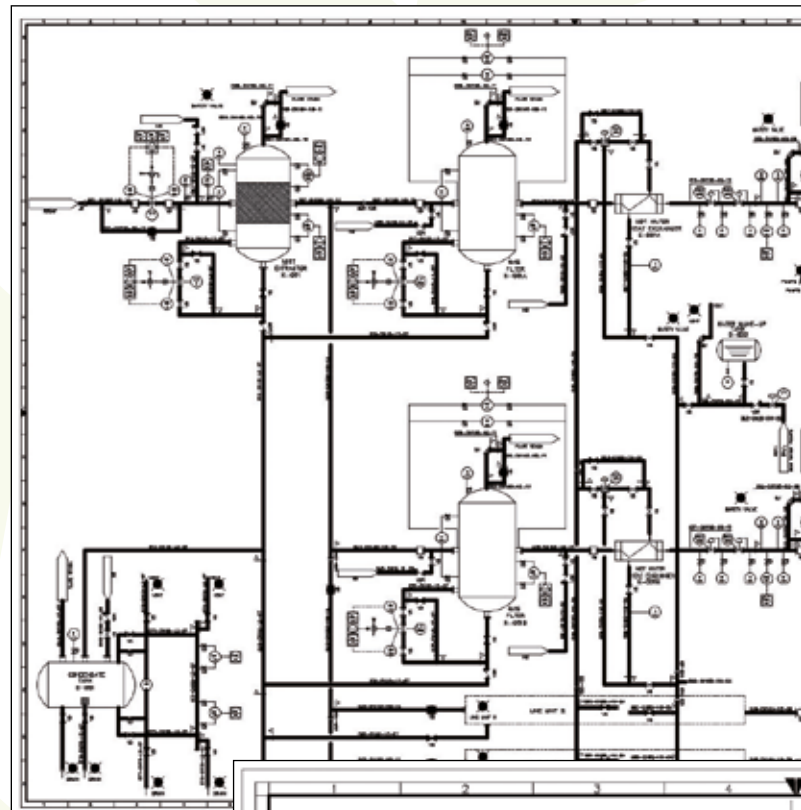
PROCESS DESIGN SUITE



- **Intelligent P&IDs driven by piping spec**
ESApr P&ID provides a tool for the creation of the Piping Specs that constantly controls and assists the user while drafting the scheme.
- **Customizable environment**
The symbol library, complying with the international standards, so as the graphic environment and the tagging rules can be easily customized by the user.
- **Graphic Tools**
The graphic functions of the program drastically reduce the drawing timing, minimizing errors.
- **Automatic tags**
The system uses tagging functions compliant with the ISA and KKS standards.
- **Easy and versatile editing**
The program is particularly efficient in the editing phase: each change in the piping class automatically affects the components of lines and lists.
- **Consistency check**
A series of automatic tools allows the user to check the continuity of the

lines, as well as to avoid duplications and locate lines, components or instrumentation loops on the drawing.

- **Automatic generation of lists**
The program generates lists of lines, instruments, components and equipment in Excel or TXT formats by using customizable templates.
- **Integration with ESApr 3D Piping**
Dedicated functions constantly check on the consistency between the P&ID scheme and the 3D model.
- **Comparing revisions**
The generated reports highlight the changes between two different revisions of the scheme.
- **Integration with wiring diagrams**
The design data can be shared with the software for the design of wiring diagrams.



ESApr

ESApr s.r.l.
Via Montevideo 15/3 - 16129 GENOVA
Tel. 010/311544 - Fax 010/313606 - info@esapro.com

Job order: EP548CY

1. Complete Assembly Other _____

2. Serrated Cover Other _____

3. Explosion Proof Class 1 _____

4. Material Stainless Steel Cond. Conn. _____

5. gte Size 4" Dim. 1/4" 200 mm Union

ELEMENT

MFR. & Model No. Thermo Inc. 66-234-01

6. Pattern Nickel _____

7. No Frost Resistance 200 Class _____

8. Temperature Range _____ °F - 120° C

9. Lead: STD Potted Term. Sealed _____

10. Sheath Material _____ O.D. 4"

RESISTANCE TEMPERATURE SHEET 1 OF 2

NO	BY	DATE	REVISION	SPEC. NO.	REV.
01	FF	16/11/2013	A	786A	2
02	FP	10/02/2014	B	Contract	DATE
03	DB	27/05/2014	C	REQ.	P.O.
04	LB	11/09/2014	A		

BY: SP CHK'D: LB APPR: MP

11. Mounting Thread _____

12. Connection: 2-Wire 3-Wire 4-Wire

Lead Wires Receptacle Bayonet Lock

Other _____

13. Material Stainless Steel AISI 304

14. Construction: Tapered Straight

Oiled Built Up Closed End Tube

15. Dimensions: MFR. STD. O.D. 2" I.D. 1.10"

16. Internal Thread Aluminum

17. Process Connection Flanged

Rev.	Tag No.	Process Conn.	Wall Dim. 1/2" 1"	Element Length	Single or Dual	P&ID DWG No.	Service	Notes
05	TI001	Ranged	100 200	300	Single	PC009-A	Cool Water	
03	TI002	Ranged	80 150	230	Single	PC009-A	Low Pressure Steam	
05	TI003	Ranged	100 200	300	Single	PC009-A	High Pressure Steam	
04	TI004	Ranged	80 150	230	Single	PC009-A	Cool Water	
05	TI005	Ranged	100 200	300	Single	PC009-A	High Pressure Steam	
05	TI006	Ranged	100 200	300	Single	PC009-A	High Pressure Steam	
05	TI007	Ranged	80 150	230	Single	PC009-A	Cool Water	
05	TI008	Ranged	100 200	300	Single	PC009-A	High Pressure Steam	
05	TI009	Ranged	80 150	230	Single	PC009-A	Low Pressure Steam	
04	TI010	Ranged	100 200	300	Single	PC009-A	Cool Water	
04	TI011	Ranged	100 200	300	Single	PC009-A	High Pressure Steam	
05	TI012	Ranged	100 200	300	Single	PC009-A	Cool Water	
03	TI013	Ranged	80 150	230	Single	PC009-A	Cool Water	
05	TI014	Ranged	100 200	300	Single	PC009-A	Low Pressure Steam	
05	TI015	Ranged	100 200	300	Single	PC009-A	Low Pressure Steam	
03	TI016	Ranged	80 150	230	Single	PC009-A	Cool Water	
05	TI017	Ranged	80 150	230	Single	PC009-A	High Pressure Steam	
03	TI018	Ranged	100 200	300	Single	PC009-A	Cool Water	

Parte meccanica
Parte strumentazione

Tipico primario: tubing

MISURA DI PRESSIONE (PT)
FLUIDO: VAPORE

NO	DESCRIZIONE	DIAMETRO	CONNESSIONE	SPURTO	MATERIALE	CLASSE
1	ORIGINE	1/2"	S.N.	30002	ANSI 316	1
2	INSTRUMENTAZIONE	1/2"	S.N.	30002	ANSI 316	1
3	VALVOLA	1/2"	S.N.	30002	ANSI 316	1
4	VALVOLA	1/2"	S.N.	30002	ANSI 316	1
5	VALVOLA	1/2"	S.N.	30002	ANSI 316	1
6	VALVOLA	1/2"	S.N.	30002	ANSI 316	1
7	VALVOLA	1/2"	S.N.	30002	ANSI 316	1
8	VALVOLA	1/2"	S.N.	30002	ANSI 316	1
9	VALVOLA	1/2"	S.N.	30002	ANSI 316	1
10	VALVOLA	1/2"	S.N.	30002	ANSI 316	1
11	VALVOLA	1/2"	S.N.	30002	ANSI 316	1
12	VALVOLA	1/2"	S.N.	30002	ANSI 316	1
13	VALVOLA	1/2"	S.N.	30002	ANSI 316	1
14	VALVOLA	1/2"	S.N.	30002	ANSI 316	1

dedicated to the process and electrical design of the plant



- **Automatic datasheets generation**
Starting from an ESApr P&ID project, ESApr Instrumentation creates and manages instrument, component and equipment datasheets.
- **Bidirectional synchronization Instrumentation / Process**
The shared project database ensures the constant alignment of all the information reported in the project documents: P&ID diagrams, line and instrument lists, datasheet.
- **Instrumentation data views**
Through a data grid interface ESApr Instrumentation displays the instrument data of an ESApr P&ID project and also allows the user to add further detail data.
- **Hook-up manager**
ESApr Instrumentation allows to associate to each instrument its own hook-up and automatically provides the bill of materials.

ESApr

PLANT DESIGN SUITE



- **Customizable dimensional catalogue**
ESApr 3D Piping is supplied with a dimensional catalog that contains over 10,000 piping components complying with the international standards, PVC, PTFE, resin glass, pharmaceutical and Victaulic libraries included. The vast catalog can be easily expanded, by creating new dimensional tables or by using 3D models supplied by manufacturers of piping components.
- **Structural steel**
The system includes a module for modeling steel structures. The

SDNF interface allows to export the model to steel detailing applications, then allowing to re-import it once processed.

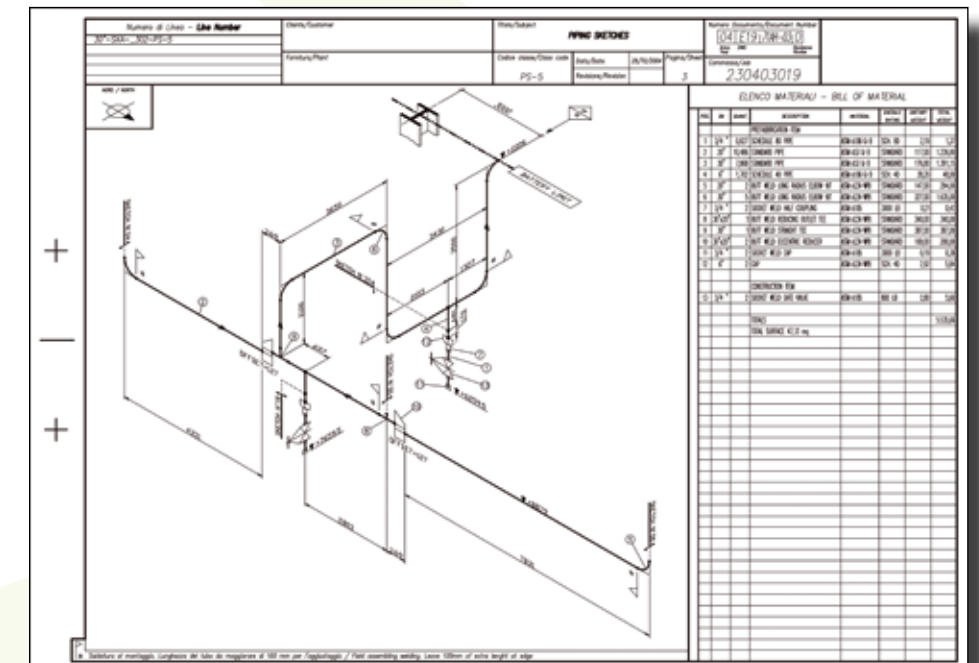
- **Equipment**
A parametric library of equipment such as pumps, tanks, heat exchangers and other devices is included.
- **Real time interference check**
The program detects possible interferences in real time during the modeling process.
- **Integration with ESApr P&ID**
Dedicated functions constantly check on the consistency between the P&ID schemes and the 3D model.

- **Orthographic automatic drawings**
The automatic 2D drawing generation tool is one of the strong points in ESApr. Changes made to the 3D model automatically affect the 2D drawings.
- **Isometric drawings automatic generation**
Isometric drawings, complete with dimensions, tags, references to other sheets, weldings, insulation, cutting and material lists, are automatically created by ESApr Isometrics.
- **Compatibility with 3D viewers**
ESApr 3D piping produces intelligent models, navigable with the most common 3D model viewers on the market.
- **Customizable material lists**
ESApr automatically produces customizable material lists. With the application ESApr FORem it is also possible to generate these documents on templates created by the user.
- **Compatibility with BIM standard**
The 3D model can be exported through the IFC interface, fully compatible with the BIM standard.
- **Laser Scanning**
ESApr is fully compatible with the most common laser scanner systems for the three-dimensional survey of existing plants.

Dedicated to the 3D design of plants.



- **Isometric drawing automatic generation from ESApr 3D piping model**
ESApr Isometrics automatically generates the isometric drawings starting from the ESApr 3D Piping model.
- **Isometric drawings manual generation**
In manual mode, ESApr Isometrics allows users to quickly create isometric drawings starting from scratches.
- **Spec-driven modeling and material lists generation**
The user can draw and quote isometric drawings in an accurate and simple way by choosing the appropriate symbols from the library, under constant control of piping specs. Soon after the software generates the bill of materials within the drawing.



ESApr

PLANT DESIGN SUITE



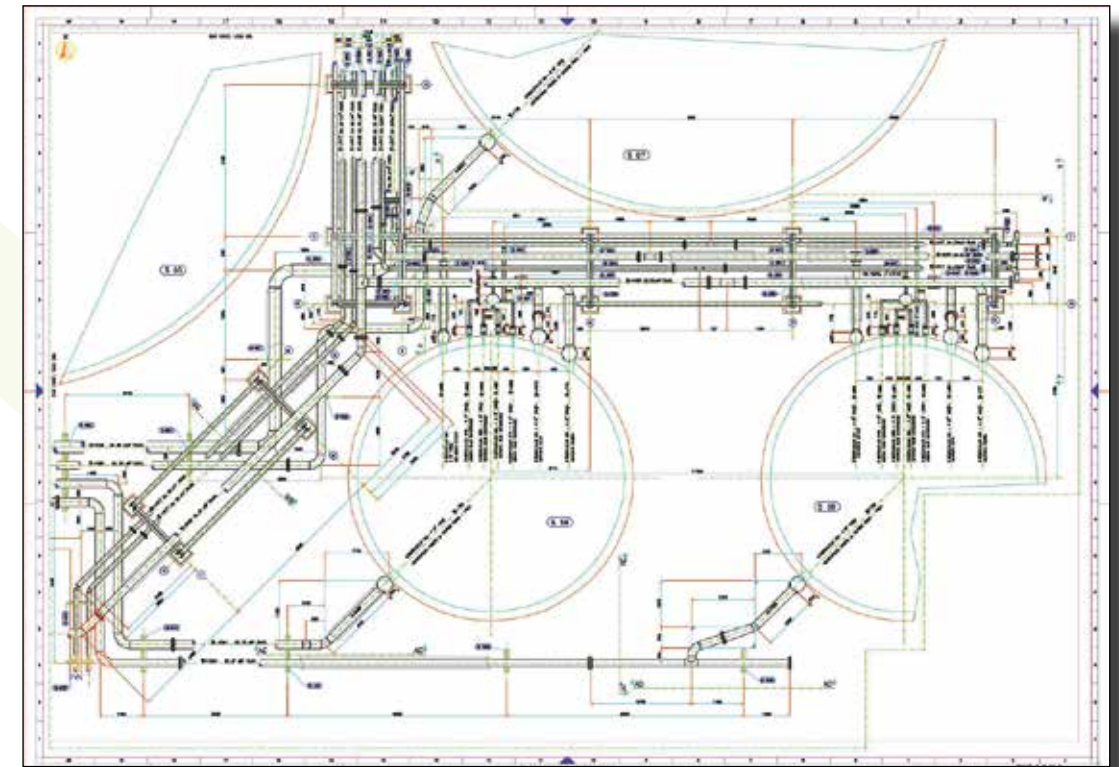
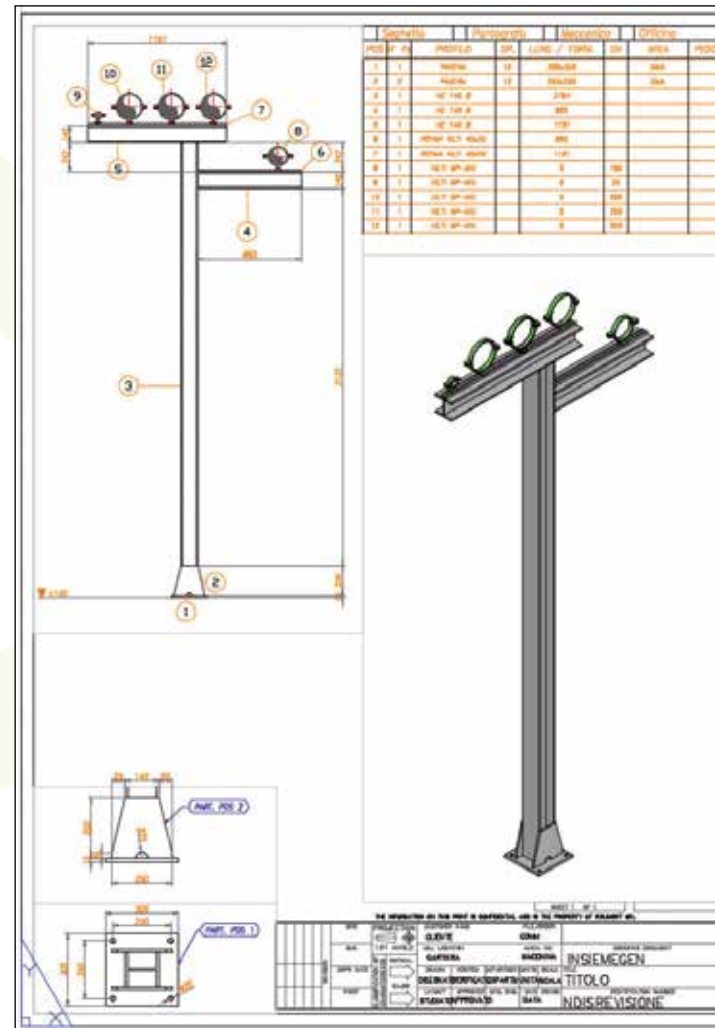
ESApr Spool extends the capabilities of ESApr Isometrics in order to effectively manage the problems related to the prefabrication of pipelines:

- Automatic detection of spools in the isometric drawing of the entire line.
- Automatic generation of bill of materials divided by spool.
- Automatic generation of spool drawings, complete with dimensioning and lists.



• Head Loss

ESApr Head Loss, starting from the insertion of information related to path, pressure, flow and fluid, calculates the head loss on a line of the 3D model according to the procedures of the Ashrae Handbook Fundamentals.



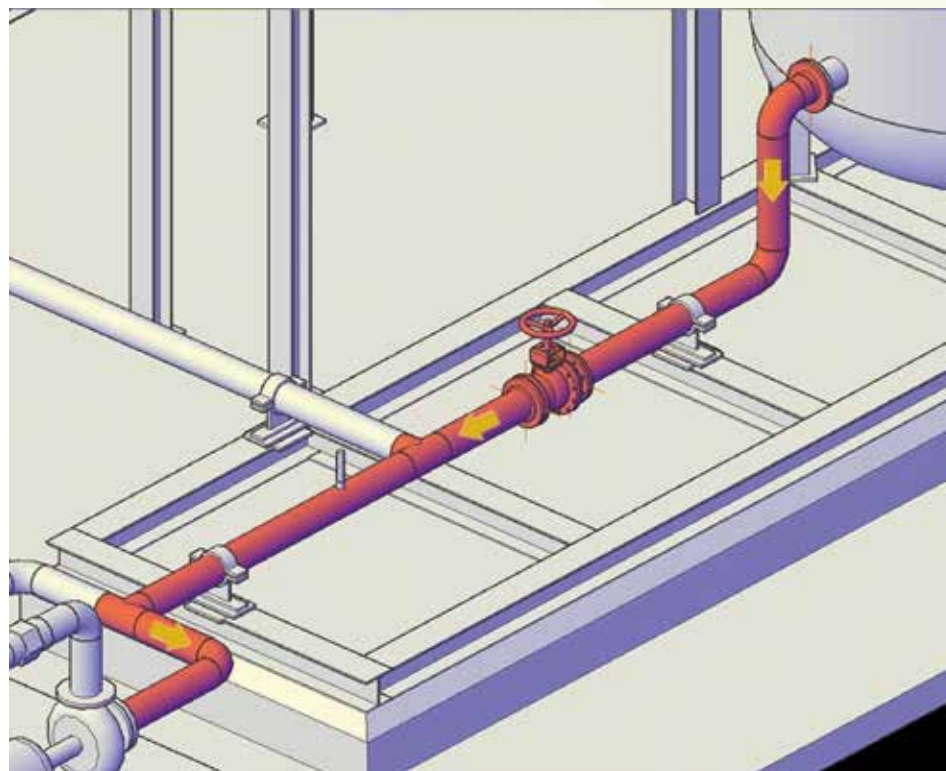
parametric parts such as attachments (collars, reinforcing plates etc.), supports (shoes, saddles, pedestals, guides, springs etc.), fasteners (bolts, tie rods, forks, tensioners etc.), carpentry components (beams, plates, shelves, poles etc.) that can be easily assembled to build the 3D model of the support.

• Automatic generation of construction drawings and material lists

Starting from the model, ESApr Supports automatically generates the 2D construction drawings, the material lists for each support and the general layout table showing the positioning of the supports within the plant.

• Automatic Material Take Off starting from a P&ID scheme

ESApr MTO allows the user to create detailed piping material lists starting from an ESApr P&ID project. Thanks to the integration with piping specs, the system automatically manages all the information concerning the line components such as flanges, fittings, bolts, branches, reducers; the user only needs to insert the pipe lengths and quantify the elbows.



• Export to Stress Analysis software

ESApr Stress Analysis Interface exports the 3D geometry to the most popular stress analysis programs, thus avoiding the manual insertion of the coordinates of the piping nodes.



• 3D modeling of the piping supports

ESApr Supports is the application dedicated to the 3D design of the supports of the pipelines made with ESApr 3D Piping or other engineering software.

- **Customizable libraries**
The software includes an extensive library of

ESApr

ELECTRICAL DESIGN SUITE

dedicated to the electrical
design of the plant.



- **Electrical Design controlled by specifications**

The program contains the dimensional catalogs of the components and guides and controls the user during the three-dimensional modeling of primary and secondary cable trays.

- **Quick and accurate modeling**

Thanks to the powerful modeling and routing tools of ESApr CableTrays, the cable trays modeling can be easily performed.

- **Supports module**

ESApr CableTrays Support Module allows the users to create, from the catalog of the clamping elements, the support of the cable trays and automatically generates the bills of material and the construction drawings.

- **Interference check in real time**

The program detects where the cable trays interfere with each other and with pipelines, equipments, structures and, in general, with any other 3D entity present in the model.

- **Orthographic automatic drawings**

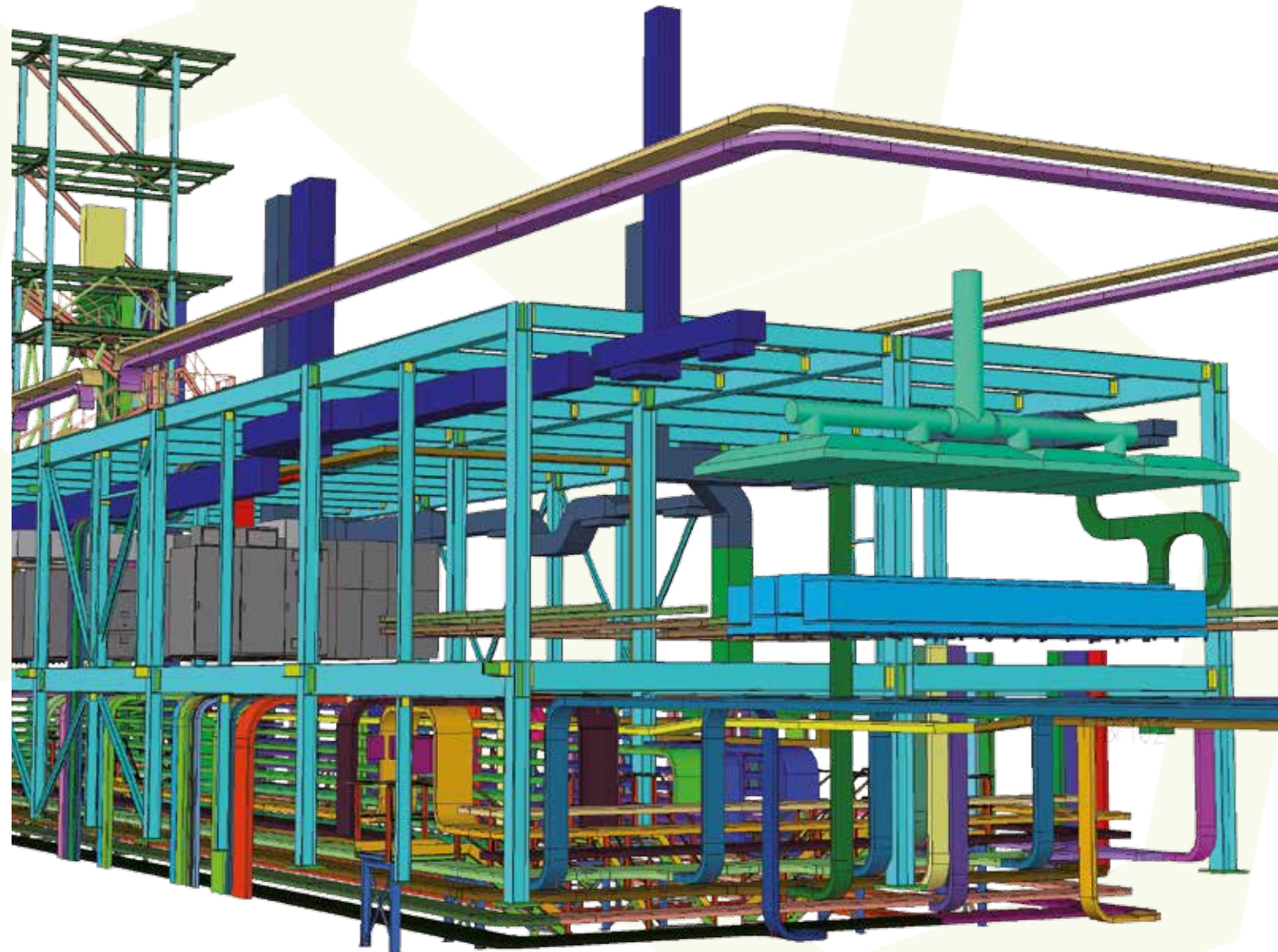
The automatic 2D drawing generation tool is one of the strong points in ESApr. Changes made to the 3D model automatically affect the 2D drawings.

- **Automatic material lists**

ESApr CableTrays automatically generates customizable material lists in Excel and TXT formats.

- **Compatibility with 3D viewers**

ESApr 3D piping produces intelligent models, navigable with the most common 3D model viewers on the market.



- **Automatic Cable Routing**

Once the electrical devices are positioned in the model and the cable list is set, ESApr Cable Routing identifies the shortest path and provides the automatic routing of cables, in compliance with the imposed constraints (filling up percentage of section, compatibility with other types of cables, etc.).

- **Material Lists**

Once the routing of cables completed, the system automatically returns the length for each cable, the total length for each type of cable, the list of the sections for each cable and the number and type of cables for each section.



ESAIN S.r.l.
info@esain.com
www.esain.com



*All the names of products and brands cited above belong to the owner.
Herein information can be updated without notice at any time.
For any further information please see: www.esain.com*