



Bentley PlantWise

Conceptual 3D Layout



22913045.51 USD

or

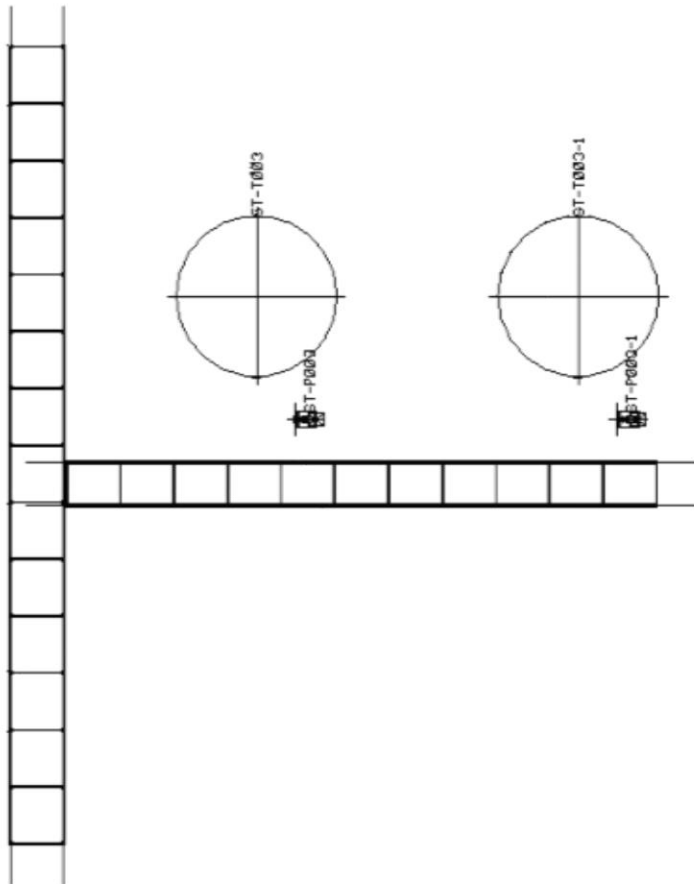
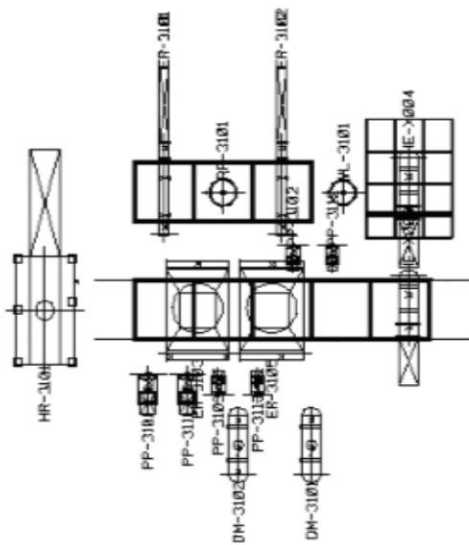
20799519.04 USD

Line ID	Class	Comm.	Diameter	Length	Pipe Cost	Elbows	Elbow Cost	Total Cost
L3001	A2A	FL	400.0	27.1	\$ 802160.00	0	\$ 0.00	\$ 802160.00
L3002	A2A	LPS	300.0	27.5	\$ 610500.00	0	\$ 0.00	\$ 610500.00
L3003	A2A	LPS	150.0	27.5	\$ 305250.00	0	\$ 0.00	\$ 305250.00
L3100	A2A	HCL	250.0	27.6	\$ 509862.57	3	\$ 54112.50	\$ 563975.07

- Pipeline Cost = \$ 19771214.25
- Elbow Cost = \$ 3008828.16
- Steel Cost = \$ 133003.10
- Total Model Cost = \$ 22913045.51

ALL STRUCTURAL MEMBERS

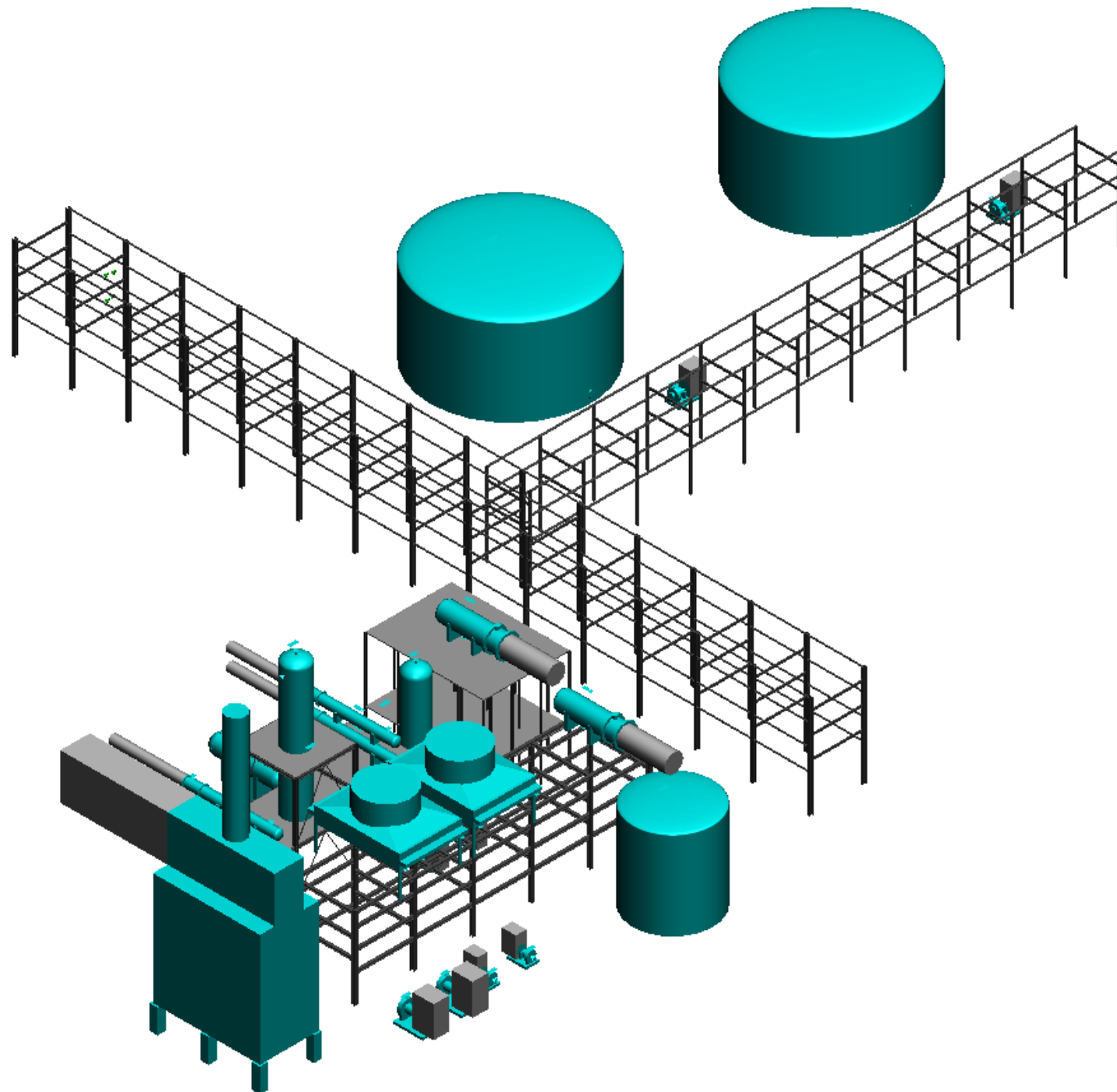
Profile	weight	total cost
2L51X51X3	2078	2077.95
H150X75	2573	2573.40
HE-140B	8094	8094.00
HE-180B	5738	5737.68
HE-260A	8333	8332.76
HE-260B	32161	32160.72
HE-300B	36195	36195.00
HE-340A	6978	6977.60
HE-340B	12865	12865.20
W100X19	16963	16963.50
WT100X18	1025	1025.30
	133003	\$ 133003.10



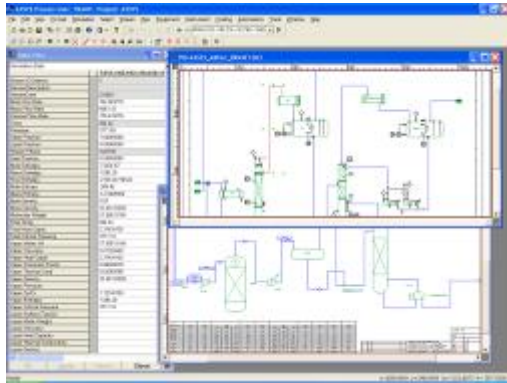
Bentley Systems, Inc.
Basic Process
Cupertino, CA USA

Plot Plan

Job No.	Drawing No.	Rev. No.
J-1	Drawing #1	1

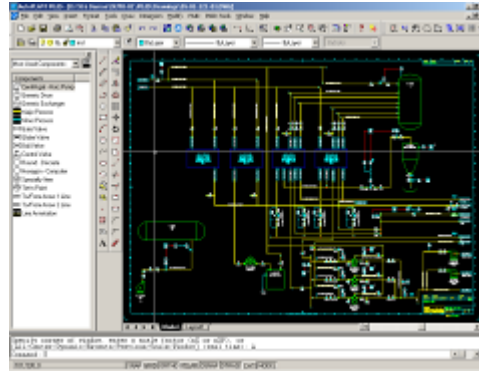


Bentley's Approach to Front-End

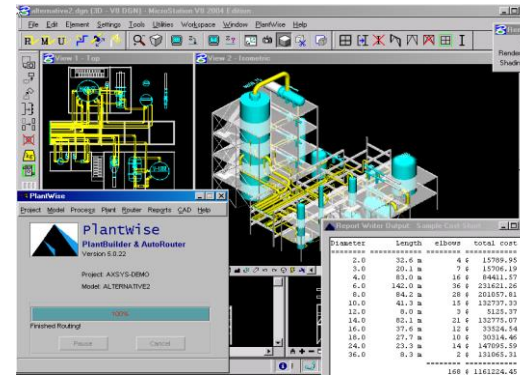
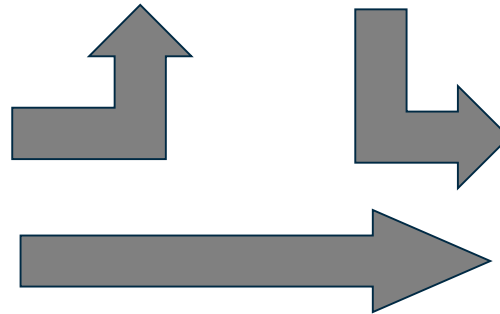


Simulations → AXSYS

- Select Best Concept
- Create Design Case
- Preliminary Sizing
- Develop PFDs
- Develop Process Datasheets
- Develop Preliminary P&IDs



Develop full P&IDs

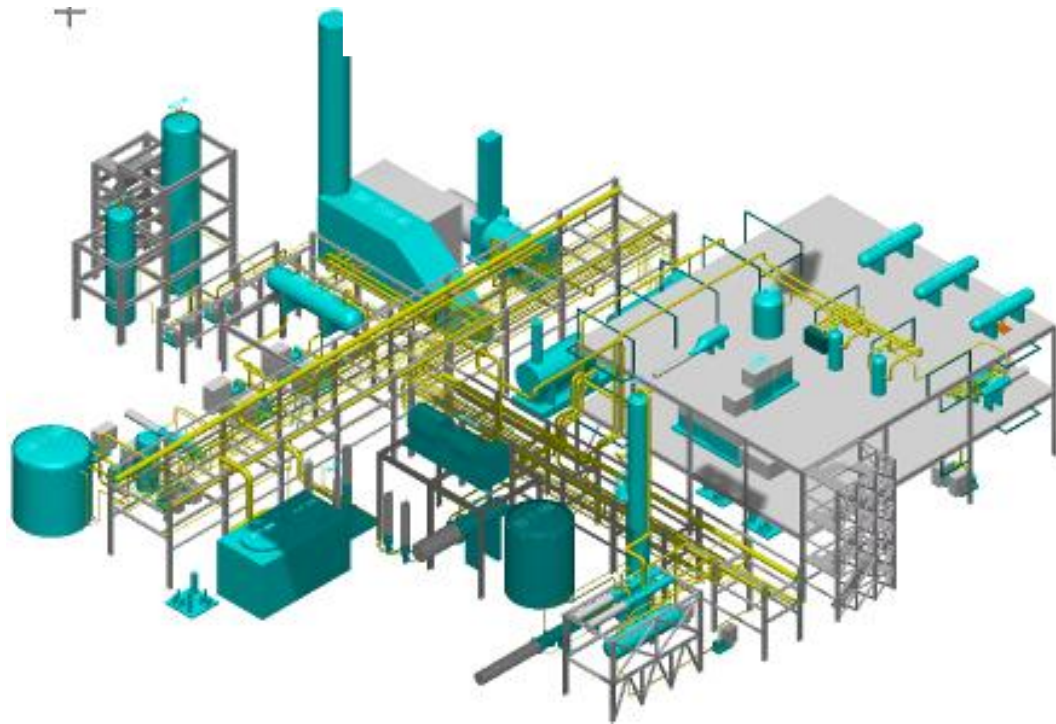


PlantWise

- Layout Equipment and Structures
- AutoRoute major Piping systems
- Review for Constructability
- Review for Operability
- Generate Bulk Quantities
- Develop costs for bulk material

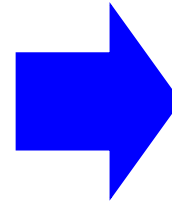
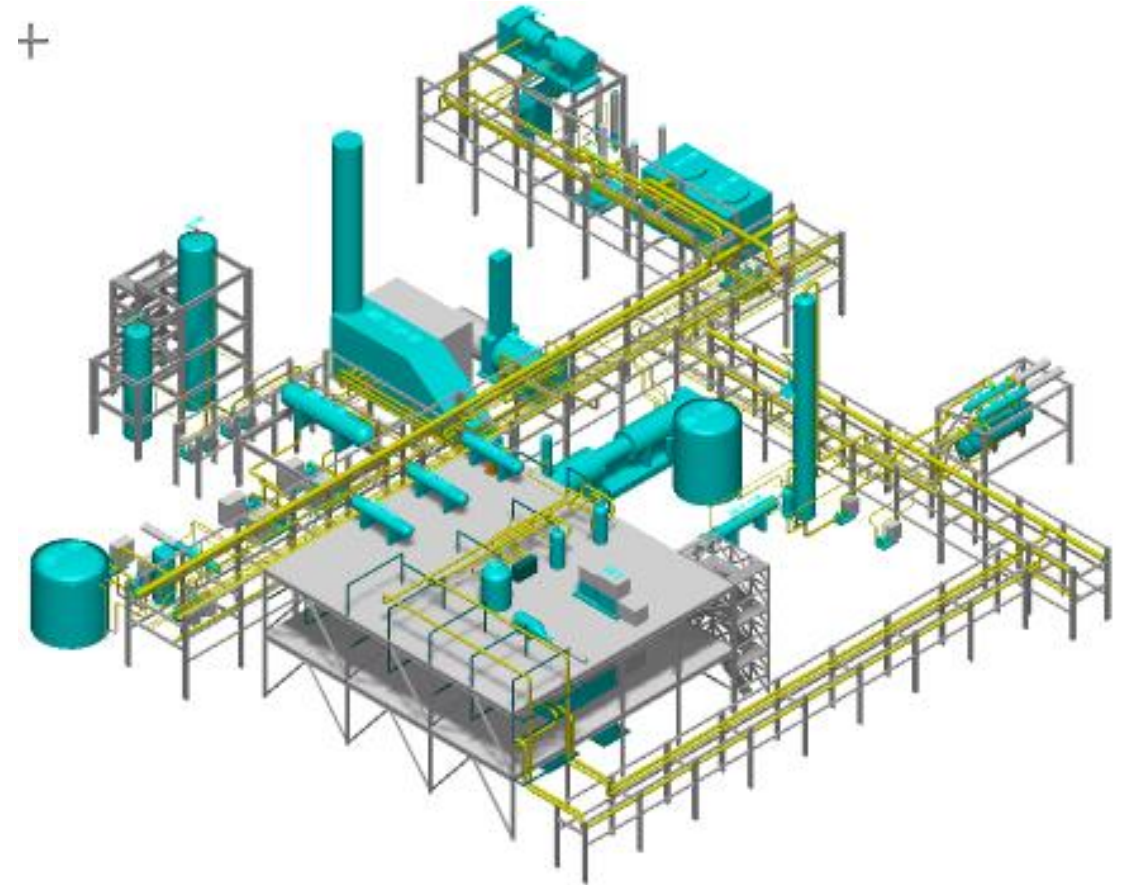
PlantWise Design Cycle

Initial 3D Layout ~ Days



Complete equipment, structures,
and automatically routed piping

Modified 3D Layout ~ Minutes



Optioneering

- Import equipment data, pipeline and/or cable lists with properties
- Rapid layout creation
- Parametric libraries
- Automatic pipeline routing

The image shows two overlapping Excel spreadsheets. The background spreadsheet is titled 'Axsys-Equipment-List.XLS' and contains an 'Equipment List' table. The foreground spreadsheet is titled 'Axsys-Stream-list.xls' and contains a 'Stream Report' table.

Axsys-Equipment-List.XLS

ITEM No	Class	Service	Purchase Order No.	Manufacturer	Operating Weight kg	Shipping Weight kg	Material
E-100	Heater					0	
E-101	Heater						
E-110	Heater						
E-200	Cooler						
E-201R	Reboiler						
E-202	Cooler						
E-203	Cooler						
MAIN_TS	Tower						
P-300	Pump						
P-301	Pump						
P-302	Pump						
T-100	ColumnGroup						
T-201K	Tower						
T-202D	Tower						
T-203A	Tower						
V-100	Separator						
V-200	Condenser						
V-200-COND_PUNPUMP							
V-200-COND_TEE	TEE						
V-200-COOLER	COOLER						
V-200-DRUM	SEPARATOR						
X-100	Mixer						

Axsys-Stream-list.xls

Stream ID	From	To	Size	Pipe Class	Service Code
103	V-100	X-100	24	S40	PV
401	P-300	PROD-AUTOBREAK-MAIN-401	6	S40	PL
304	E-202	MAIN_TS	8	S40	PL
213	FEED-AUTOBREAK-COL1-213	T-203A	4	S40	PL
301	MAIN_TS	E-200	8	S40	PL
221	V-200-COOLER	V-200-DRUM	14	S40	P
105	E-110	X-100	14	10	P
211	T-202D	PROD-AUTOBREAK-COL1-211	24	10	PV
108	FEED-AUTOBREAK-MAIN-108	T-203A	10	S40	PV
205	MAIN_TS	PROD-AUTOBREAK-COL1-205	6	S40	PL
306	E-203	MAIN_TS	8	S40	PL
100	FEED-AUTOBREAK-MAIN-100	E-101	14	10	P
106	X-100	MAIN_TS	14	10	P
206	T-201K	PROD-AUTOBREAK-COL1-206	16	10	PV

Optioneering

- Precise cost estimation
- Piping components
- Steel profiles
- Center of gravity
- Piperack fill control
- Proximity alerts

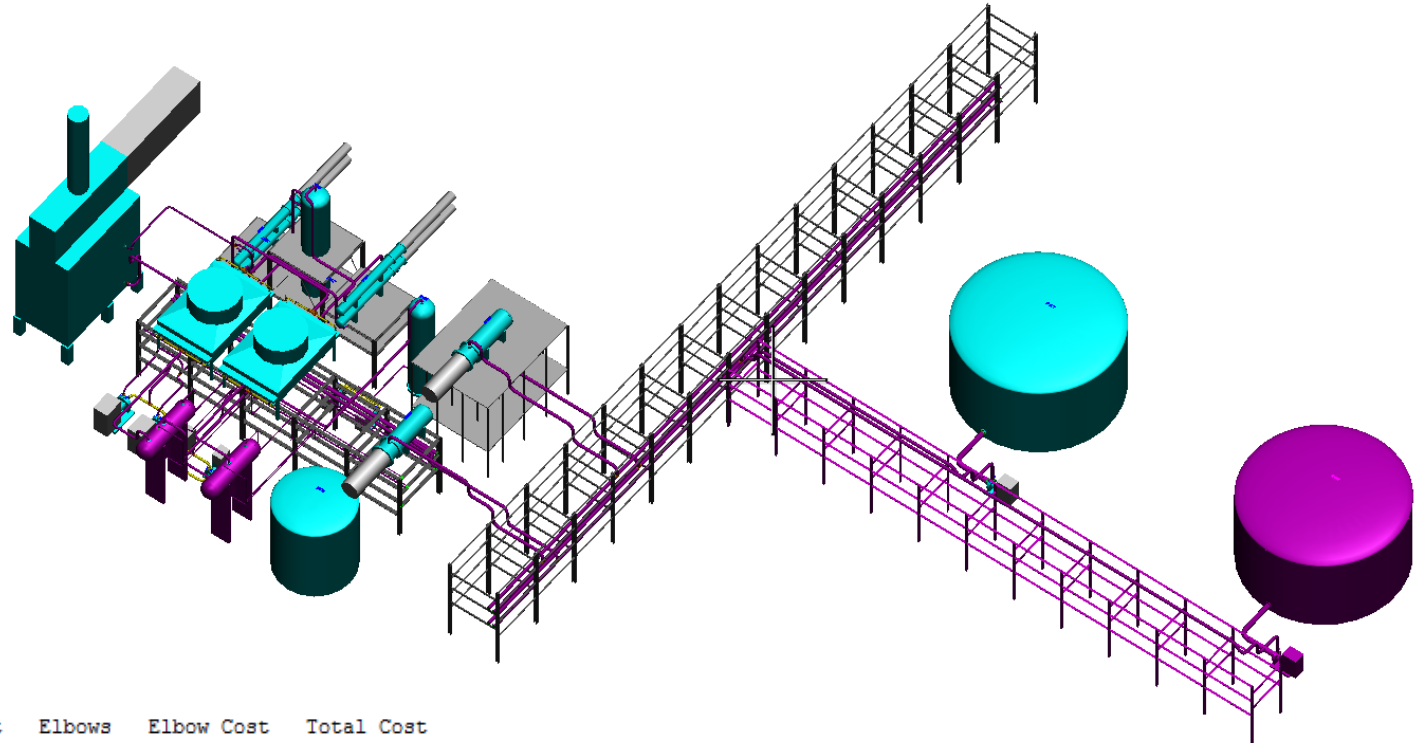
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L3002	A2A	LPS	300.0	27.5	\$ 610500.00	0	\$ 0.00	\$ 610500.00
L3003	A2A	LPS	150.0	27.5	\$ 305250.00	0	\$ 0.00	\$ 305250.00
L3100	A2A	HCL	250.0	27.6	\$ 509862.57	3	\$ 54112.50	\$ 563975.07
L3100-1	A2A	HCL	200.0	0.0	\$ 0.00	0	\$ 0.00	\$ 0.00
	A2A	HCL	250.0	2.7	\$ 50172.85	2	\$ 36075.00	\$ 86247.85
L3101	A2A	HCL	150.0	0.0	\$ 0.00	0	\$ 0.00	\$ 0.00
	A2A	HCL	200.0	7.1	\$ 104610.75	5	\$ 57720.00	\$ 162330.75
L3103	A2A	HCL	150.0	0.0	\$ 0.00	0	\$ 0.00	\$ 0.00
	A2A	HCL	200.0	24.5	\$ 363280.47	8	\$ 92352.00	\$ 455632.47
L3105	A2A	HCG	200.0	0.0	\$ 0.00	0	\$ 0.00	\$ 0.00
	A2A	HCG	300.0	17.8	\$ 395492.87	4	\$ 103896.00	\$ 499388.87
L3105-1	A2A	HCG	150.0	1.9	\$ 21278.03	2	\$ 12987.00	\$ 34265.03
	A2A	HCG	200.0	2.4	\$ 34953.90	0	\$ 0.00	\$ 34953.90

Section	Level	Capacity	Usage	% Used	Level Names
1	1	8 ft 6.0 in	4 ft 7.9 in	54.8%	Process
1	2	8 ft 6.0 in	5 ft 5.9 in	64.6%	Utility
PIPEWAY Sec_Ns has these sections and levels:					
Section	Level	Capacity	Usage	% Used	Level Names
1	1	5 ft	6.9 in	11.5%	Process
1	2	5 ft	2 ft 5.3 in	48.8%	Utility
PIPEWAY Sec_Sn has these sections and levels:					
Section	Level	Capacity	Usage	% Used	Level Names
1	1	4 ft	3 ft 0.2 in	75.4%	Process
1	2	4 ft	6.9 in	14.4%	Utility

Designation	Length	Weight
2L51X51X3.2	225.6	2077.95
H150X75	257.3	6211.91
HE-140B	190.0	8094.00
HE-180B	93.6	5737.68
HE-260A	109.1	8332.76
HE-260B	311.5	32085.78
HE-300B	285.0	36195.00
HE-340A	62.3	6977.60
HE-340B	90.6	12865.20
W100X19	591.3	16994.08
WT100X18	149.4	1024.78
		136596.73

Optioneering

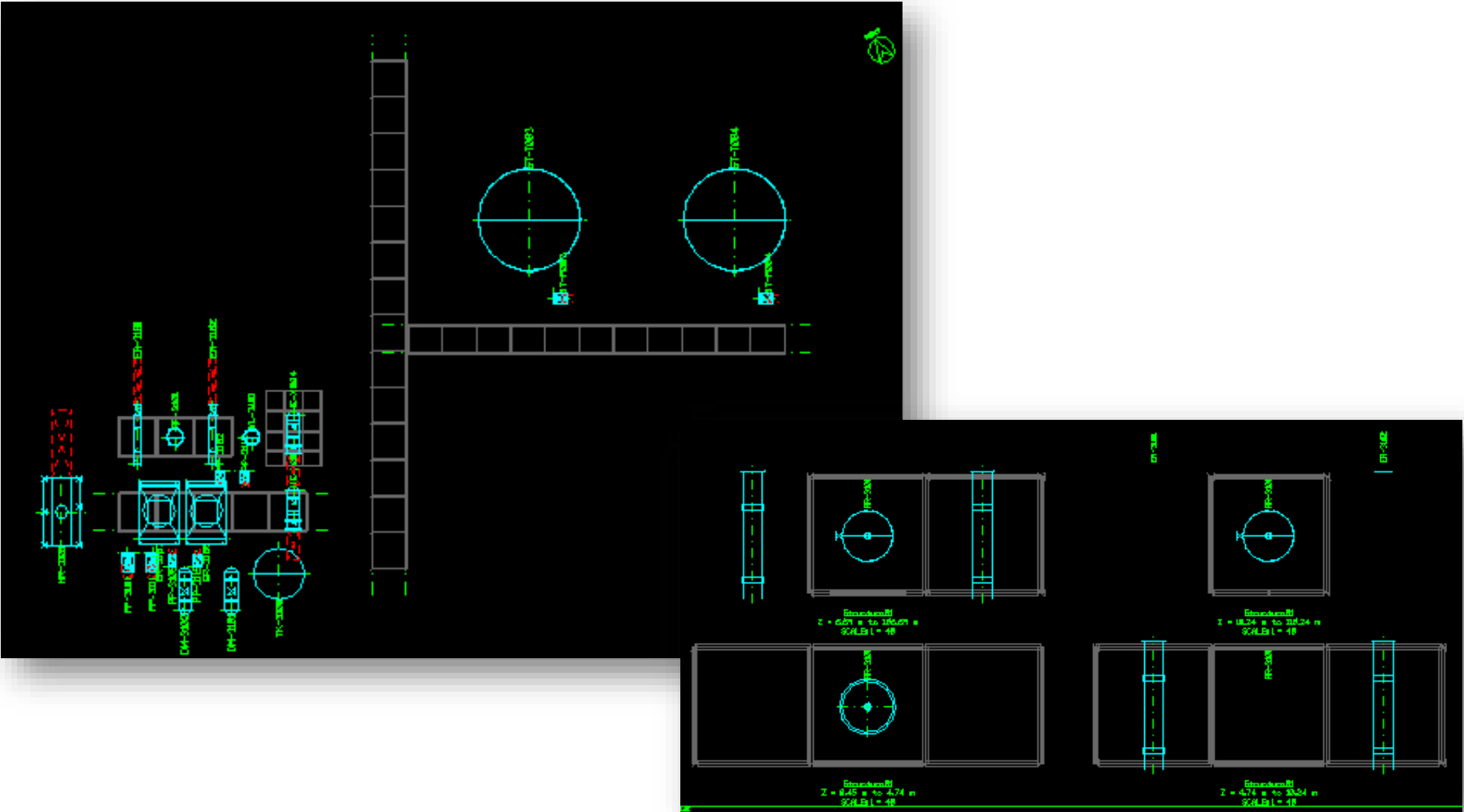
- Cost difference
- Visual report of modifications
- List of modified components



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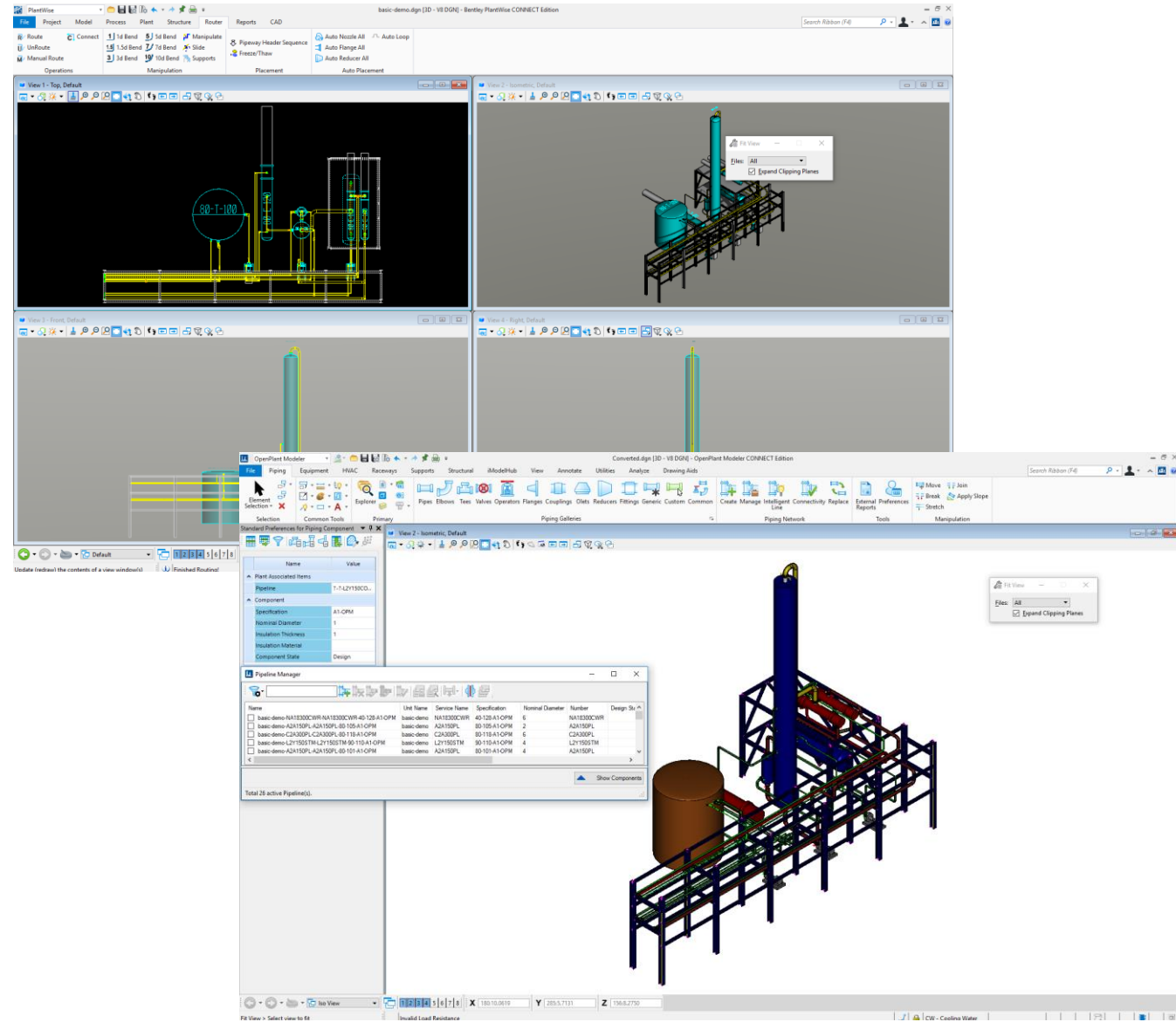
Optioneering

- Automatic plan drawings generation



Convert Models from PlantWise to OpenPlant Modeler

- Convert equipment and piping directly from PlantWise to OpenPlant Modeler
- Structural converted via SDNF to ISM



Key Benefits of using PlantWise

- Early indication of design intent, layouts and costs
- Multiple layout configurations assessed quickly
- Re-use similar plant modules from historical projects
- Early considerations of hazards and emergency plans
- Early construction involvement
- Standardized Bill of Materials and Costs for Bulks
- More rapid start for 3D Plant Design activities

