COMPASS
INTERNATIONAL INC.

2025 INTERNATIONAL CONSTRUCTION BENCHMARK YEARBOOK

Printable View

x Search

2.9 Air Separation Unit (ASU)

Cost / Man-Hour Model

100 Ton / Day Air Seperation Unit (ASU)

US Gulf Coast

2024 Cost Basis - Detailed Design 9 months - Construction 14.5 months

(commenced 2.5 months from DD)

#	Description	Man Hours	Wage Rate	Labor Cost	Mat Cost	Total $ Cost	% Split
1	Major Equipment (101 Items)						
2	Modules / Pre-Assemblies (3)						
3	Freight of ME & Modules						
4	Site / Civil Work						
5	Structural Steel / Platforms						
6	Piping (Process & Utility)						
7	Electrical Scope						
8	Instrumentation						
9	Insulation						
10	Painting / Coatings						
11	Field In-Directs (Supervision, Site Establishment, Cranes, Construction Equipment, Small Tools / Consumable, Scaffolding etc)						
12	Project Management - Home Office Support / Engineering Detailed Design						
13	Construction Management						
14	Other Minor Costs						
15	**S/T**						
16	**Total EPC Cost**						
17	**Cost per 1 NM3/Hour**						
18	**Low Cost Value -15%**						
19	**High Cost Value +15%**						

Printable View

x Search

3.17 Overhead Electrical Transmission Line Benchmarks

Cost / Man-hour Model

Overhead Electrical Transmission Line Benchmarks

US Mid-West Location - 2024 Cost Basis:

230 kV - 400 kV 2 & 4 conductor cable lines

Tower height approx 150' / 175 ' ROW 150 to 200'

15 mile Length

#	Description	Qty 15 Mile	$ Cost Per Mile	$ Total
1	2 Cable Lines on Galv SteelLlatice Tower cable suspended on both sides on flat open ground / field application			
2	Ditto 4 Cable Lines ditto			
3	Ditto 2 Cableson elevated / hills add 15%			
4	Ditto 2 Cables on elevated / moutains add 40%			
5	Ditto 2 Cables on wooded area add 55%			
6	Ditto 2 Cables in surban / residential area add 20%			
7	Ditto 4 Cableson elevated / hills add 15%			
8	Ditto 4 Cables on elevated / moutains add 40%			
9	Ditto 4 Cables on wooded area add 55%			
10	Ditto 4 Cables in surban / residential area add 20%			

Single Galv Steel Pole115 kV

100' - 150 'High Row 100' to 150' - 2 & 4 conductor cable

#	Description	Qty 15 Mile	$ Cost	$ Total
1	2 Cable Lines on galv steel pole cable attached on both sides on flat open ground / field application			
2	Ditto 4 Cable Lines ditto			
3	Ditto 2 Cable on elevated / hills add 15%			
4	Ditto 2 Cable on elevated / moutains add 40%			
5	Ditto 2 Cable on wooded area add 55%			
6	Ditto 2 Cable in surban / residential area add 20%			
7	Ditto 4 Cable on elevated / hills add 15%			
8	Ditto 4 Cable on elevated / moutains add 40%			
9	Ditto 4 Cable on wooded area add 55%			
10	Ditto 4 Cable in surban / residential area add 20%			

Cost / Man-hours Model

ONSHORE / OFFSHORE DRILLING / WELLHEAD CONSTRUCTION COST DATA:

Crude Oil & Natural Gas Drilling Onshore – Offshore & Sub-Sea Cost Data:

Sub Sea Production Module 2025 Cost basis - Gulf of Mexico - 2,500-foot water depth

30,000 B/D Production Rate – Tied-back to Existing Offshore Production Jacket.

#	Description	Qty	U Of M	$ Low Cost	$ High Cost
1	Module Frames / Pre-Assemblies				
2	Christmas Tree assemblies				
3	Manifold assemblies				
4	Piling				
5	Risers / Jumpers				
6	Flow Lines				
7	Christmas Tree control package				
8	Control on Jacket				
9	Umbilical's / tie in				
10	Misc. piping / equipment				
11	FAT / Testing				
12	Detailed Design / Project Management				
13	Site Management / Consultants - Oversight				
14	Insurance / bonds / permits				
15	Freight				
16	**S/T**				
17	**Installation**				
18	Seabed clearance / preparation				
19	Piling				
20	Pipe Laying Spread / Barge				
21	Install Christmas tree / manifolds / Jumpers				
22	ROV / vessel & crew				
23	Final Check out / integration - hook up				
24	Transport to Offshore locations / barge & heavy lift crane				
25	Weather downtime allowance				
26	Owner Oversight - Other costs				
27	**S/T**				
28	**Total before Contingency**				
29	**Contingency 20%**				
30	**TOTAL CAPEX COST (FID submission)**				
31	**Cost per Barrel**				

Printable View

x Search

5.11 Manufacturing – Electric Vehicle Battery

Cost / Man-hour Model

Electric Vehicle Battery Production Facility

USA 2023 Cost Basis

Engineering & Procurement 16 Months - Construction 32 Months

#	Description	Qty	UoM	$ Rate	Total
1	Site Work (Site Clearence, Cut & Fill, Building Demo, Imported Engineered Fill, Waste Water Treatment Plant & Test Bores)				
2	Roads, Parking Areas, Ponds, Fencing, Gatehouse & Weighbridges				
3	EV Battery Production Facility (32 feet Floor to Ceiling Complete Building) - Foundations, Structural Steel, Finishes, Siding, Roof, Polished Floor, Electrical & HVAC scope, Cafeteria, Change Rooms & Control Area				
4	Offices / Engineering Suites / Canteen - Gym & Change Rooms 2 story Building Floor to Ceiling 12 feet				
5	Utility Building / Solar Energy Area				
6	Material Storage Building				
7	Clean Warehouse & Storage Building				
8	Delivery & Dispatch / Waiting Area & Weighbridge				
9	EV Production Equipment including Slurry Tanks, Bins, Hoppers, Mixers, Conveyors, Presses, Cathode / Anode production, Electrolyte Filling Equipment, Heat Exchangers, Pumps, Piping / Insulation & all Electrical / Control Scope				
10	Mezzanine Area				
11	Fire Protection / Miscl Items				
12	Start Up / Commissioning				
13	Construction Site In-Directs (Site Establishment, Supervision, Construction Equipment)				
14	**S/T**				
15	Project Management & Detailed Design 12.6%				
16	Construction Management 6.7%				
17	Owners Project Manangement Oversite - Inspection Team				
18	**S/T**				
19	Contingency /Management Reserve 20%				
20	**Total**				
21	**Cost Per SF (Based on Total Area 1,292,210 SF)**				
22	**Low $ Cost Range per SF Less 20%**				
23	**High $ Cost Range per SF Add 20%**				
	EXCLUDES A Land purchase & Demolition B Front End - Location Studies C Spare Parts D State Grants, Incentive, Training Levies & Tax Holidays				

7.3 Metals – Steel Mill

Cost / Man-hour Model

Steel Mill Construction Cost Benchmarks:

Integrated Steel Production Facility: A typical integrated steel plant uses coal & iron ore as the feedstock materials to produce steel. Iron ore as the main input material together with coke as the major fuel as the combustion source. The resulting product is pig iron, pig iron has a high carbon value that must be removed to produce steel and the introduction of oxygen can achieve this.

Major Equipment / Production Equipment: includes Heaters, Oxygen systems, Coke Ovens, Rollers, Quench Boxes / Tanks, Conveyors, Cooling Beds, Blast Furnaces, Steel Mill Shears, Ladles, Pumps, Reheating Furnaces and Heat Exchangers & Boilers and other equipment: Basically, Oxygen is introduced to convert the basic pig iron into a steel product.

Steel Mill Construction Cost Benchmarks:

#	Description / Production Capacity Per Year	Average CAPEX Cost Per Ton Of Production	Low CAPEX Cost In $ Billion	High CAPEX Cost In $ Billion	Average CAPEX Cost In $ Billion
A	500,000				
B	750,000				
C	1,000,000				
D	1,250,000				
E	1,500,000				

Integrated Steel Production Facility (Main Category % values)

#	Description	Low %	High %
1	Excavation / Civil / Site Work		
2	Concrete, Rebar & Formwork Foundations		
3	Structural Steel / Siding / Platforms		
4	Steel Production Equipment Heaters, Oxygen systems, Coke Ovens, Rollers, Quench Boxes / Tanks, Conveyors, Cooling Beds, Blast Furnaces, Steel Mill Shears, Ladles, Pumps, Reheating Furnaces and Heat Exchangers & Boilers and other equipment		
5	Piping Systems		
6	Electrical Systems		
7	Detailed Design / Project & Construction Management Costs		
8	Owner Project Oversight & Inspection Related Costs		
9	**Total %**		

Location Factors, Cost Adjust Factors & Productivity Values

GLOBAL LOCATION FACTORS, CONSTRUCTION PRODUCTIVITY AND ENGINEERING (DESIGN & DRAFTING) PRODUCTIVITY V's USA STANDARDS
(Washington D.C. – 30 - 40 mile radius = 1.00)

The factors indicated below would be appropriate for ($5 - $100+ million) hi-tech / manufacturing / pharmaceutical type facility. * Applicable if the above value is for a "first of its kind" building / facility(engineering / construction endeavor will initially experience a steep learning curve as the staff navigates it way through local import regulations and various permitting issues). If company has built or has operating facilities already in country reduce location factor value by 0.04 – 0.08 points

Location Factor A: is applicable to Refineries, Chemical Plants, Power Stations, Hi-Tech Type Facilities (Pharmaceutical / Chip Manufacturing Facilities), these facilities typically contain sophisticated manufacturing / production equipment.These facilities often require complex piping / air conditioning systems.These facilities are often highly automated systems, many times these complex equipment items / materials need to be imported from North America, Europe or Japan / South Korea into the host country.

Location Factor B: this factor is germane to less sophisticated projects such as schools, hospitals, office buildings, hotels, shopping malls, roads, bridges, airports, marine works (jetties / piers) and warehouses.

GLOBAL LOCATION FACTORS, CONSTRUCTION PRODUCTIVITY AND ENGINEERING (DESIGN & DRAFTING) PRODUCTIVITY vs USA STANDARDS

Country	City	Location Factor * A	Location Factor * B	Construction Productivity	Eng. / Design Productivity
Argentina					
Australia	Melbourne				
	Perth				
	Sydney				
Austria					
Belgium					
Brazil					
Canada	Calgary				
	Edmonton				
	Fort McMurray				
	Halifax				
	Montreal				
	Toronto				
	Vancouver				
China	Beijing				
	Guangzhou				
	Shanghai				
Cyprus					

Cost / Man-hour Model

Electrical & Instrumentation Systems

#	Electrical Systems Work	Unit	Labor Or Machine Hours (MC Hours)
1	Galvanized ridged conduit 1" dia		
2	Ditto 2" dia		
3	Ditto 4" dia		
4	Aluminum conduit 1" dia		
5	Ditto 2" dia		
6	Ditto 4" dia		
7	Electric Metal Tubing (EMT) conduit 1" dia		
8	Ditto 2" dia		
9	Ditto 4" dia		
10	Labor pulling wire in conduit # 6 AWG stranded wire		
11	Ditto 250 MCM		
12	Ditto 500 MCM		
13	Labor installing direct burial cable 250 MCM		
14	Ditto 500 MCM		
15	Labor installing 12" galv cable tray		
16	Ditto aluminum		
17	Labor installing 5 KV dry transformer 150 KVA		
18	Ditto oil filled		
19	Labor installing 10 circuit panel board		
20	Ditto 20		
21	Ditto 40		
22	Copper Wire THHN # 14 Solid		
23	Ditto # 14 Stranded		
24	Ditto # 12 Solid		
25	Ditto # 12 Stranded		
26	600 Volt copper cable #12 AWG		
27	Ditto # 10		
28	Ditto # 8		
29	Ditto # 6		
30	Ditto # 4		
31	Ditto # 2		
32	Ditto # 1		
33	Ditto # 1/0		
34	Ditto # 2/0		

Cost / Man-hour Model

Detailed Design M.H.'s per Major Equipment Item

# Of M.E. Items	"A" Detailed Design M.H.' S Per M.E Item (Excludes PM / PC / Procurement	PM / PC / Procurement M.H.' S Per M.E. Item
New Facility 10 - 50		
50 - 100		
150 - 250		
Retrofit / Revamp 10 - 50		
50 - 100		
150 - 250		

Cost / Man-hour Model

Detailed Engineering Man-Hours per Piece of Production Equipment

#	Equipment Item	Range Of Home Office. Detailed Design Man-Hours
1	Agitators & Mixers (all types)	
2	Boilers & Heater (all types)	
3	Compressors (all types)	
4	Conveyor Systems (all types)	
5	Fans & Blowers (all types)	
6	Heat Exchangers (all Types)	
7	Miscellaneous Equipment (all types – blenders, crushers, cyclones, ejectors, evaporators, filters, separators)	
8	Pumps (all types)	
9	Reactors / Vessels (all types)	
10	Tanks(all types)	
11	Tower & Columns (all types)	

Cost / Man-hour Model

EPC Home Office Man-Hour Percentages

Discipline	Low %	High %
Project Management / Project Engineering		
Detailed Design - Civil, Structural, Rotating Equipment, Major Equipment, Process, Electrical, Instrumentation, Insulation, Admin & CAD work		
Procurement, Contracts, Expediting, QA / QC & Admin		
Estimating		
Cost Engineering / Monthly Reports (Site Cost Engineers monitor progress & scope changes)		
Planning / Monthly Reports (Site Planners monitor progress & scope changes)		
Accounting, Human Resources, IT Service & Admin		