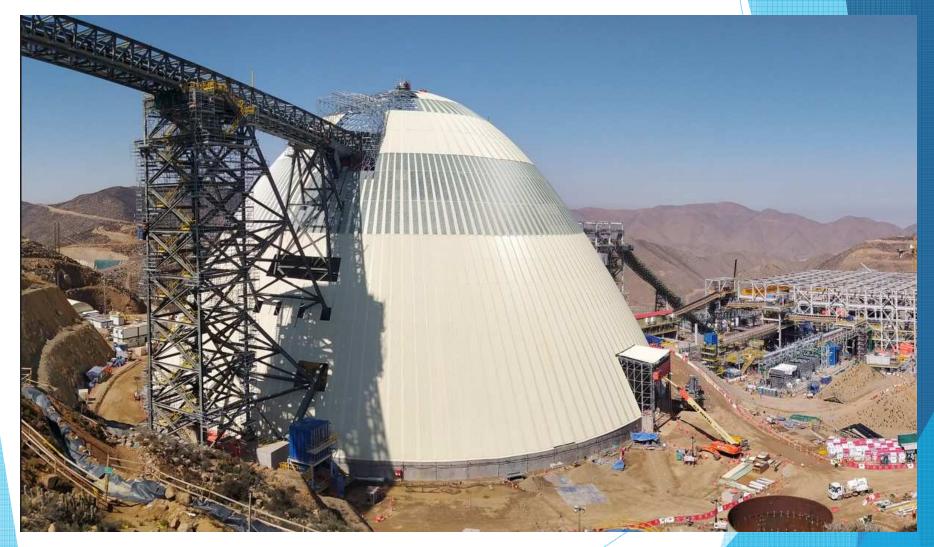






Triodetic QUELLAVECO Dome (One of the biggest domes worldwide)



60 + Years of Experience

The Triodetic system was invented and developed in Canada and has now worldwide applications.

Engineering office and fabrication plant are located at Arnprior, Ontario, Canadá.

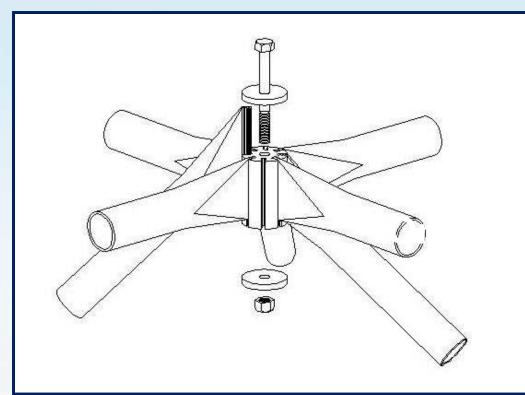
- Architectural Applications
- Triodetic Multipoint Foundations
- Industrial Applications
- Others

Main topics / Industrial applications

- Triodetic typical node and size capabilities /material
- Visit some recent Triodetic domes
- Foundations and cladding options
- Summary of advantages for Triodetic Domes



Typical Joint and Size Capabilities / Materials



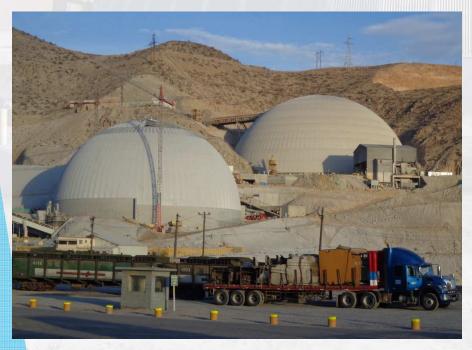


Material used for Triodetic Domes

- Aluminum connector Steel pipes Galvanized cladding (painted)
- Aluminum connector aluminum pipes Aluminum cladding
- Stainless steel connector SS pipes SS cladding

Dome diameters from 25m to 140m







Triodetic Structures and Experience

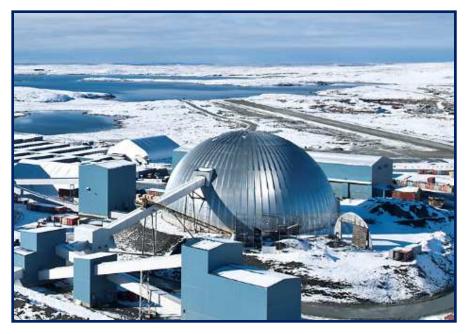
Visit some recent Triodetic Domes



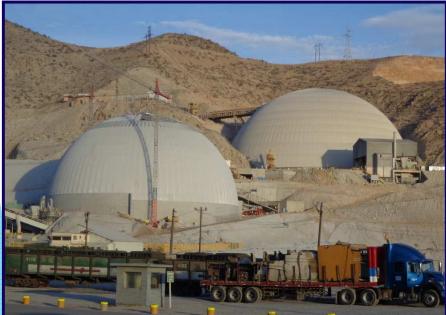
Project: Goldex Dome Location: Val D 'or, Quebec/Canada Client: Agnico Eagle Eng. Company: SNC Lavalin Diameter: 65 m

Project: Goldex Dome
Location: Val D 'or,
Quebec/Canada
Client: Agnico Eagle
Eng. Company: HATCH Canada
Diameter: 65 m

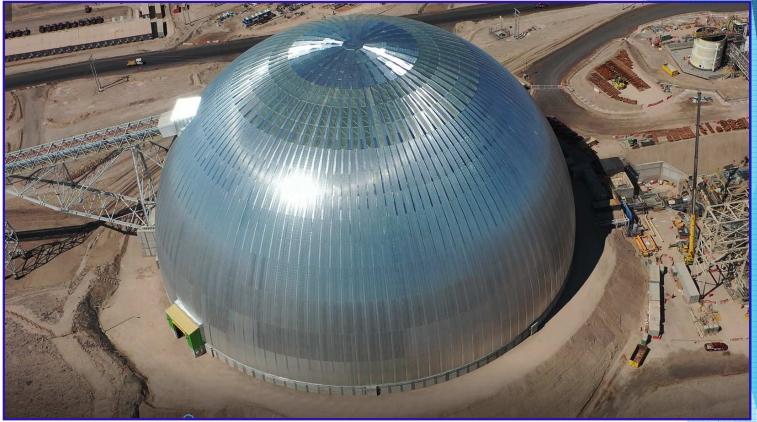




Project: Meadowbank Location: Nunavut, Canada Client: Agnico Eagle Diameter: 61 m



Project: Toquepala Mine Location: Tacna, Peru Client: Southern Peru Copper Corporation Diameters: 115 m and 75 m



Project: Spence Copper Mine Dome Location: Atacama, Chile Client: Bhpbilliton Eng. Company: FLUOR Diameter: 110.5 m





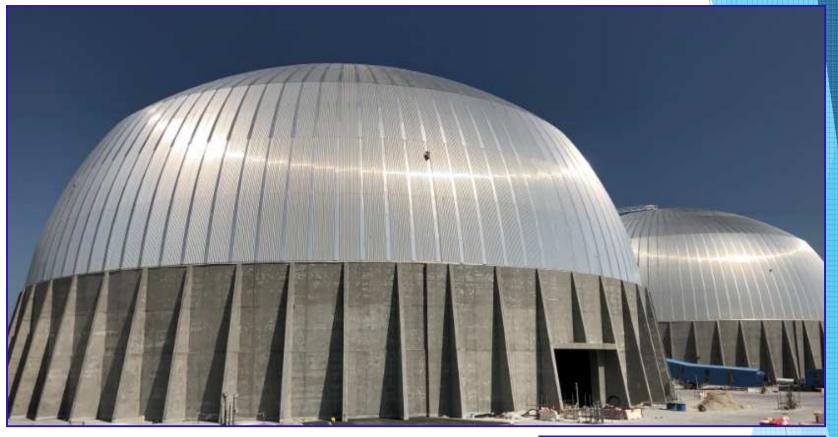
Project: Salares Norte Project Location: Atacama, Chile Client: Gold Fields Eng. Company: FLUOR Diameter: 50 m



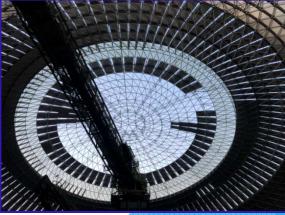


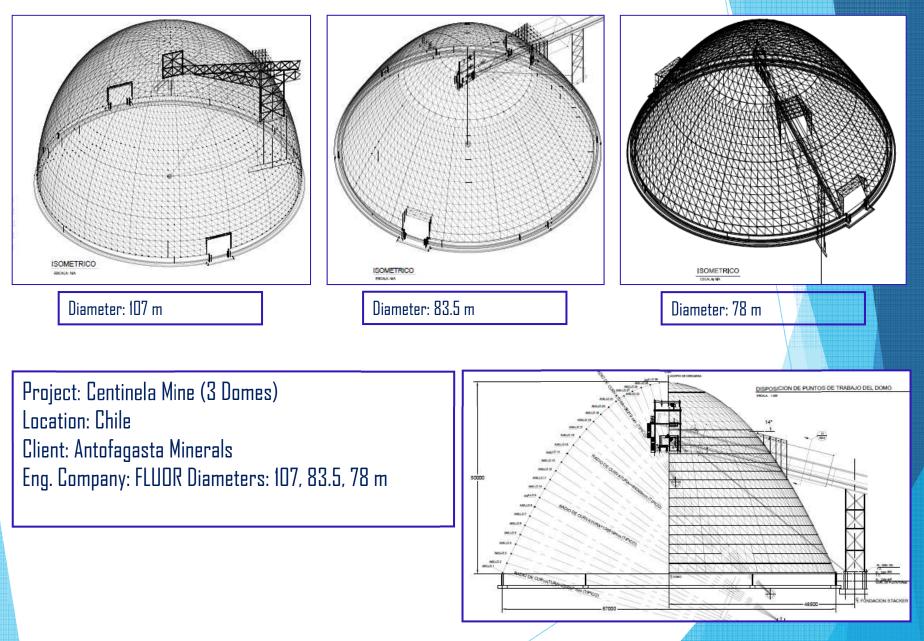
Project: Quellaveco Mine, Location: Moquegua, Peru Client: Anglo American Eng. Company: FLUOR Diameter: 124 m

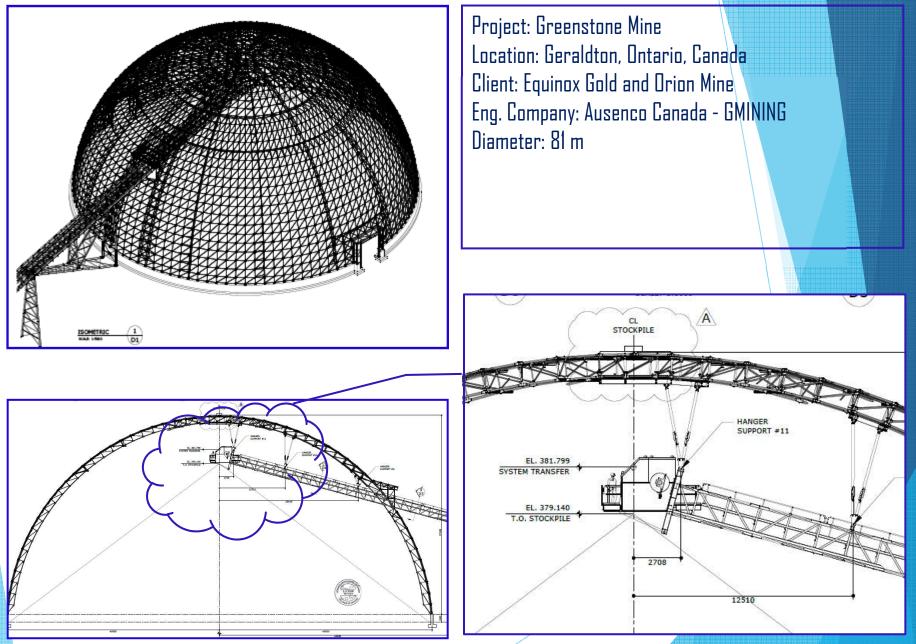


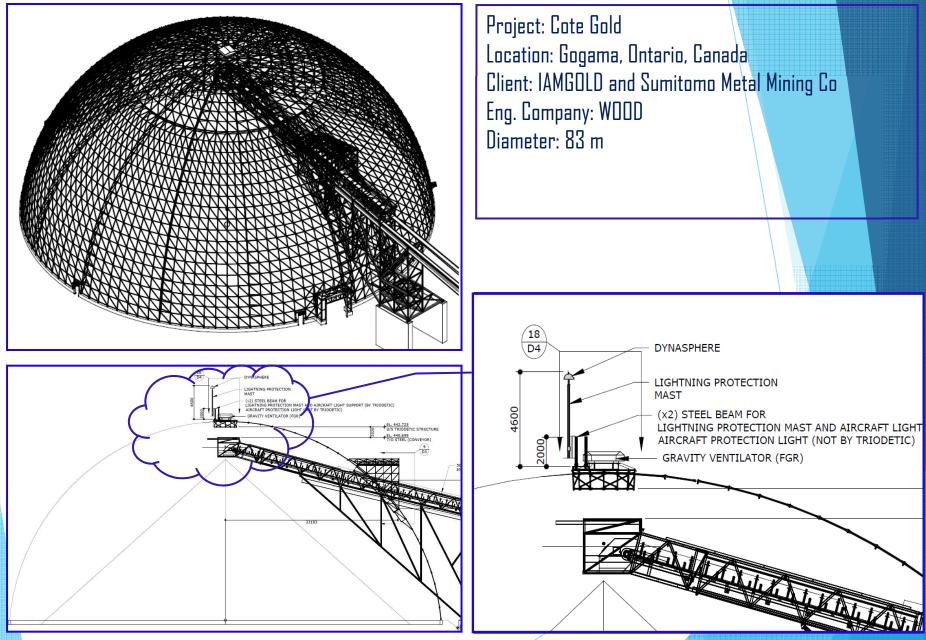


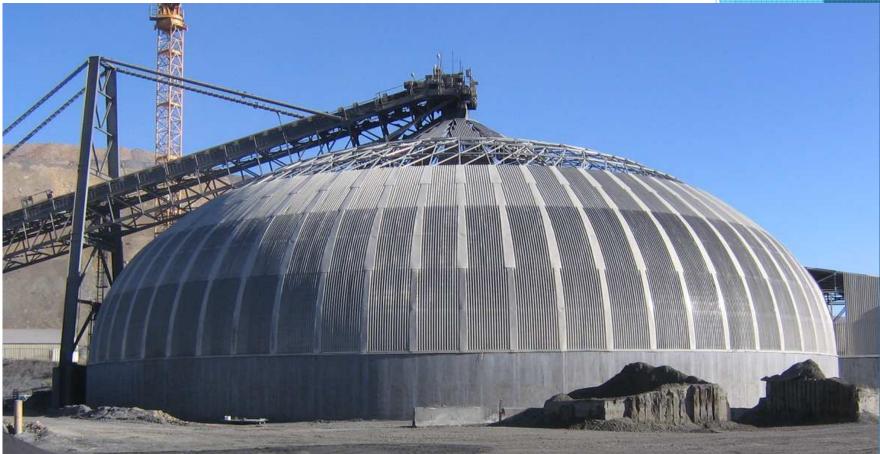
Project: AL Zor REFINERY (2 Domes) Location: Kuwait Eng. Company: FLUDR Diameter: 87 m











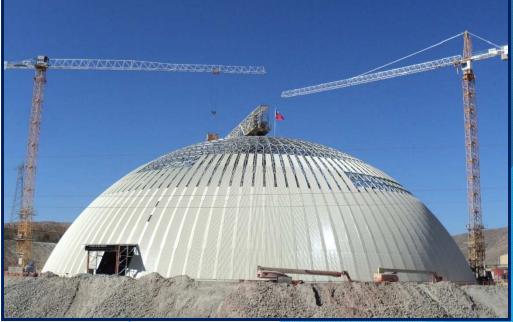
Project: Gold Strike Location: Elko, Nevada, USA Client: Barrick Diameter: 54m

Side Loaded vs. Top loaded



Andacollo Mine 98m Diameter Top loaded Dome

Toquepala Mine 115m Diameter Side loaded Dome



Side Loaded vs. Top loaded

Highland Valley Copper mine B.C. 3 Domes 105 m diameter (top loaded) (One of the biggest Canadian Flag

Triodetic Structures and Experience

Foundations Options

Triodetic Foundation Alternatives





Steel Column Supports



Perimeter Steel Tension Ring

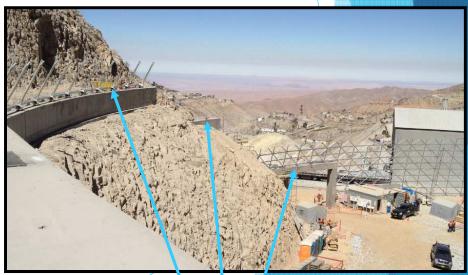




Triodetic Foundation Alternatives



All Dome Supported at Ring # 1 Concrete Foundation Wall



Dome Supports Ring 1 to 11 Concrete Foundation Wall

Alternative Foundation Systems

(Tall foundation for material storage on Refineries and other applications)



Dome Supporting Conveyor. Translucent panels.

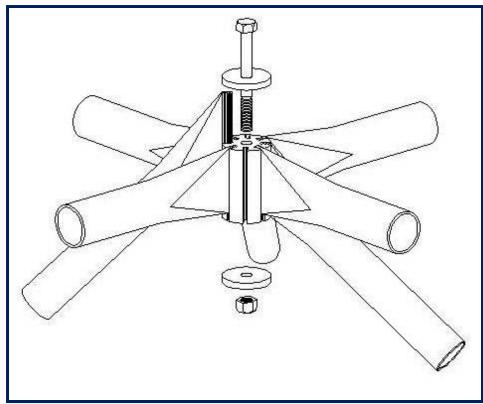
20% surface area translucent panels.

Summary of TRIODETIC Domes Advantages

TRIODETIC DOMES (ADVANTAGES)

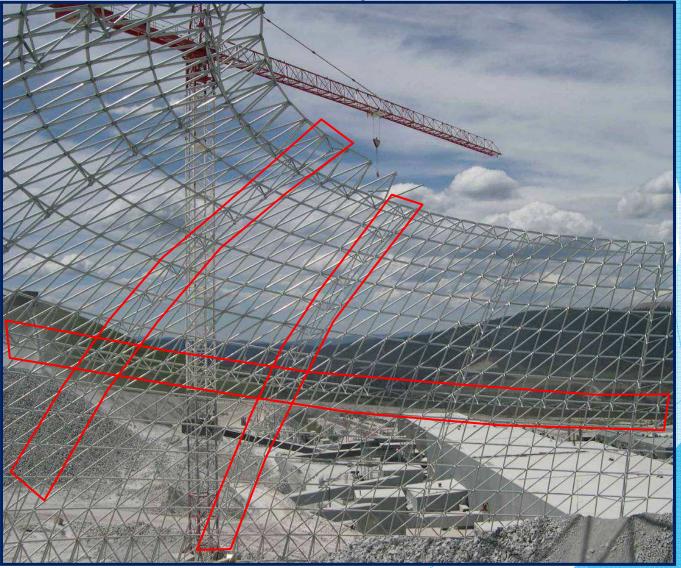
- High flexibility on interfaces with other structures / very easy to adapt to interferences
 - stacker foundations, door openings
 - conveyor gallery penetration, etc.
- Lighter structures / more cost effective foundations / single stage concrete foundation
- Very low maintenance (negligible operational cost)
- Installation performed while mine is operating (Safford is not an existing mine, but just in case)
- Low complexity installation process (simple joint) <u>Slide 27</u>
- Few reinforcing trusses combined with most of the structure being a single layer of components <u>Slide 28</u>
- Installation can be performed in an operating mine Slide 29
- Customized and pre-fab cladding panels (no site work required) <u>Slide 3</u>
- Pre-assembly capabilities <u>Slide 31</u>
- Shorter Installation Schedule (quite a few less components to be installed)

Simple Typical Joint





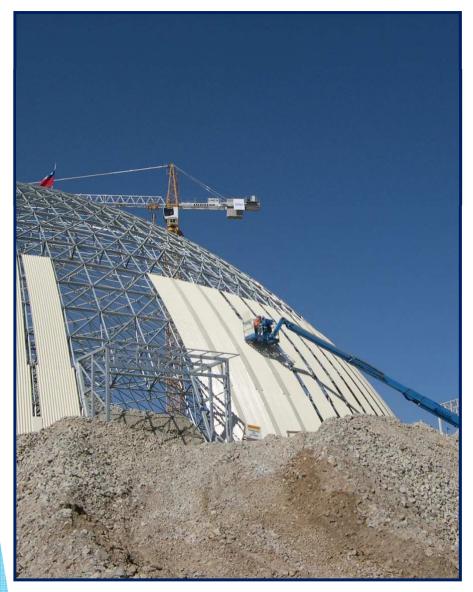
Double layer of structure vs mostly single layer

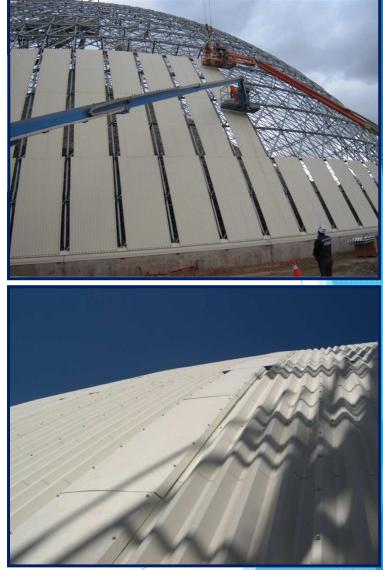


Andacollo Dome (Installation Mine Operating)



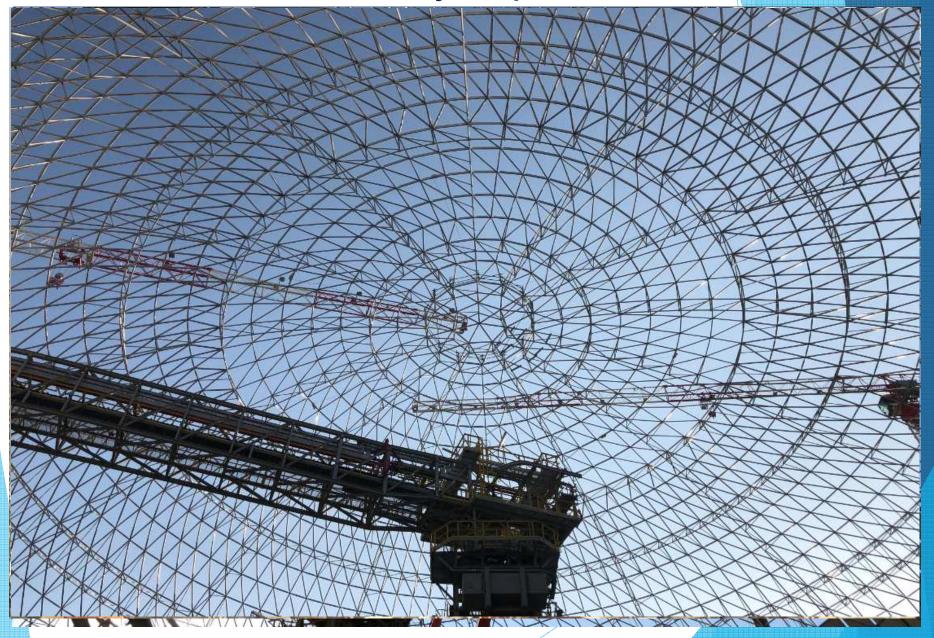
Triodetic Cladding System (Installation)



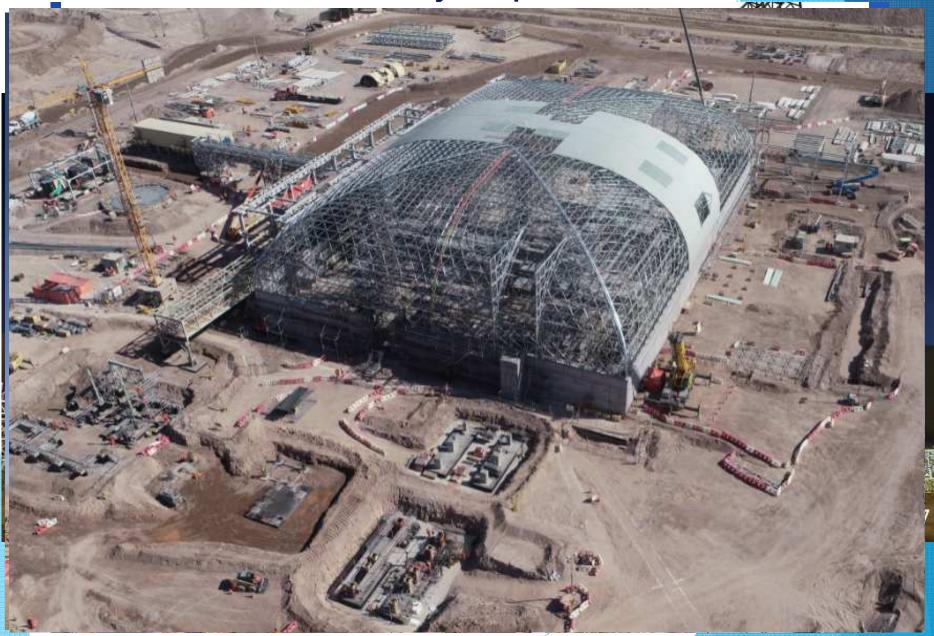


Customized, prefab cladding system, translate on high savings in labour and equipment, as well as shorter installation schedule

Pre assembly capabilities



Pre assembly capabilities



Comparison HH and schedule Triodetic vs others

Overall Items	Details
Dome diameter	360.8 ft. (110.50m)
Dome height	181.8 ft. (55.45m)
Foot print area	103,172 ft2 (≈9,590 m2)
Surface area	206,161 ft2 (≈19,162 m2)

ITEMS	Triodetic Dome	Other Dome Suppliers	Differences (%)
Number of pipes to be installed	13,806	Minimum 22,790	65% Increase
Direct Man hours structure and cladding	18,750	23,440	25% Increase
Schedule duration	149 days	Minimum 180 days	21% Increase

Installation Mine Operating Chinchillas Project Dome Argentina





A TRIODETIC DOME IS THE BEST CHOICE FOR YOUR PROJECT

