



the **Mill**  
for **Minimills**

# LADLE FURNACE (LF)

## MECHANICAL DESIGN

**CVS MAKINA** - *Company Presentation*



**YOUR ONE STOP SOLUTION PROVIDER  
FOR MELTSHOP AND ROLLING MILL**



- Design
- Manufacturing
- Erection
- Training
- Consultancy
- Innovation
- Process Development



- Offices:
- CVS Headquarter (Turkey)
  - CVS Europe (Italy)
  - CVS Egypt
  - CVS Ukraine
  - CVS Iran

**FROM CONCEPT TO COMMISSIONING**

[info@cv.com.tr](mailto:info@cv.com.tr)

[www.cv.com.tr](http://www.cv.com.tr)



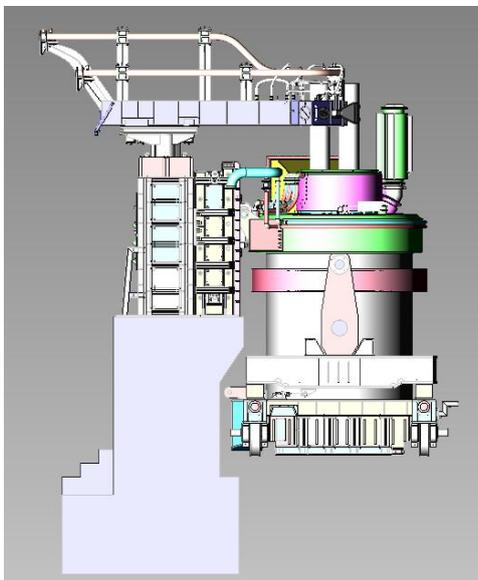
## for *the* **Mill** for **Minimills**



- CVS provides plants & equipment for minimills, also in “turn-key” solution.
- CVS covers the complete design and manufacturing activities for green-field projects as well as revamping/upgrading of existing plants and equipment.
- CVS manufactures spare parts & components for meltshops & rolling mills.
- CVS provides technical assistance and consulting service to steel production.



## for *the* **Mill** for **Minimills**



### Quick Info

- CVS headquarter is placed in the industrial region of Gebze, just east of Istanbul, close to many major ports
- Our modern facilities consists of more than 40,000 sqm of closed area and a land of additional approx. 40,000 sqm
- CVS workforce is formed by over than 500 specialized workers and engineers with a modern machinery park to undertake even the most challenging projects.
- Over than 200 engineers and administrative employees are involved in the design and management of the projects.

## CVS - SECONDARY METALLURGY LF. Advantages



➤ The advantages of a ladle furnace can be defined as follows :

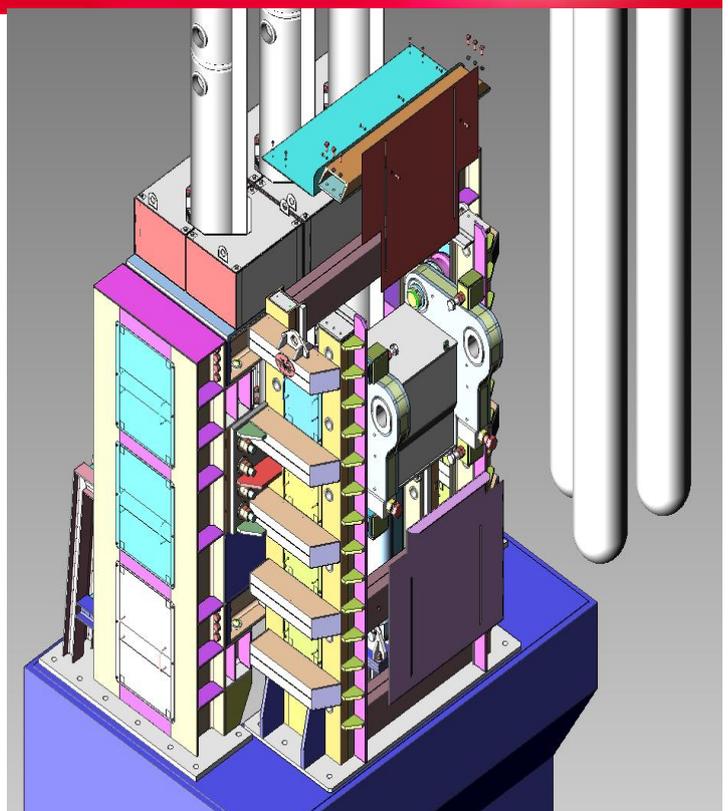
- Saving of ferroalloy
- Saving of energy
- Increase productivity
- Decreasing refining time of EAF
- Decreasing tapping temperature at EAF
- Precise temperature control
- Improved of inclusions, cleanliness of the steel
- Possibilities of wrong analysis limited



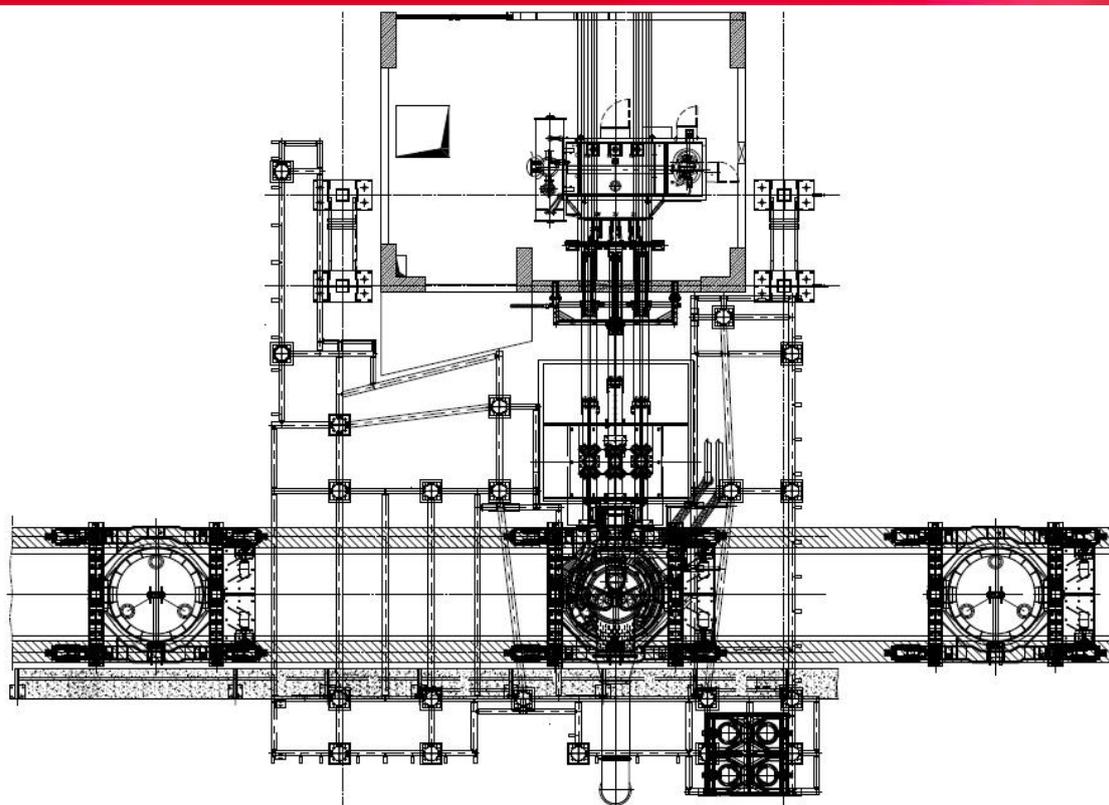
## CVS - SECONDARY METALLURGY LF Design Advantageous



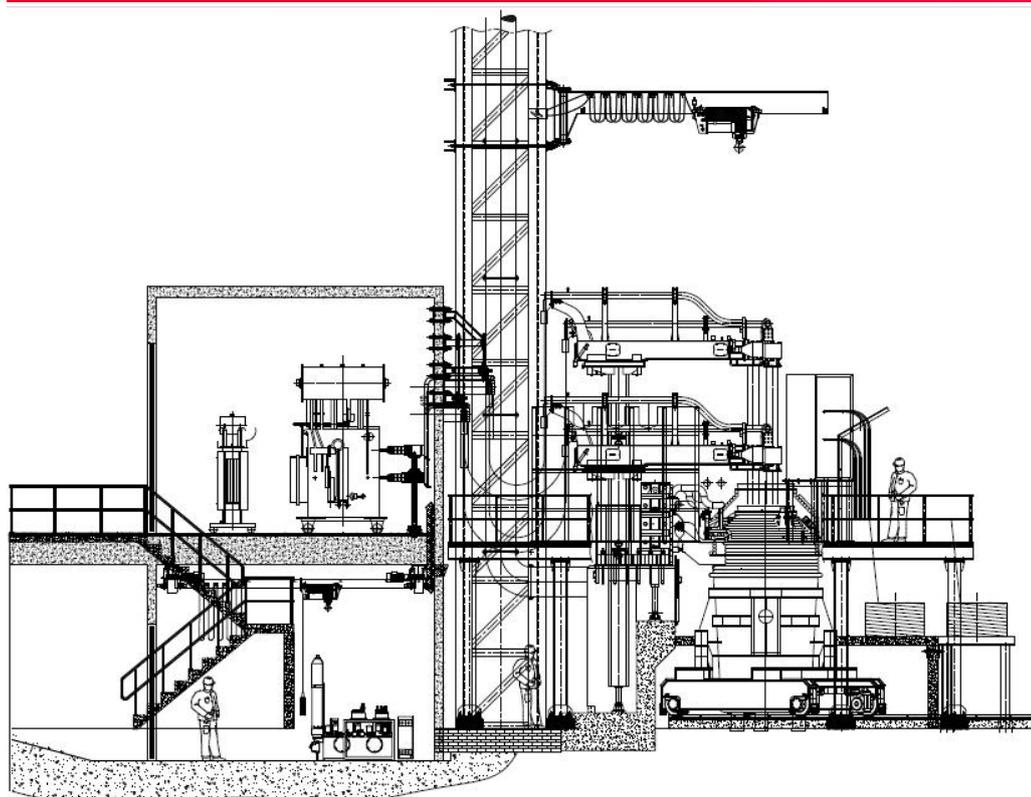
- The Ladle Furnace is conceived for reheating the steel in the ladle placed on a ladle car and will be designed and built according to the most modern techniques in the field and will be in particular provided with:
- Water-cooled secondary circuit and water cooled flexible cables
- Water-cooled ladle roof equipped with indirect fume collecting hood to reduce steel oxidation
- Roof lifting mechanism via hydraulic cylinder
- Electrode arms with reduced electrode pitch diameter
- Water-cooled secondary circuit and water cooled flexible cables
- Electro-hydraulic electrode regulation



## LF - GENERAL PLAN VIEW

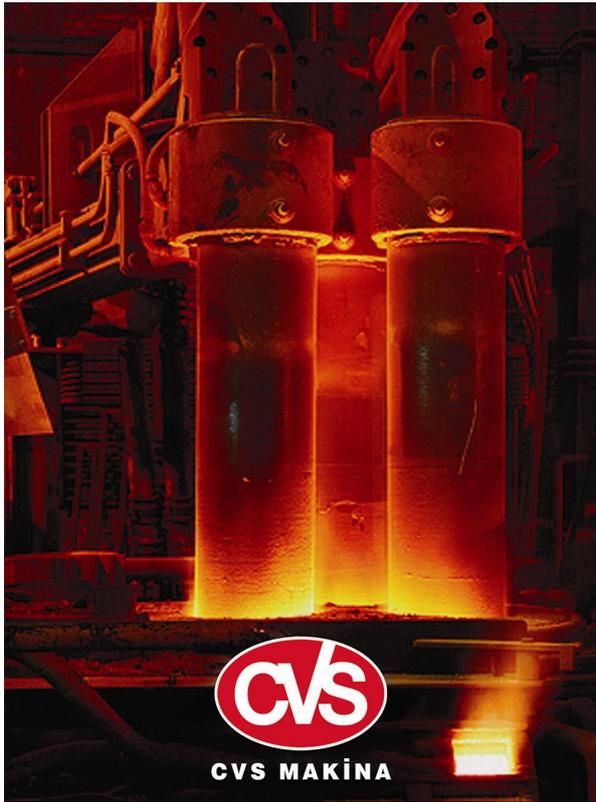


## LF - SIDE VIEW



- Saving of Ferroalloy
- Saving of Energy
- Increase Productivity
- Precise Temperature Control
- Cleanliness of The Steel

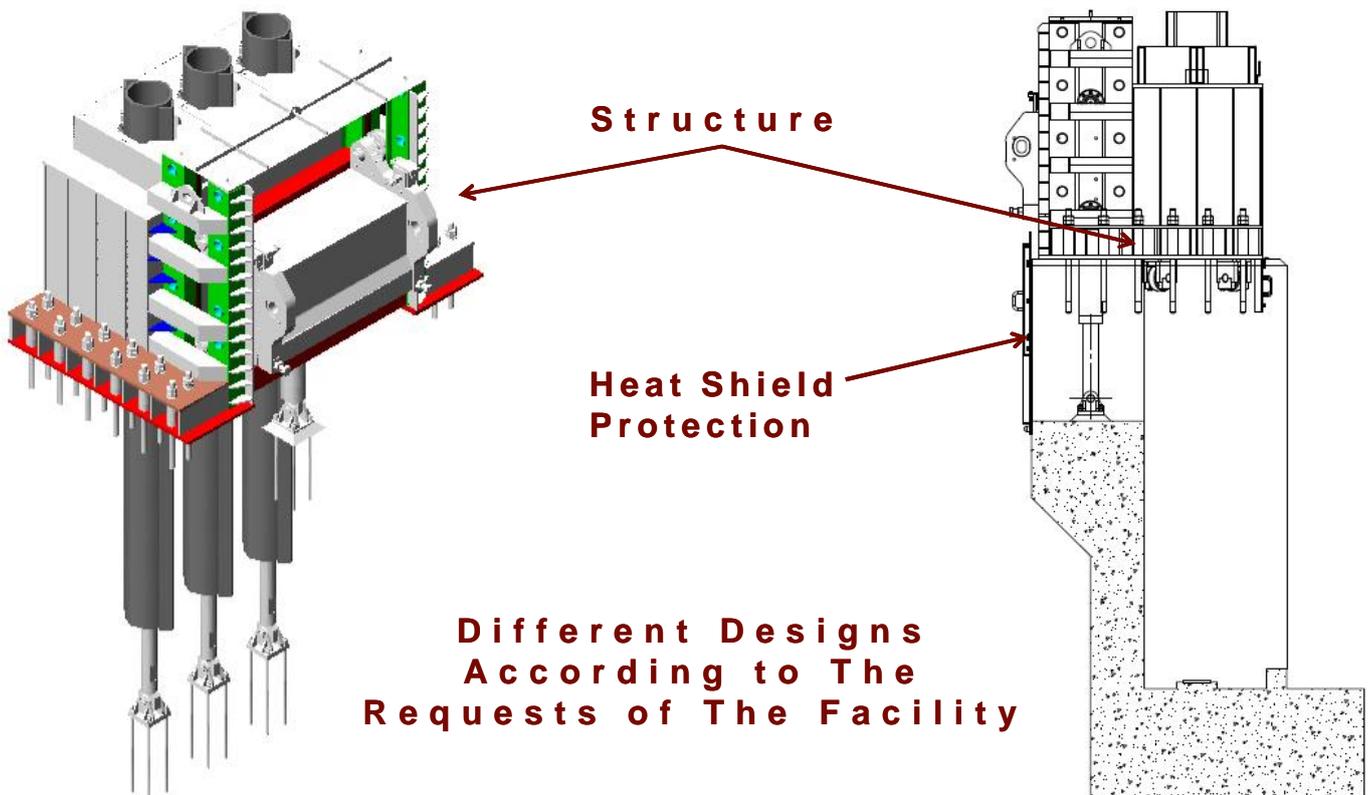
## LF - EQUIPMENTS



### MAIN EQUIPMENTS

- Furnace Support Structure
- Roof Lifting Device
- Electrode Lifting System
- Electrode Arms
- Transformer
- Secondary Circuit
- Water Cooled Roof
- Water Cooled Pipes for Direct Suction
- Sampling and Measuring Devices
- Emergency Lance
- Electrode Nipling System
- Material Handling System
- Wire Feeding Machine
- Ladle Car
- Hydraulic Unit

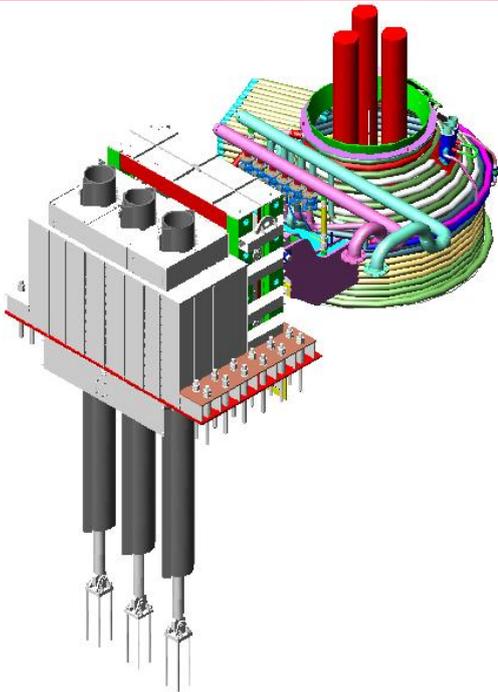
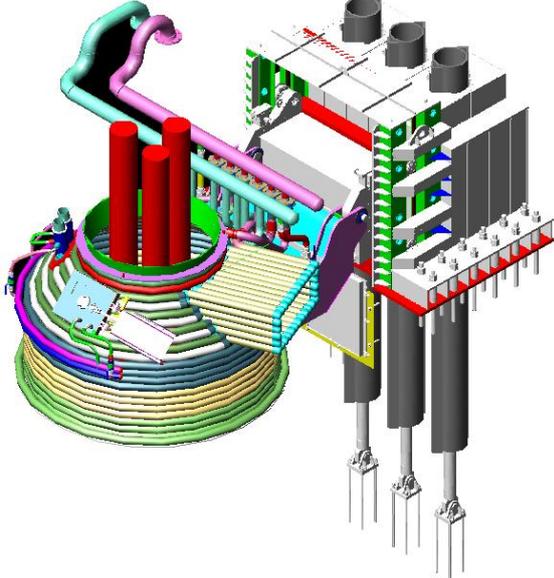
## SUPPORT STRUCTURE



# ROOF & ELECTRODE LIFTING SYSTEM



Advanced Engineering

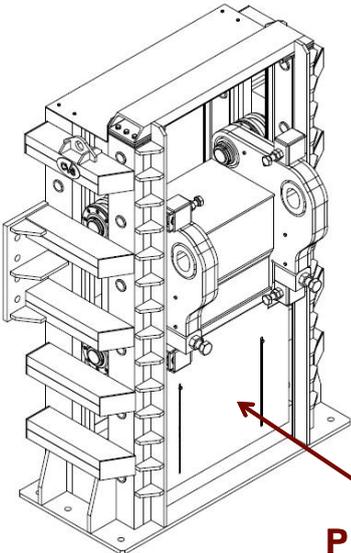


Creative Solutions

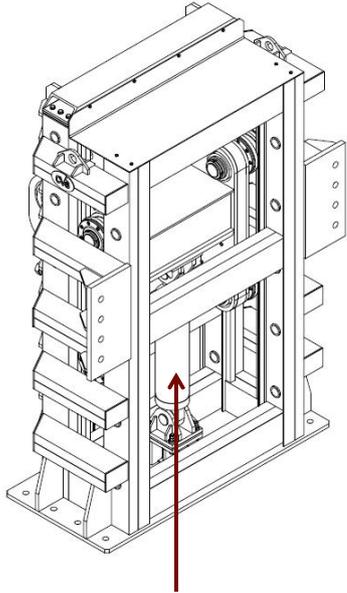
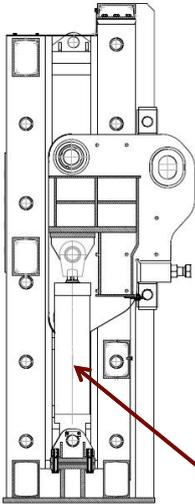
# ROOF LIFTING DEVICE



Any Kind of Lifting Systems

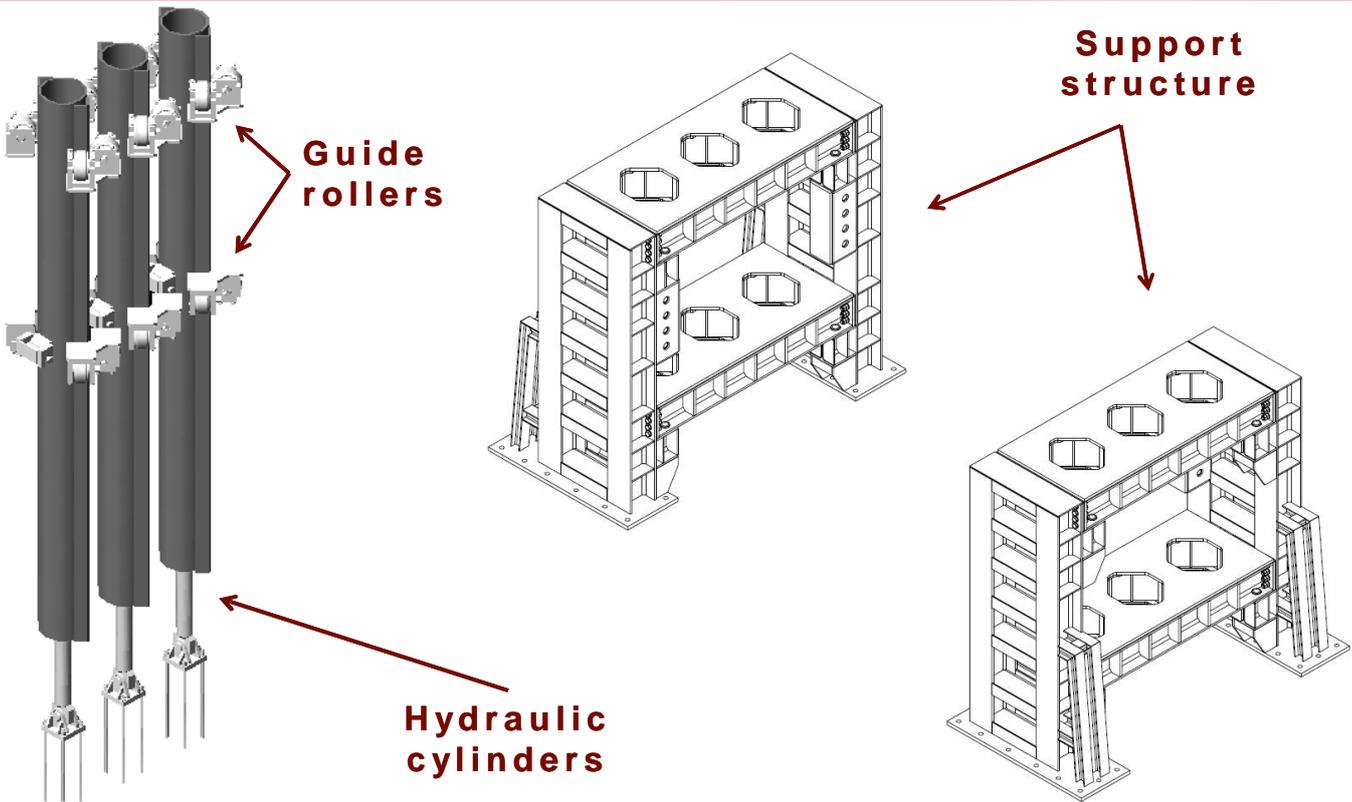


Protection

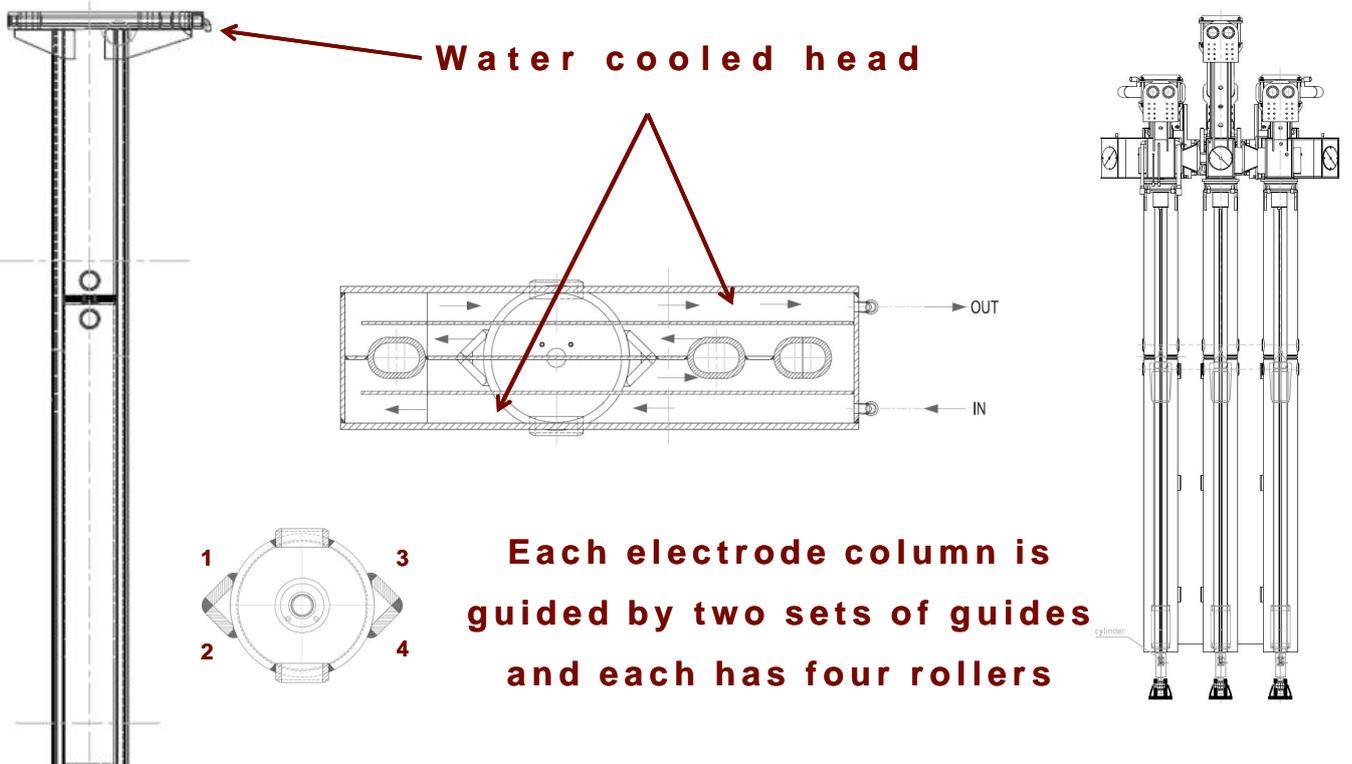


Roof lifting mechanism via hydraulic cylinder

# ELECTRODE LIFTING SYSTEM



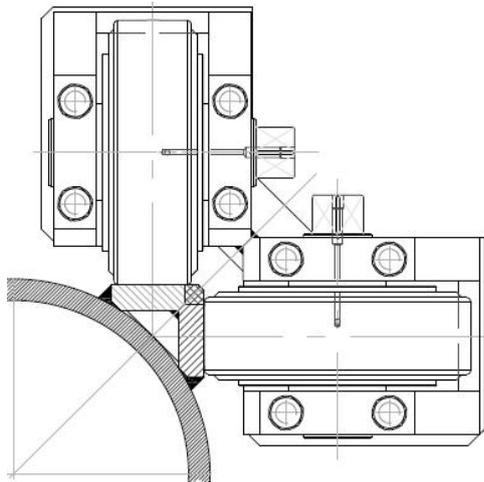
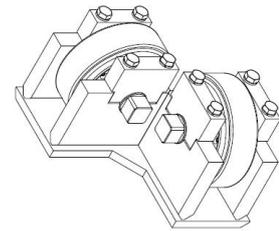
# ELECTRODE COLUMNS



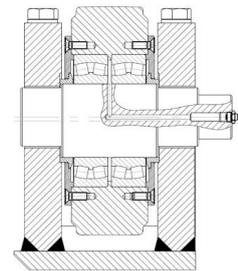
# ELECTRODE COLUMNS - GUIDES



**The Guide Rollers Are Lubricated By  
a Centralized Lubrication System**



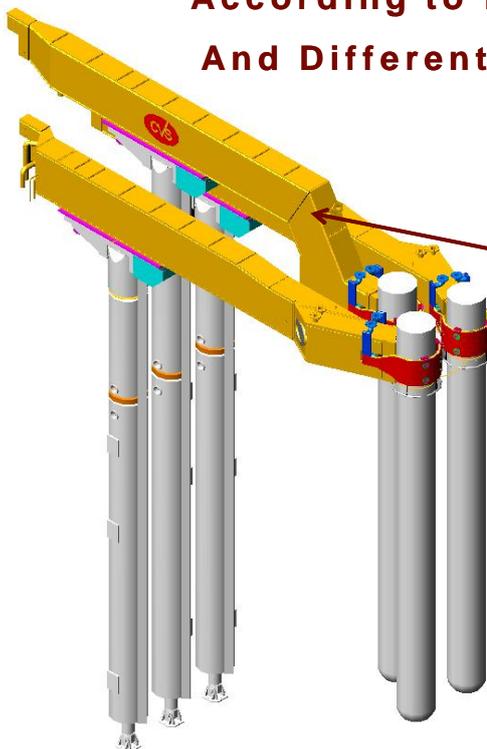
**4 Top and  
4 Bottom  
to Guide  
Each  
Electrode  
Column**



# ELECTRODE ARMS

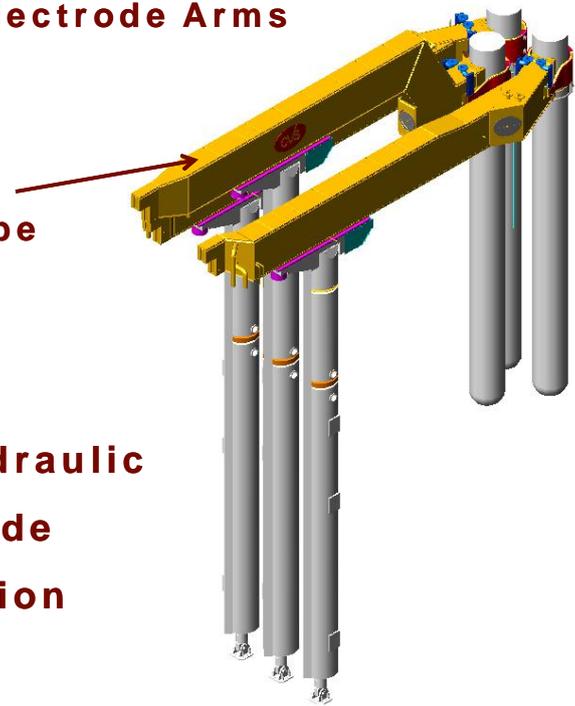


**According to Furnace Capacities Suitable  
And Different Designs of Electrode Arms**

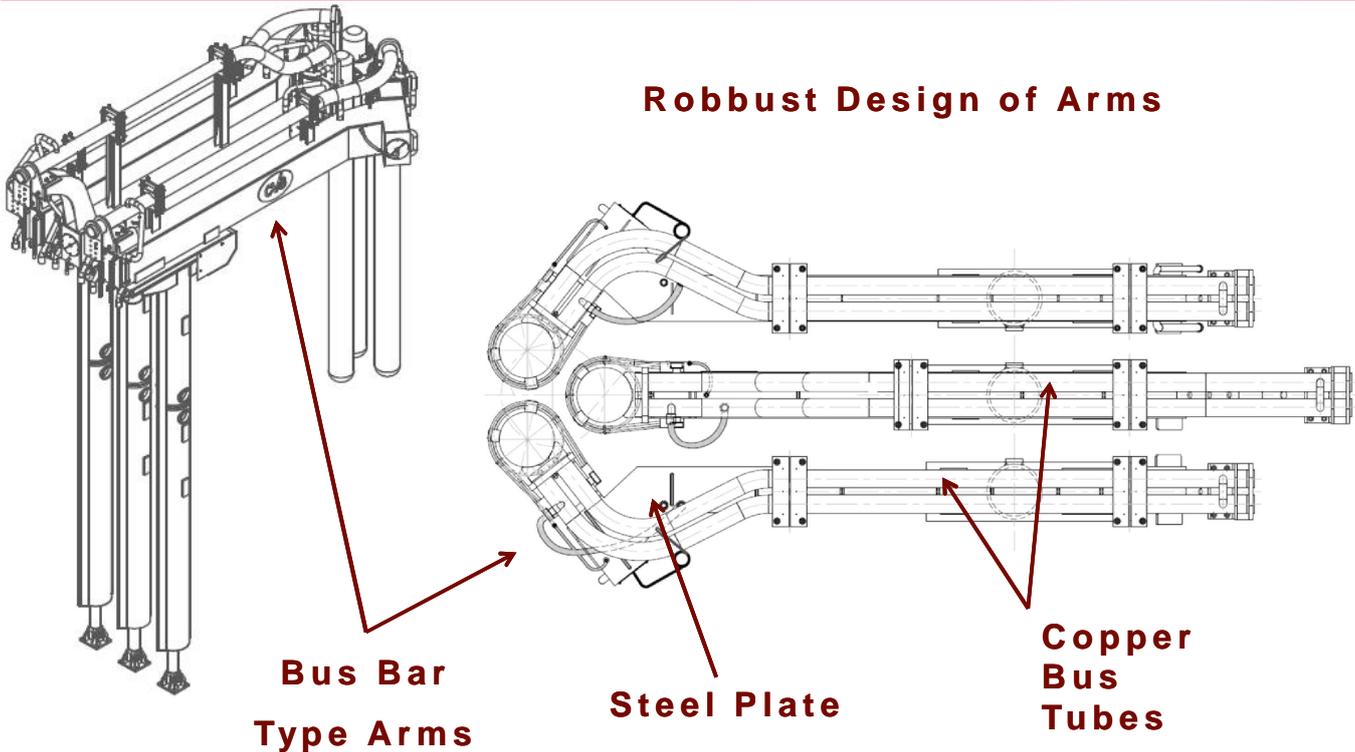


**Copper  
Cladded Type  
Arms**

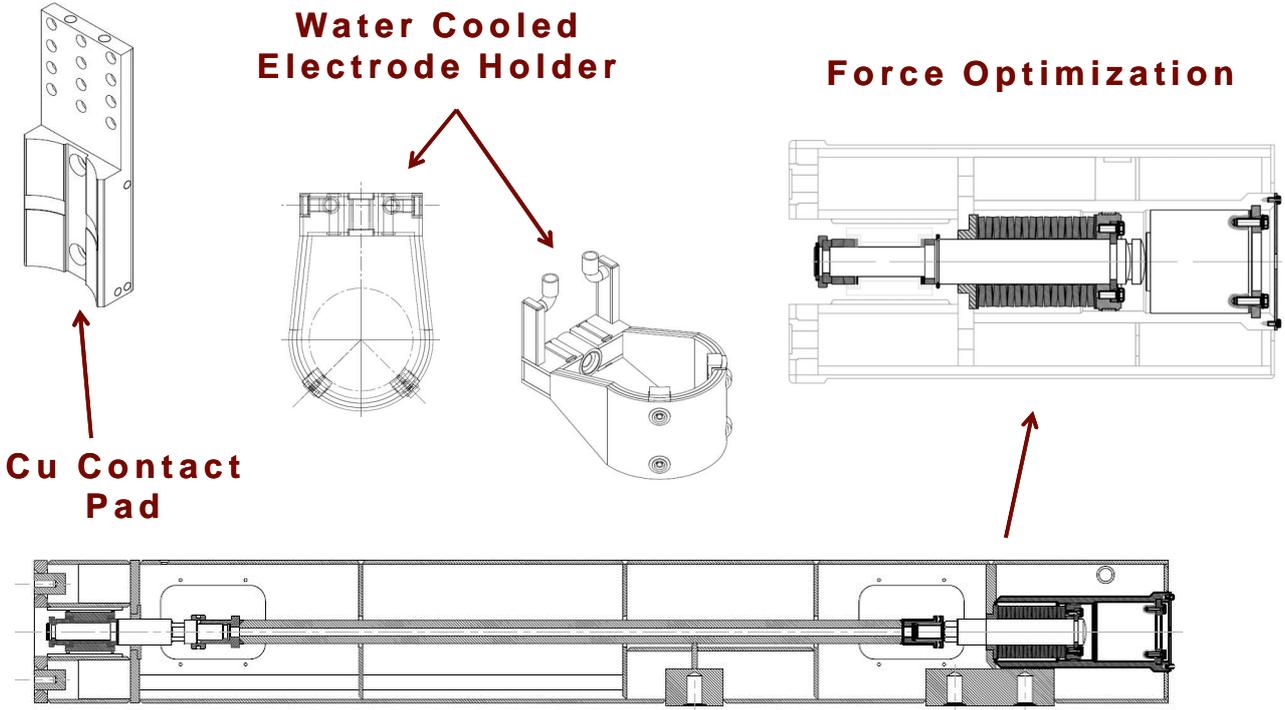
**Electro-Hydraulic  
Electrode  
Regulation**



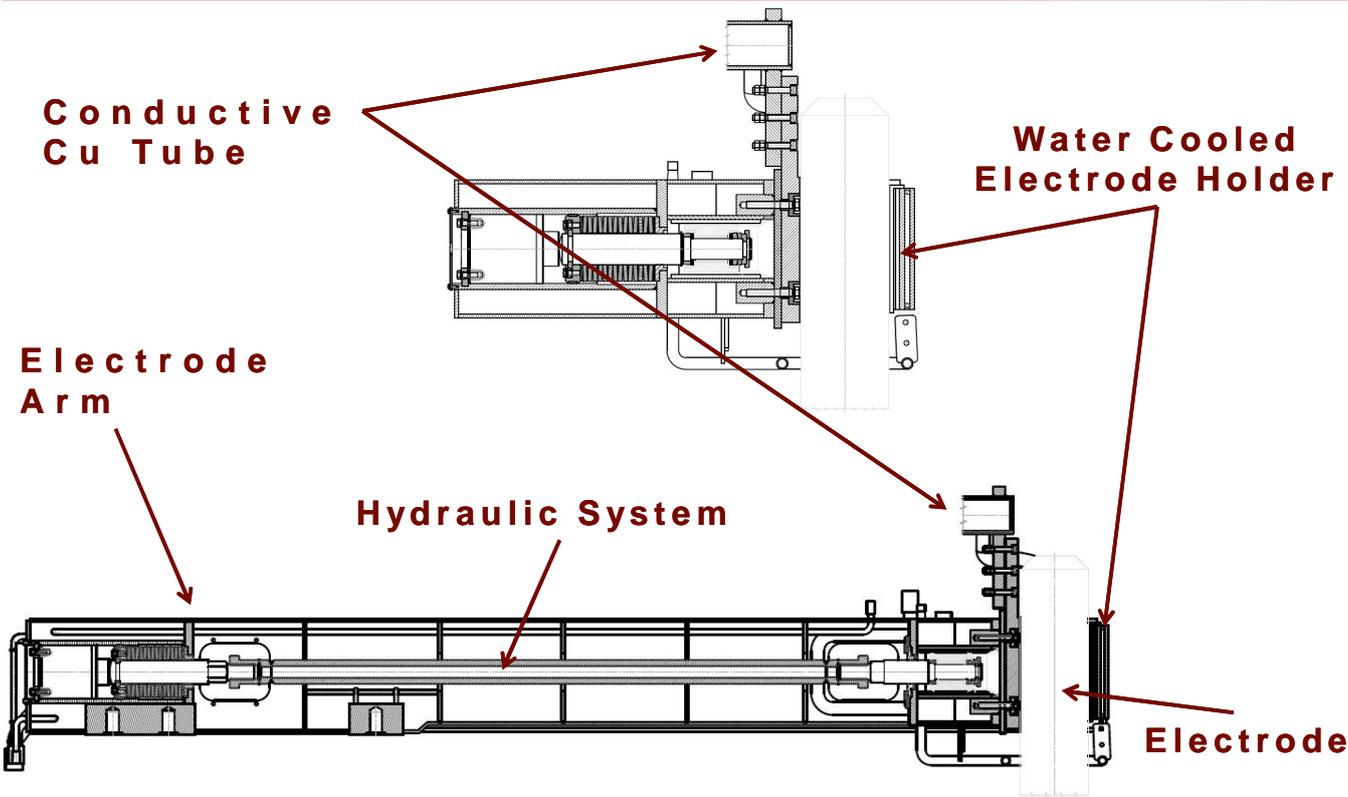
# ELECTRODE ARMS



# ELECTRODE HOLDING SYSTEM



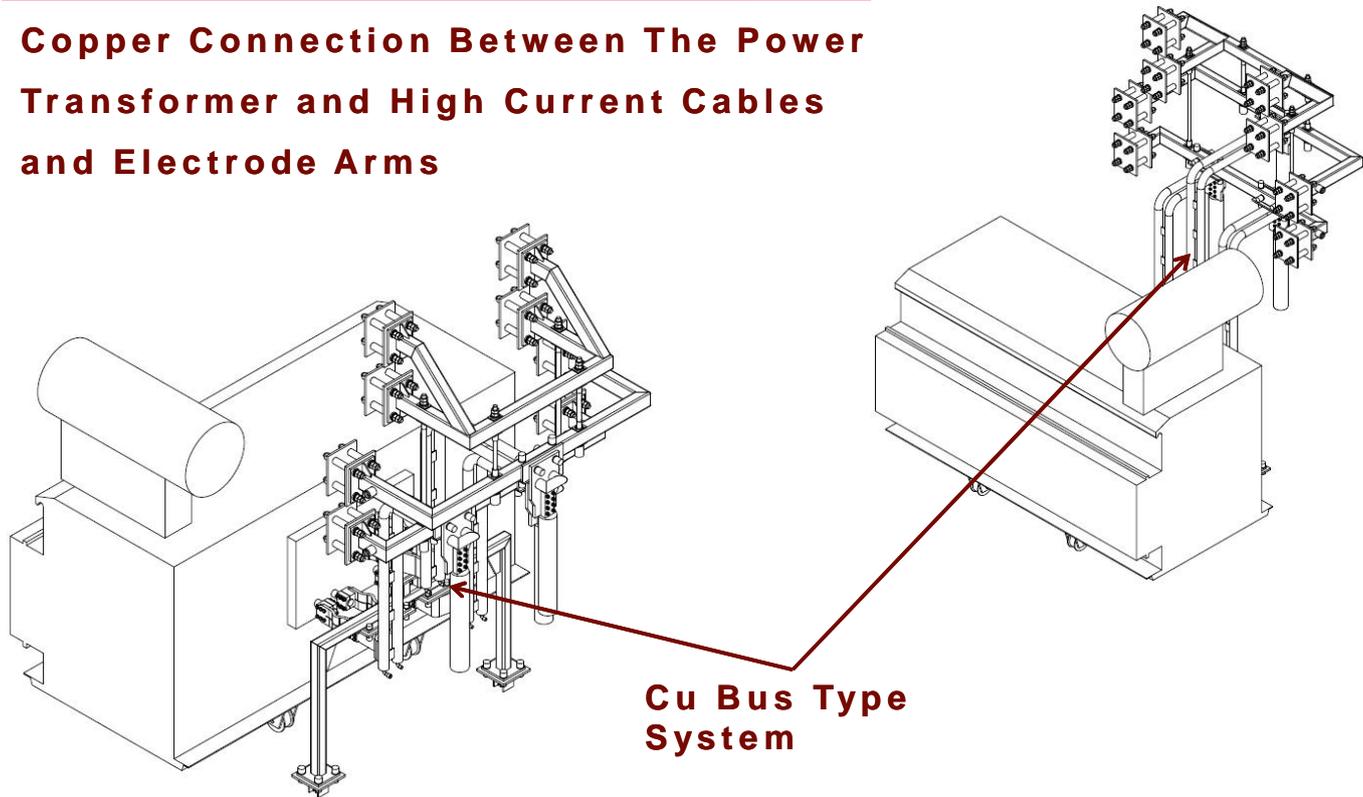
# ELECTRODE HOLDING SYSTEM



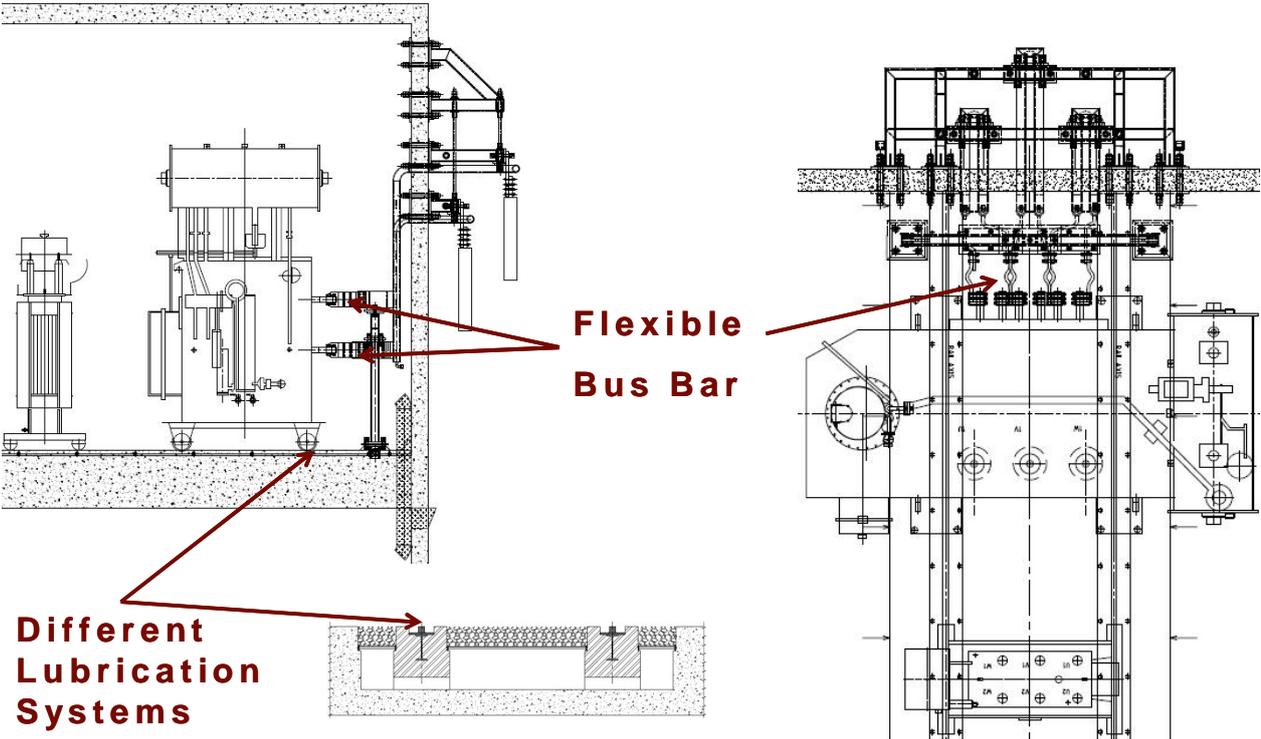
# SECONDARY CIRCUIT



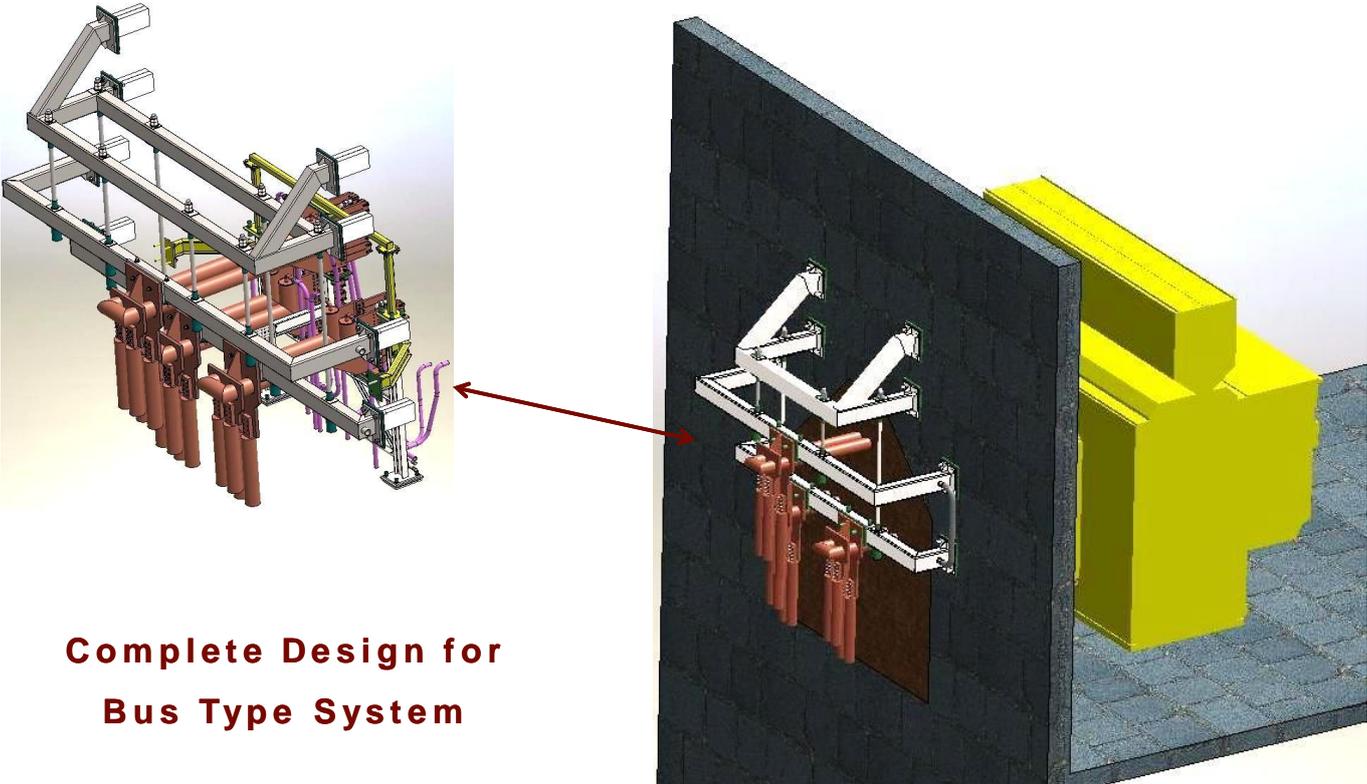
**Copper Connection Between The Power Transformer and High Current Cables and Electrode Arms**



# SECONDARY CIRCUIT



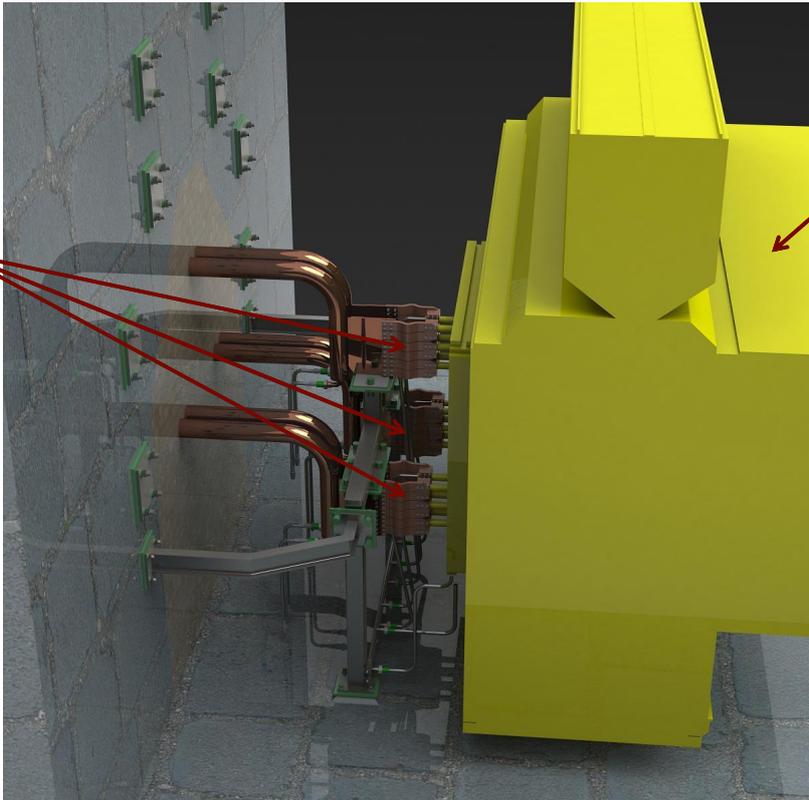
# BUS TYPE SYSTEM



# BUS TYPE SYSTEM



**Flexible  
Bus Bar**

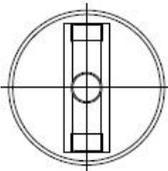
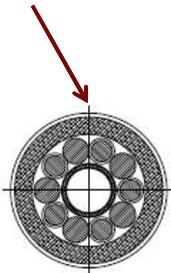


**Transformer**

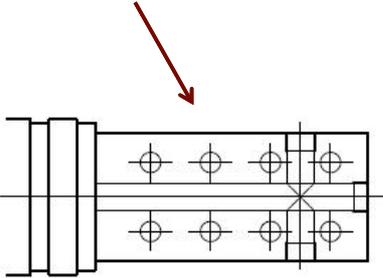
# WATER COOLED CABLES



**Water Cooled Cables**

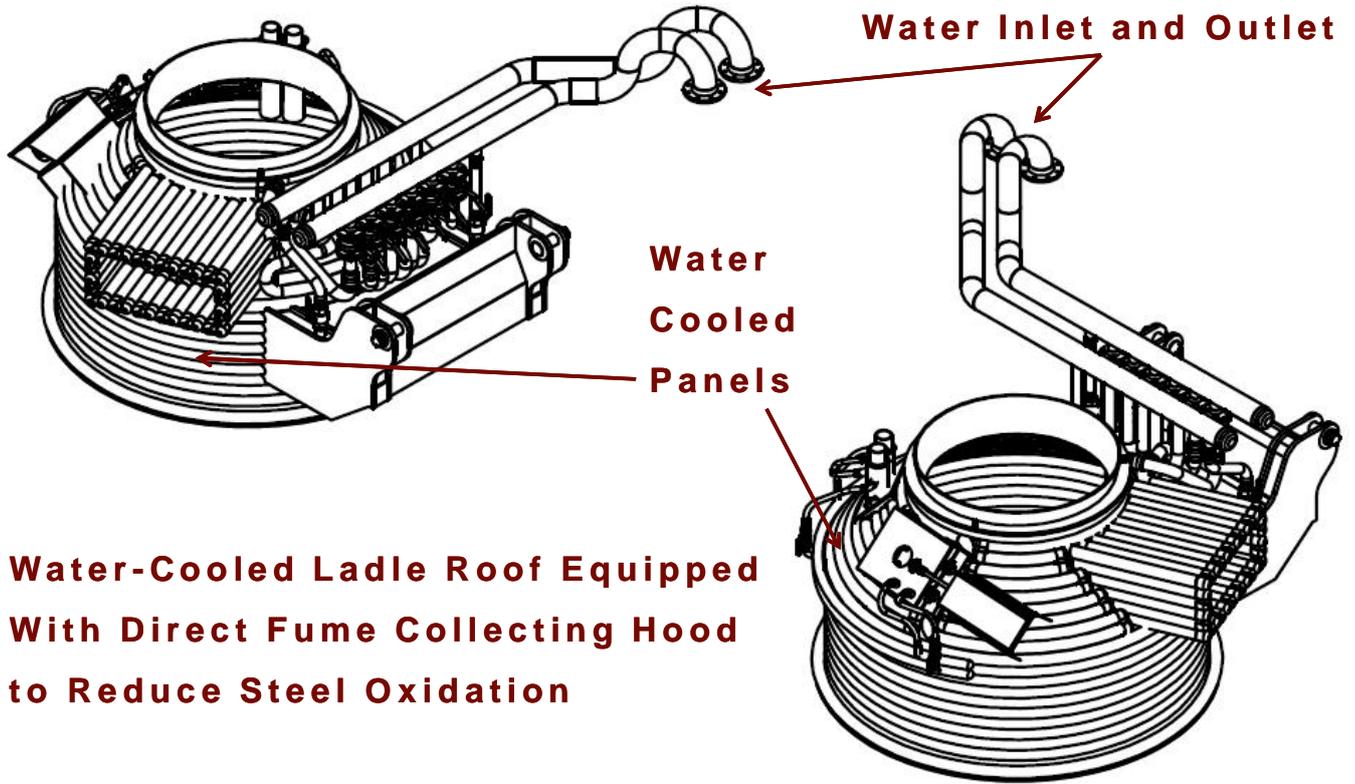


**Head Connection**

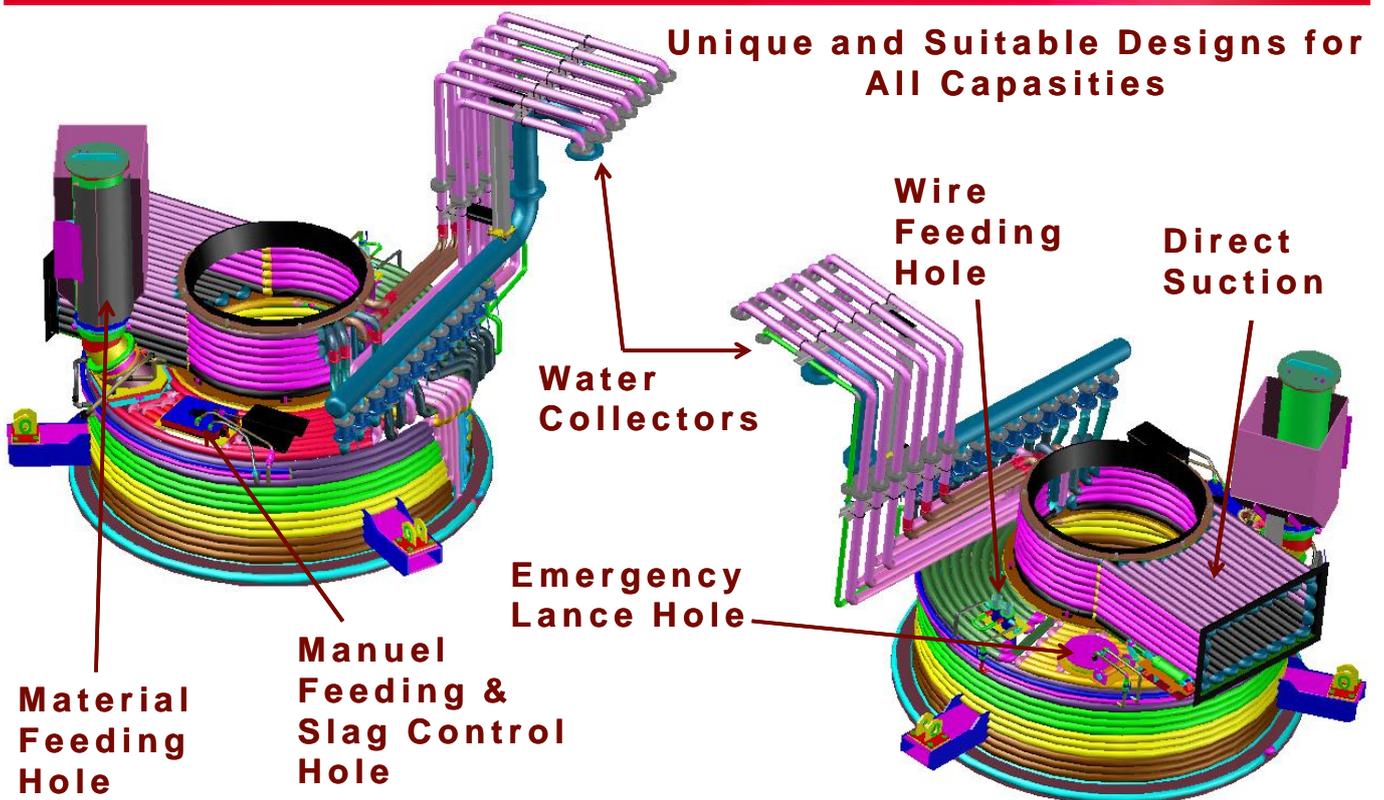


**Connection Between Furnace Electrode Arms and  
Transformer Secondary System**

# WATER COOLED ROOF



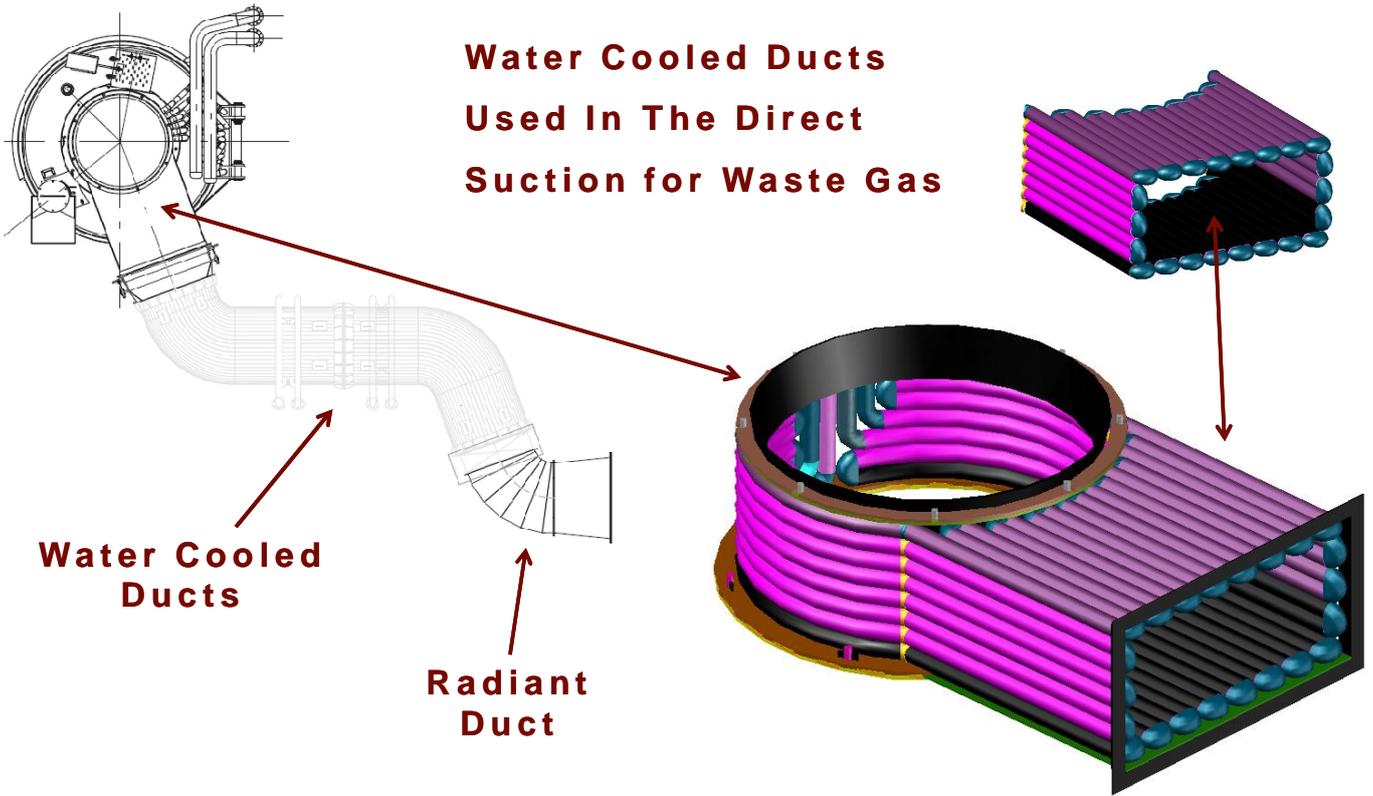
# WATER COOLED ROOF



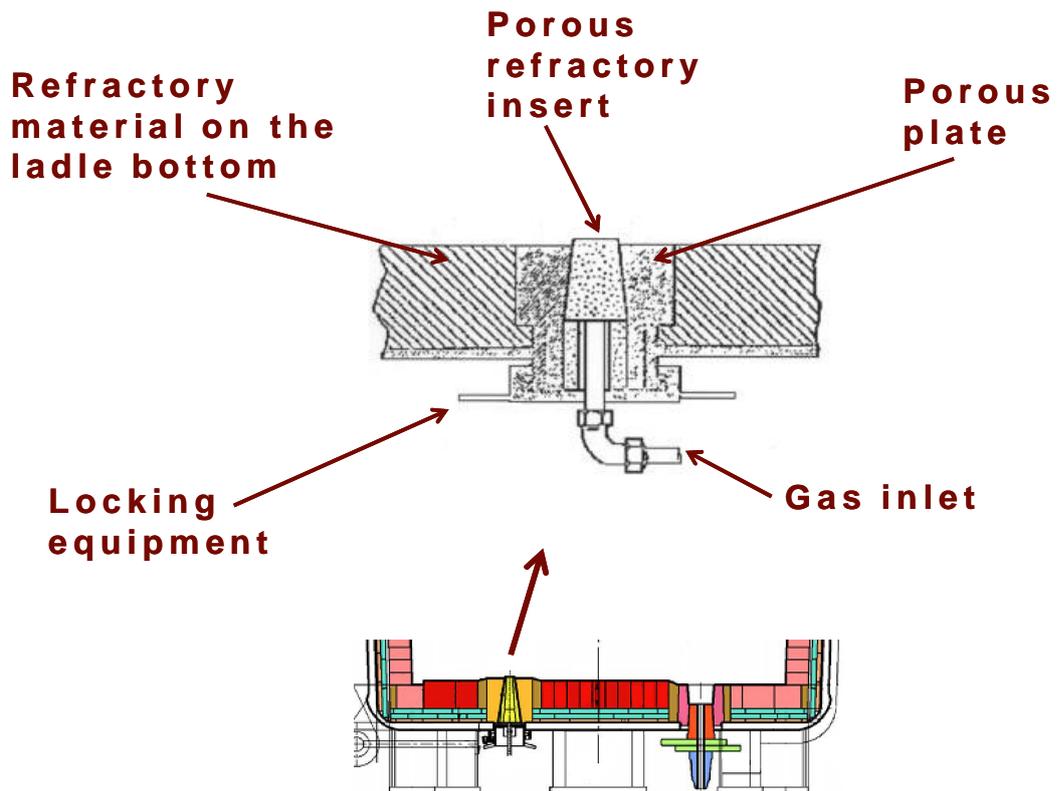
# WATER COOLED PIPES FOR SUCTION



Water Cooled Ducts  
Used In The Direct  
Suction for Waste Gas



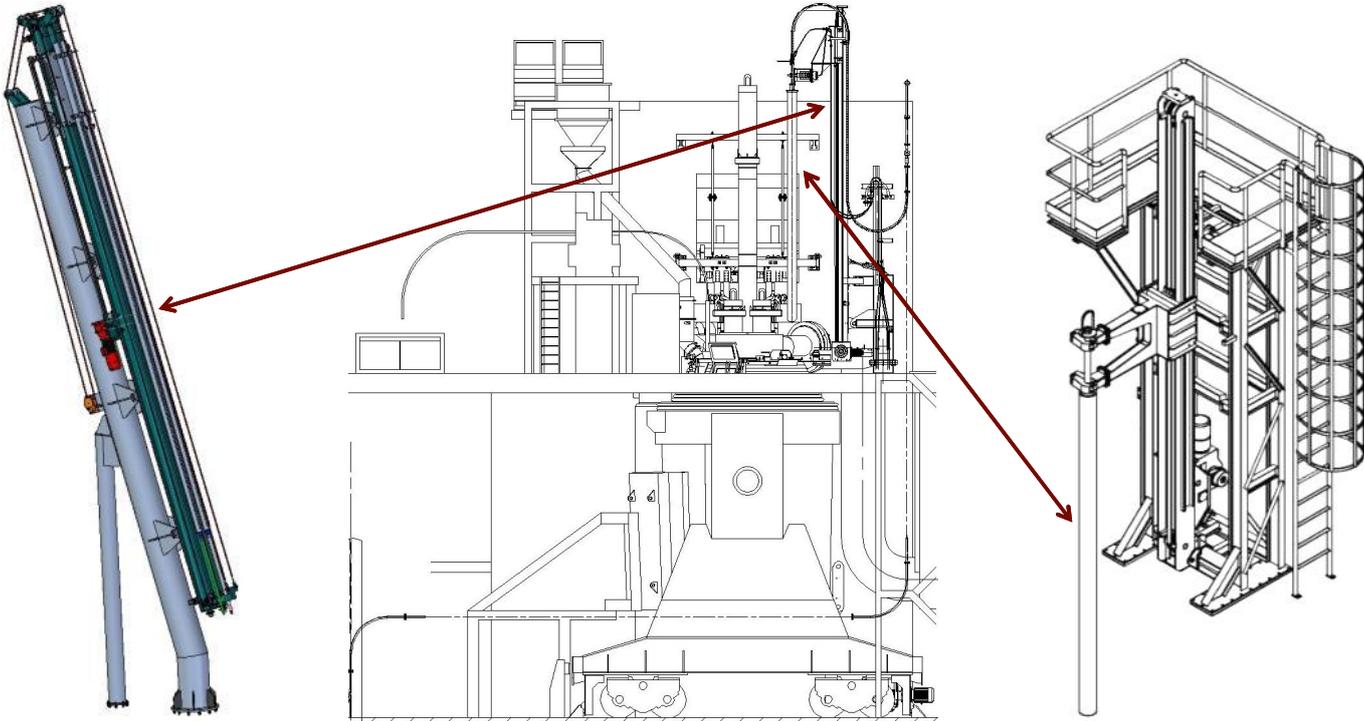
# LADLE INERT GAS USE



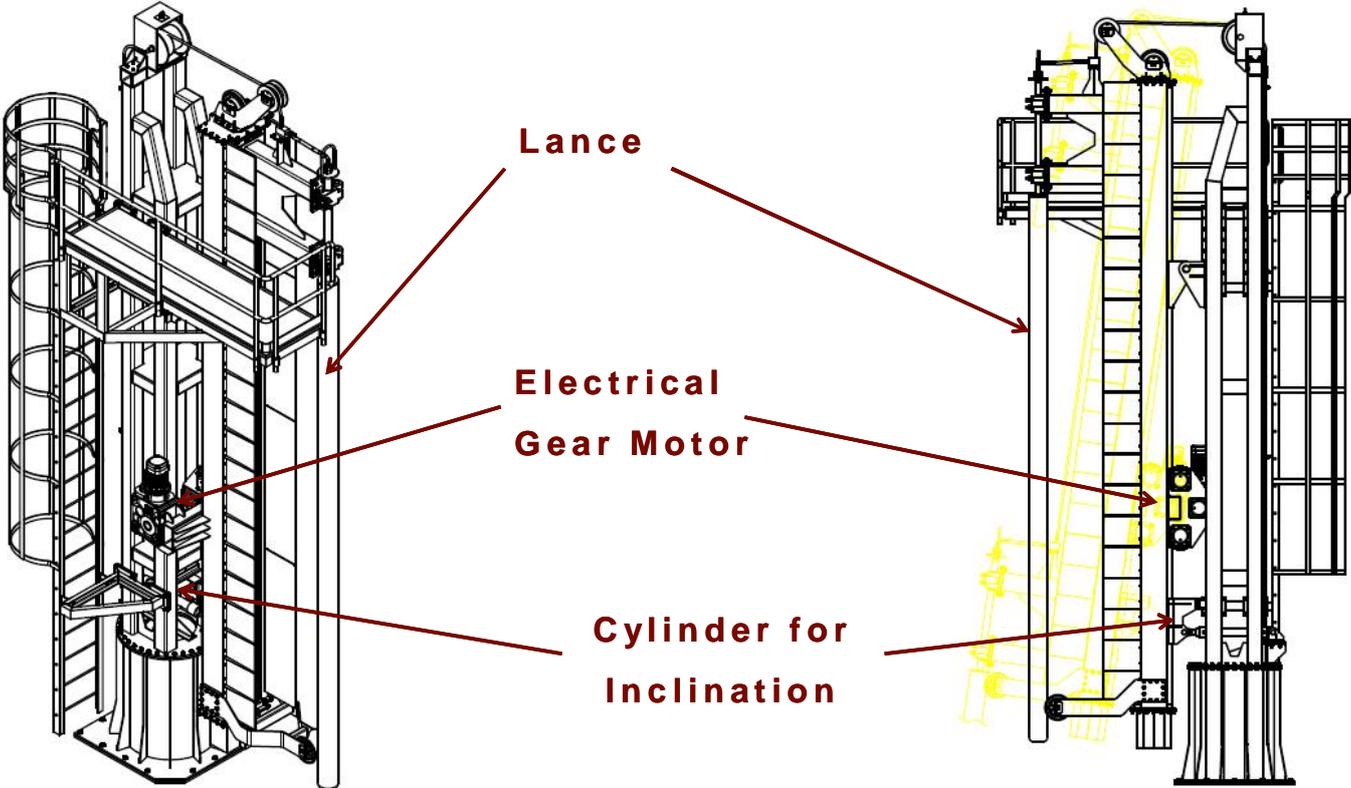
# EMERGENCY LANCE



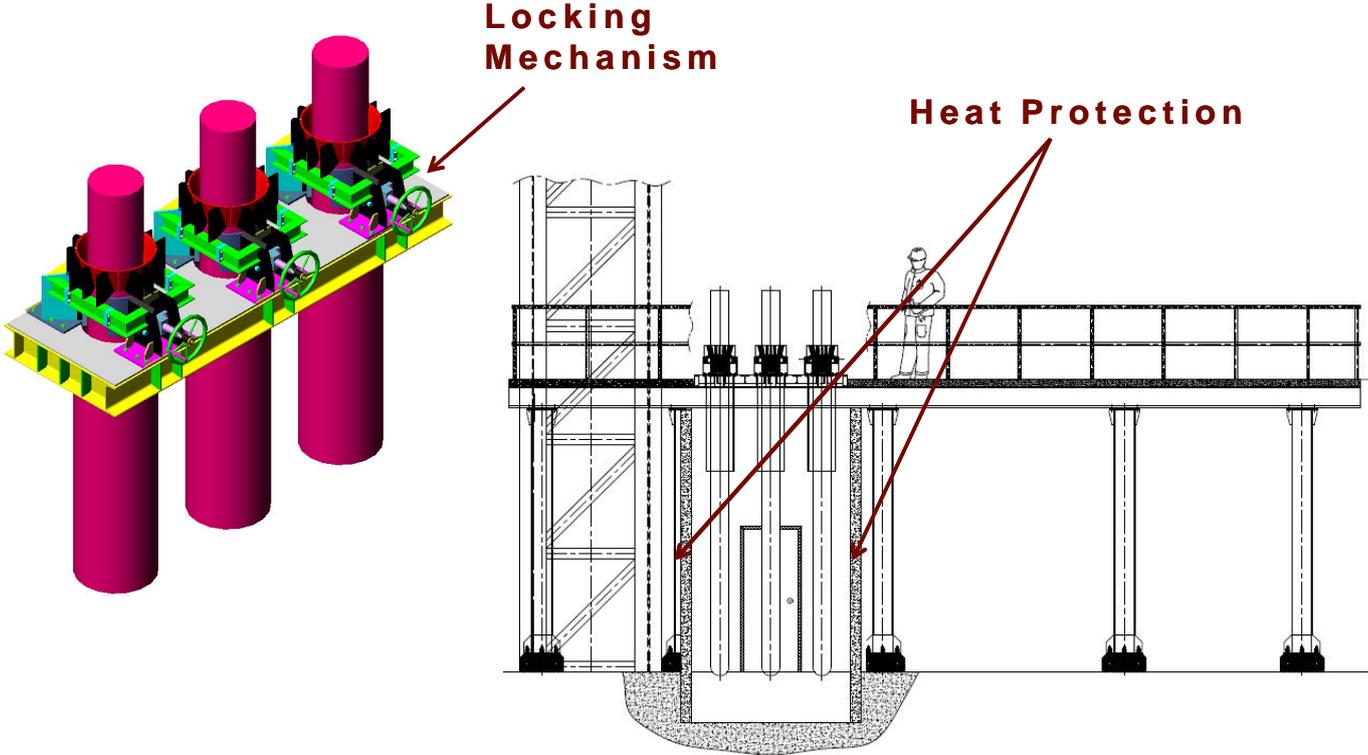
## Fully Automatic System



# EMERGENCY LANCE



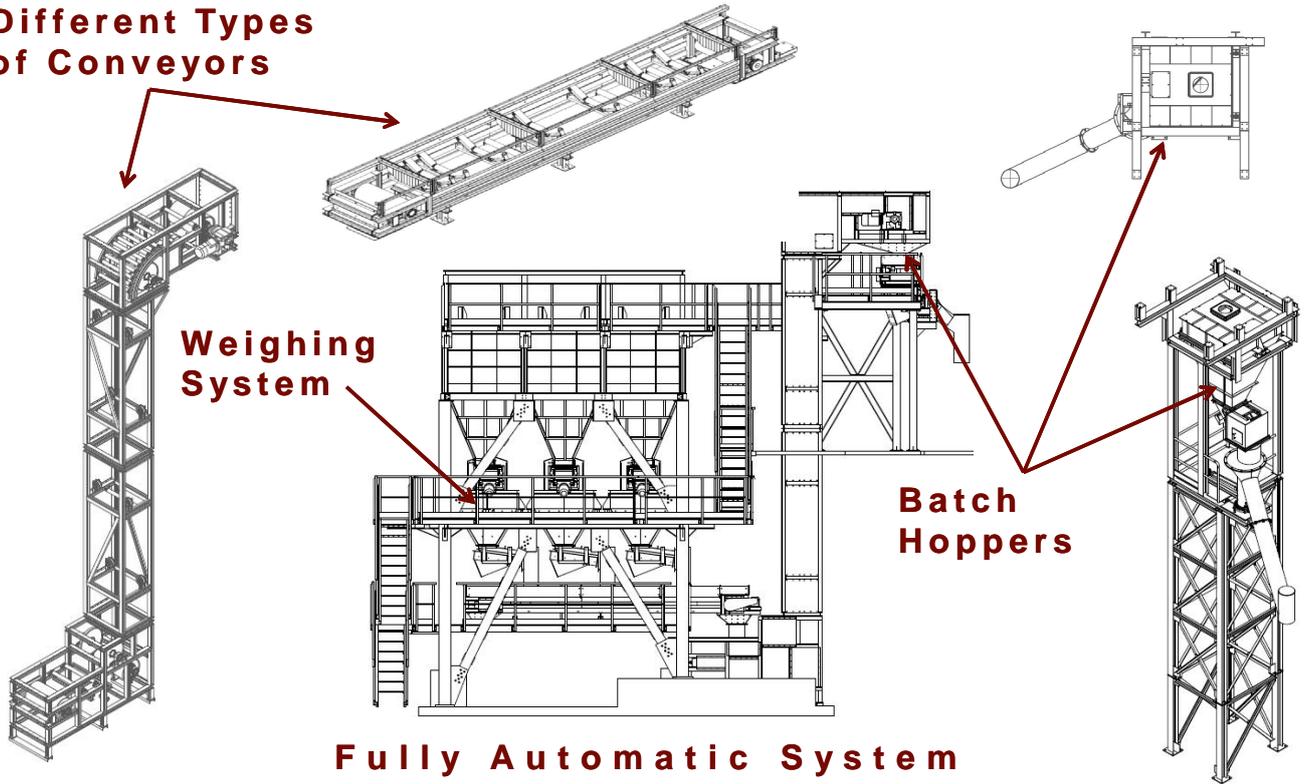
# ELECTRODE NIPPLING SYSTEM



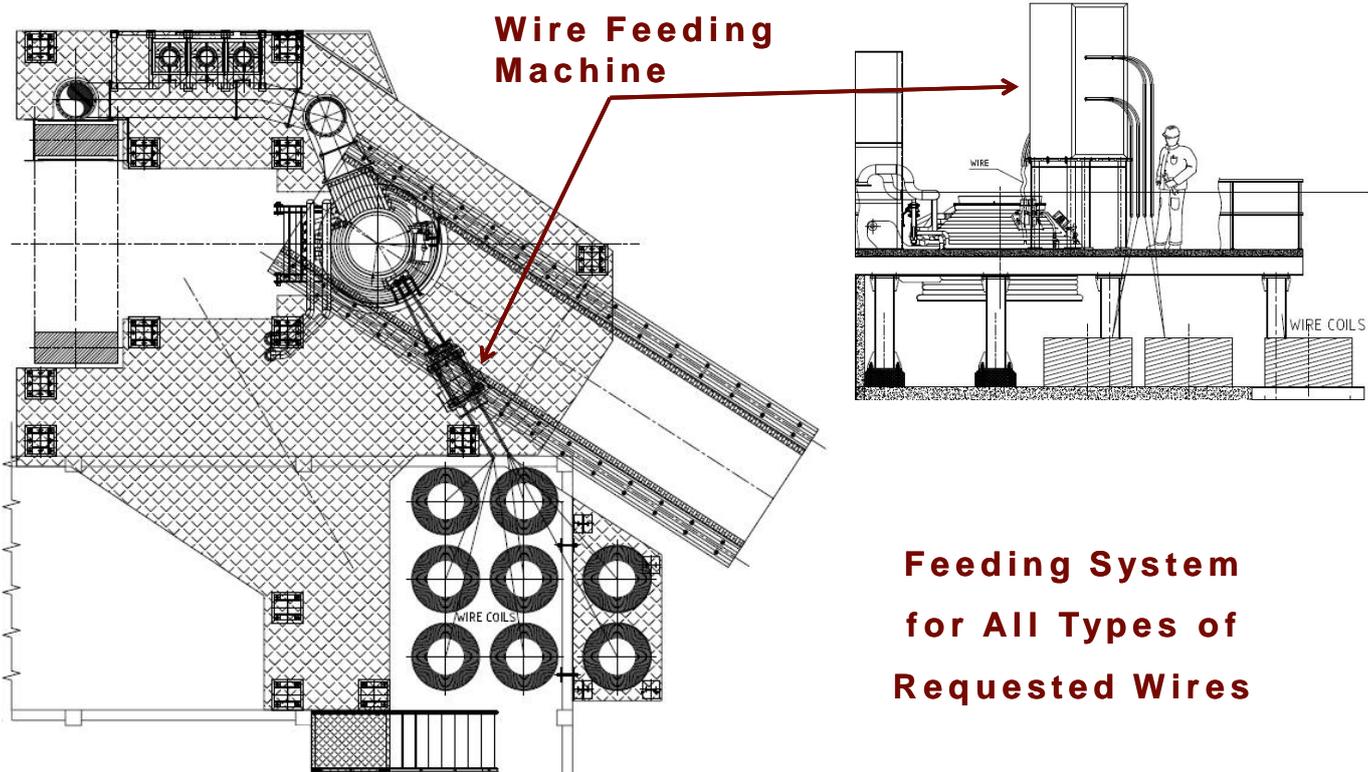
# MATERIAL HANDLING SYSTEM



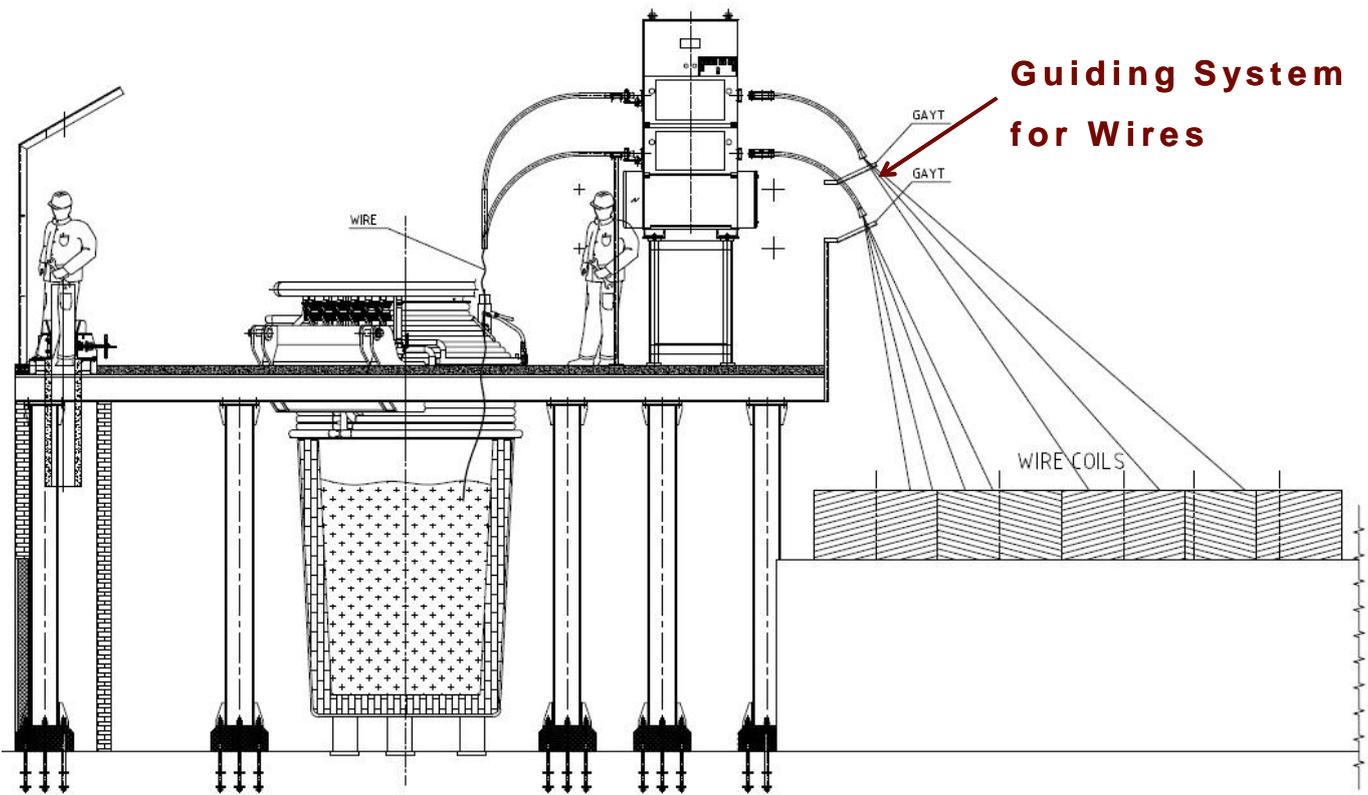
**Different Types of Conveyors**



# WIRE FEEDING MACHINE



# WIRE FEEDING SIDE VIEW



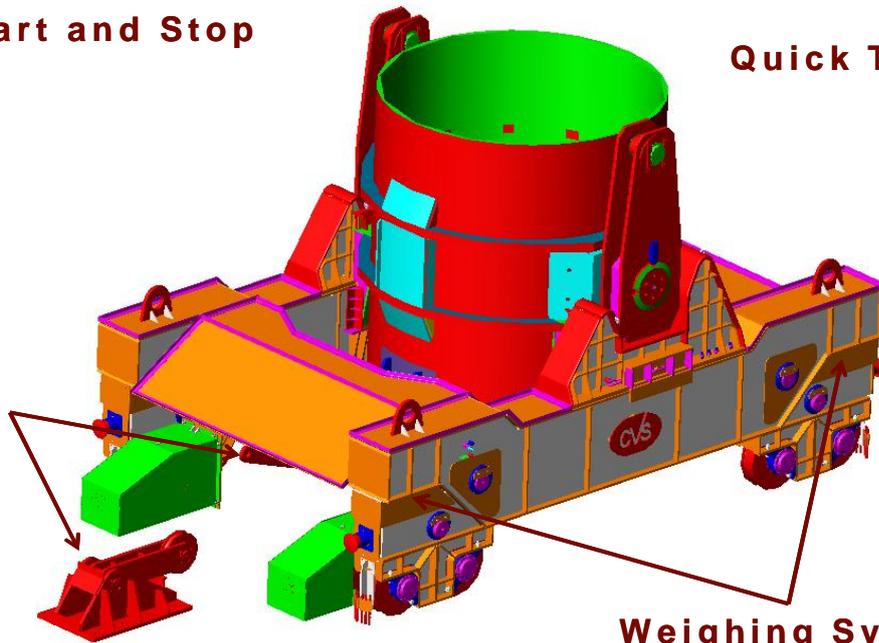
# LADLE CAR



Smooth Start and Stop

Quick Transfer

Reel to  
Move Ladle  
Car In  
Emergency  
Situations

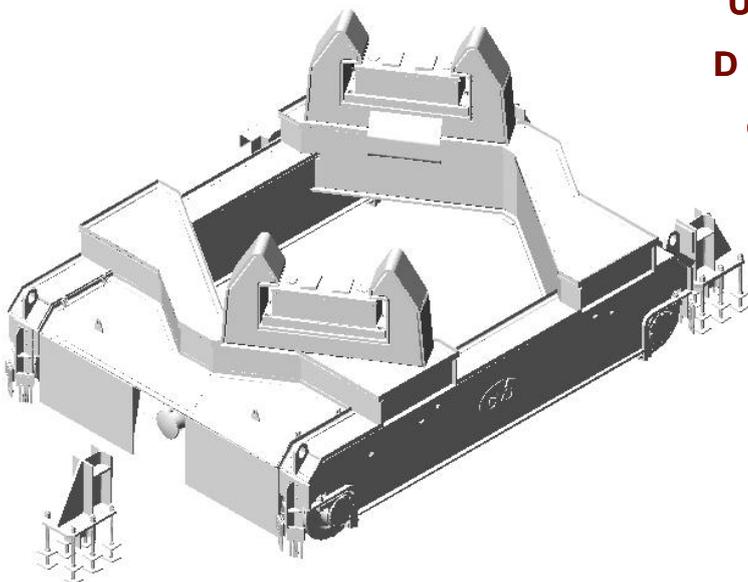


Weighing System

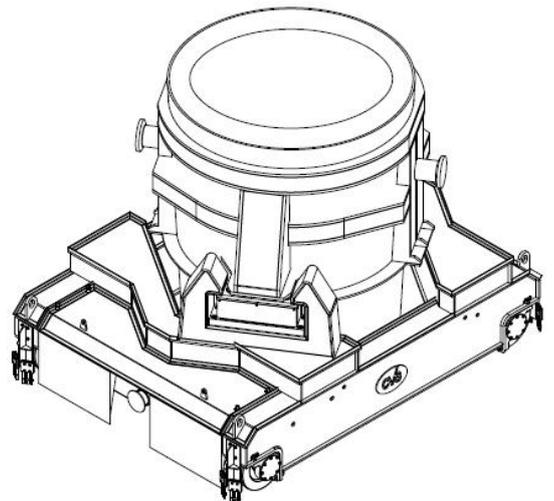
# LADLE CAR



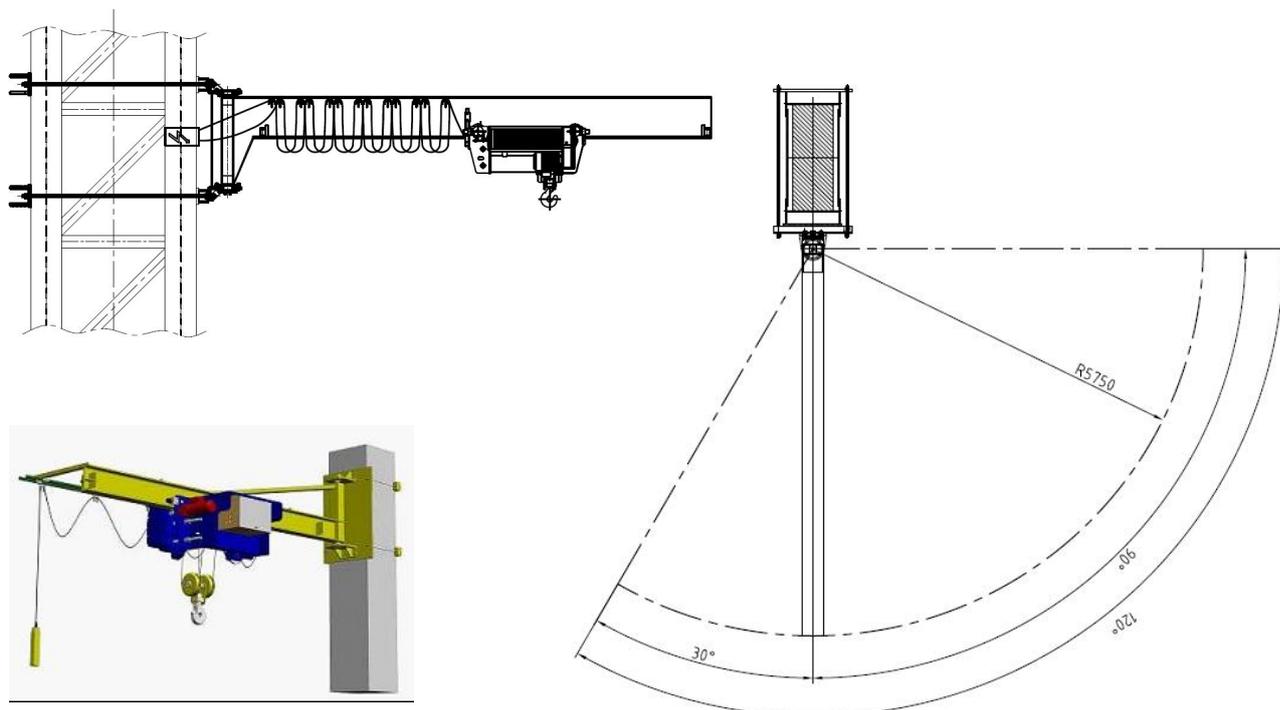
Unique and Suitable  
Designs for Any Kind  
of Customer Needs



For All Capacities



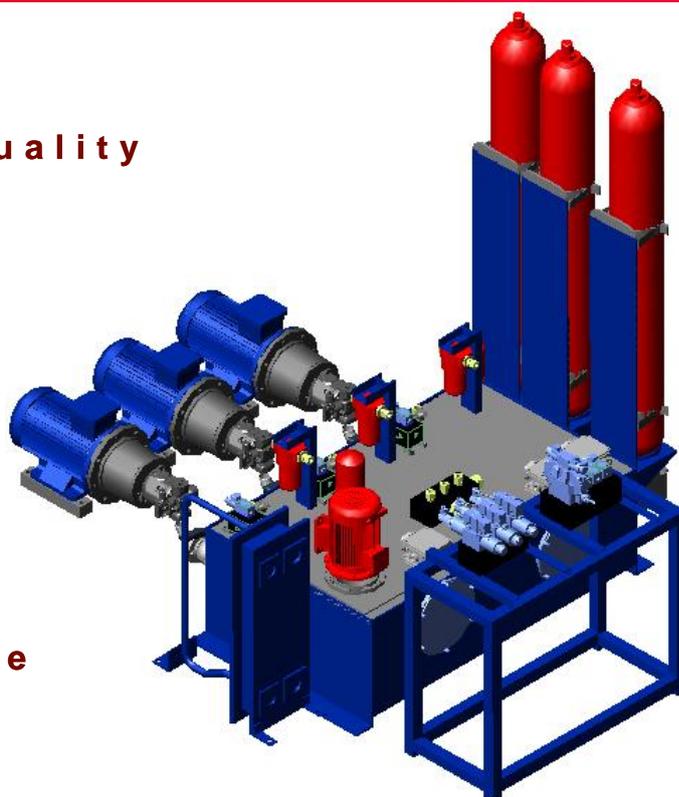
# JIB CRANE



# HYRAULIC UNIT



High Quality



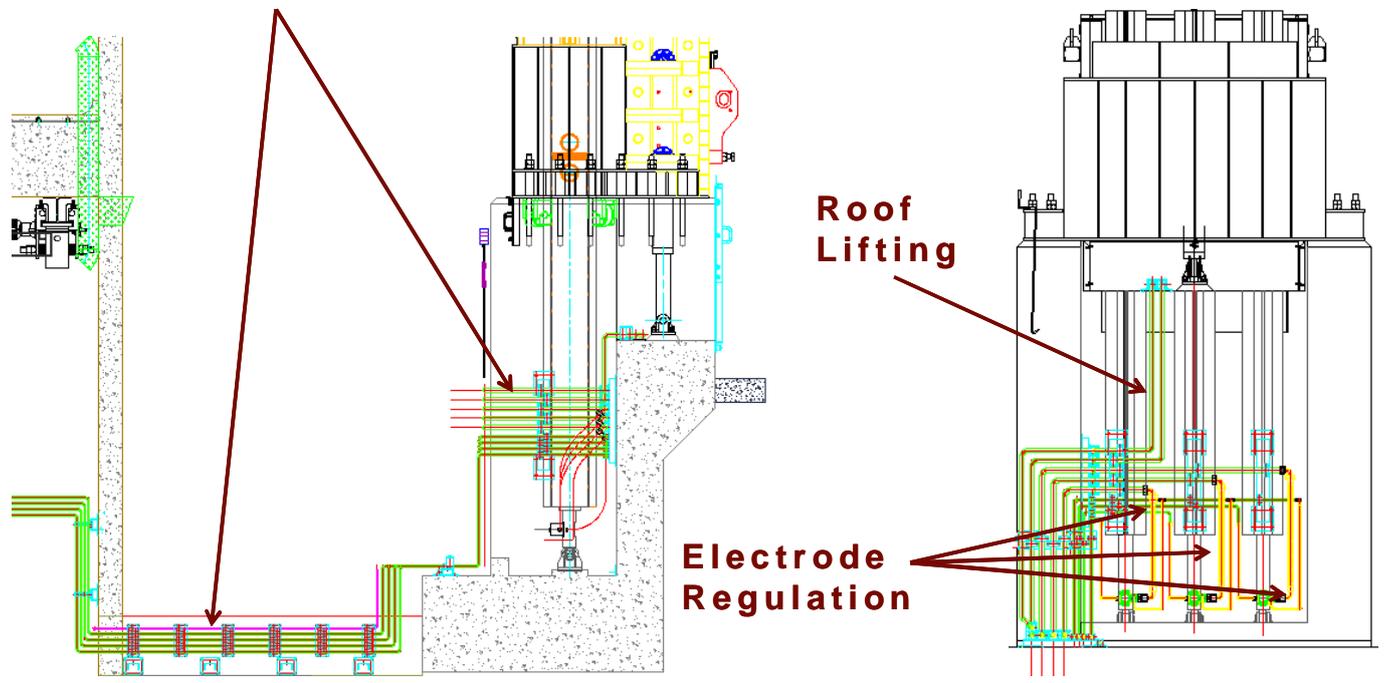
High Performance

Long Life

# HYRAULIC UNIT



## Hydraulic Line

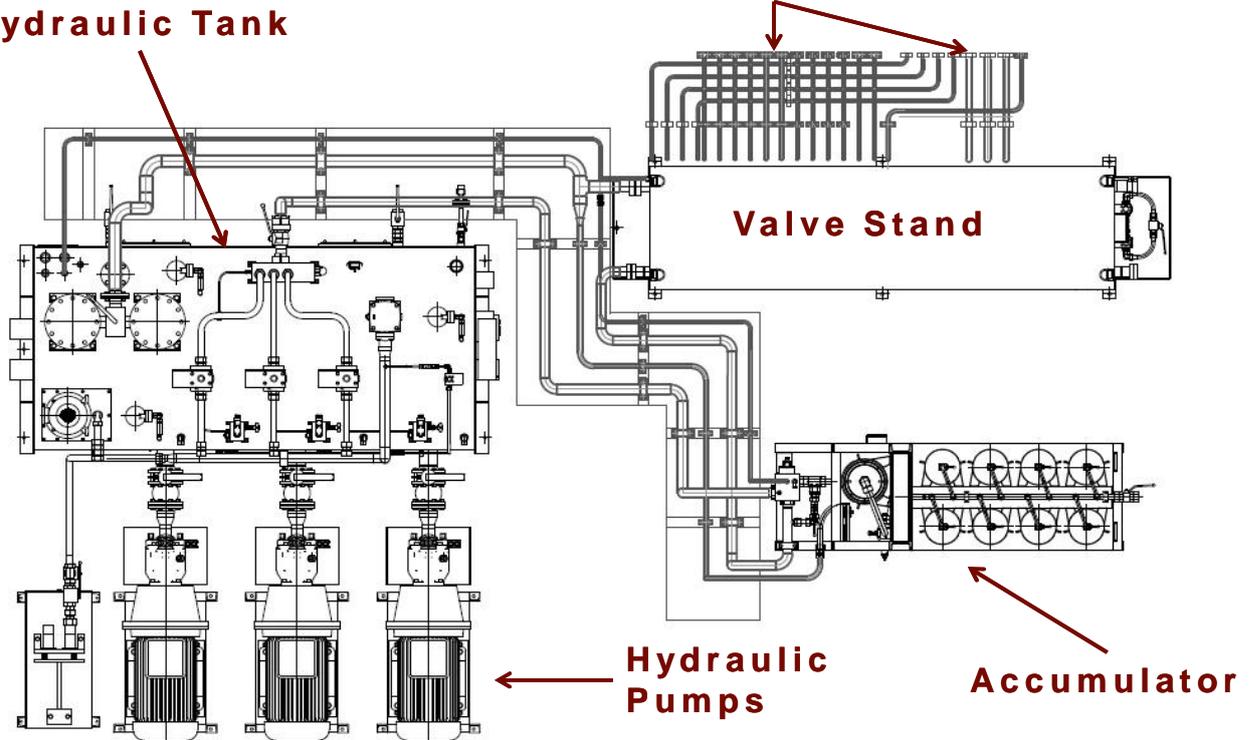


# HYRAULIC UNIT

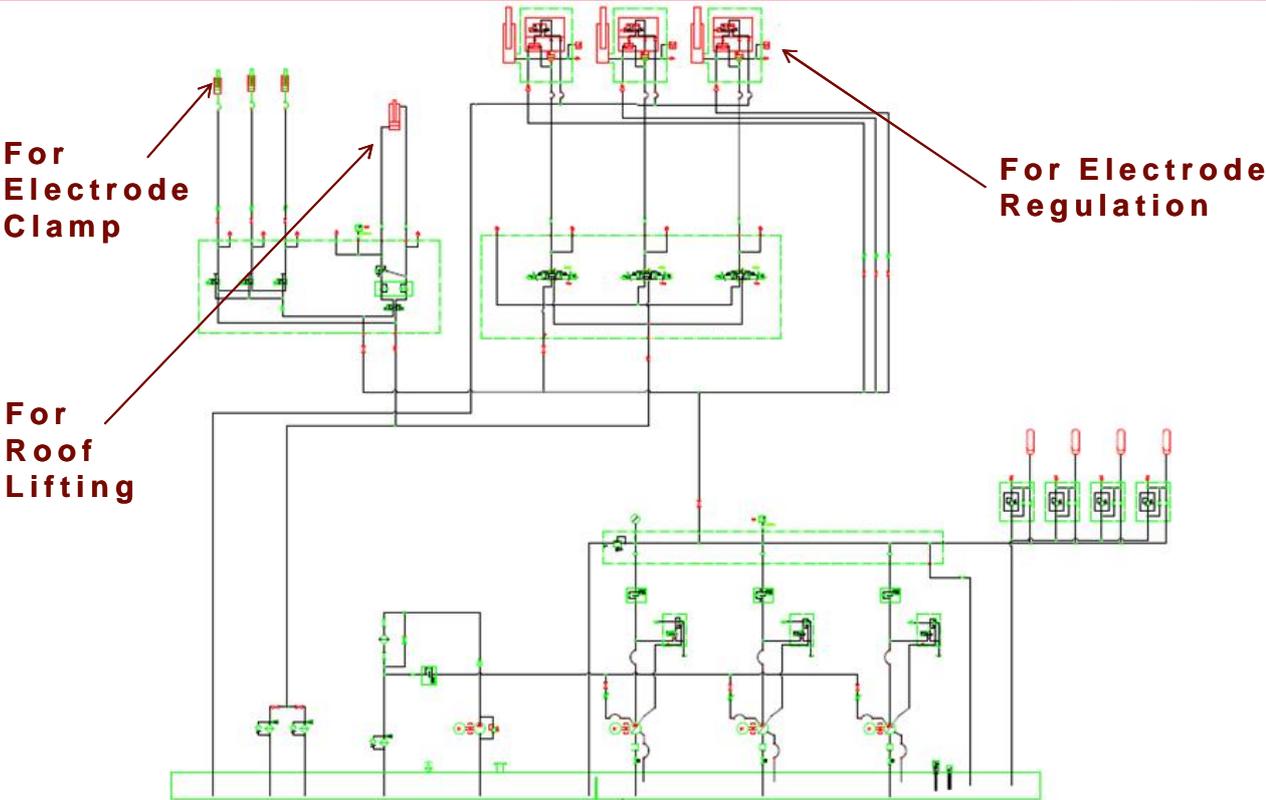


## Hydraulic Tank

## Distribution Pipes



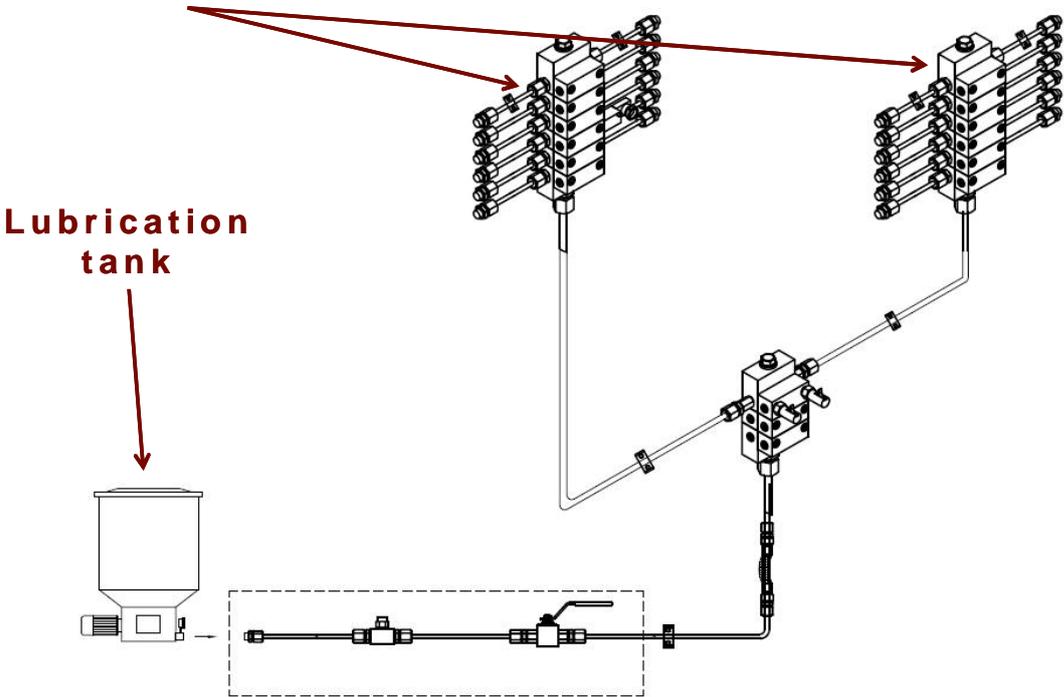
# HYRAULIC UNIT - P&I



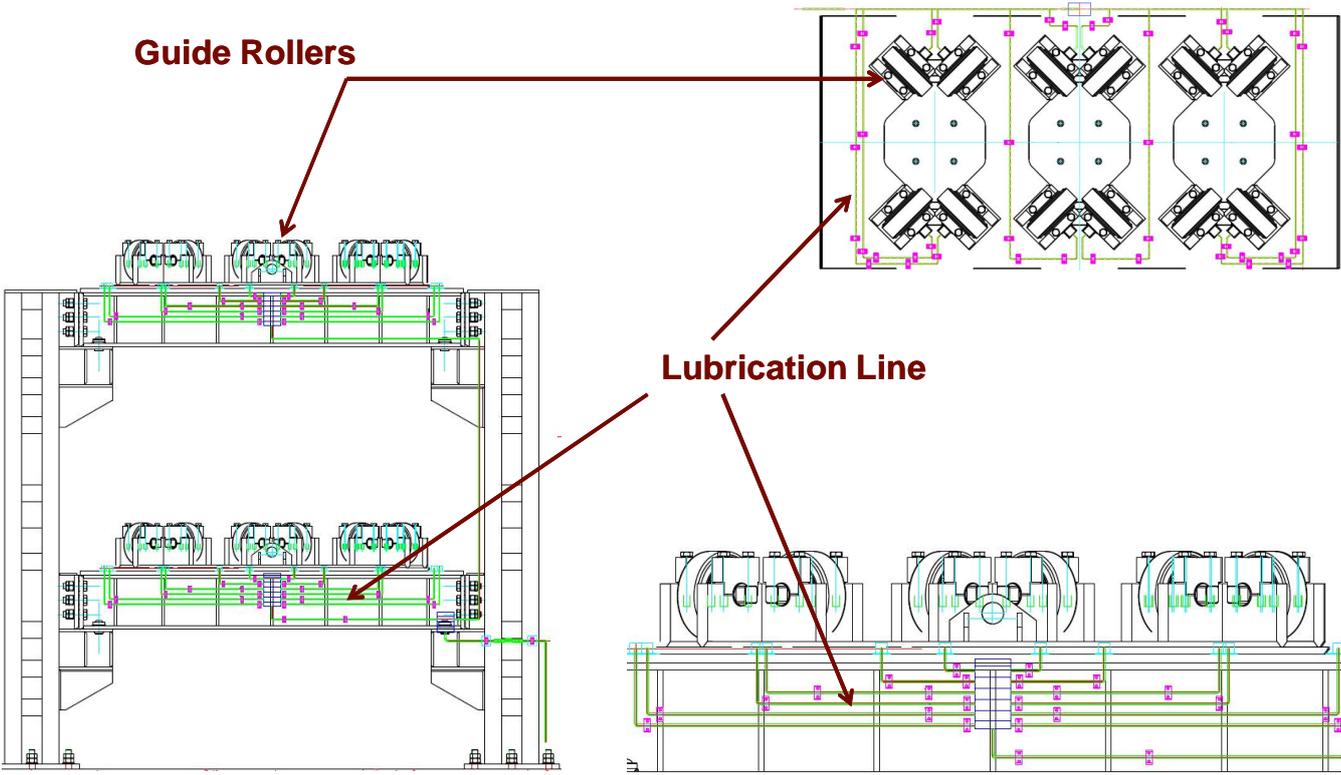
# LUBRICATION SYSTEM



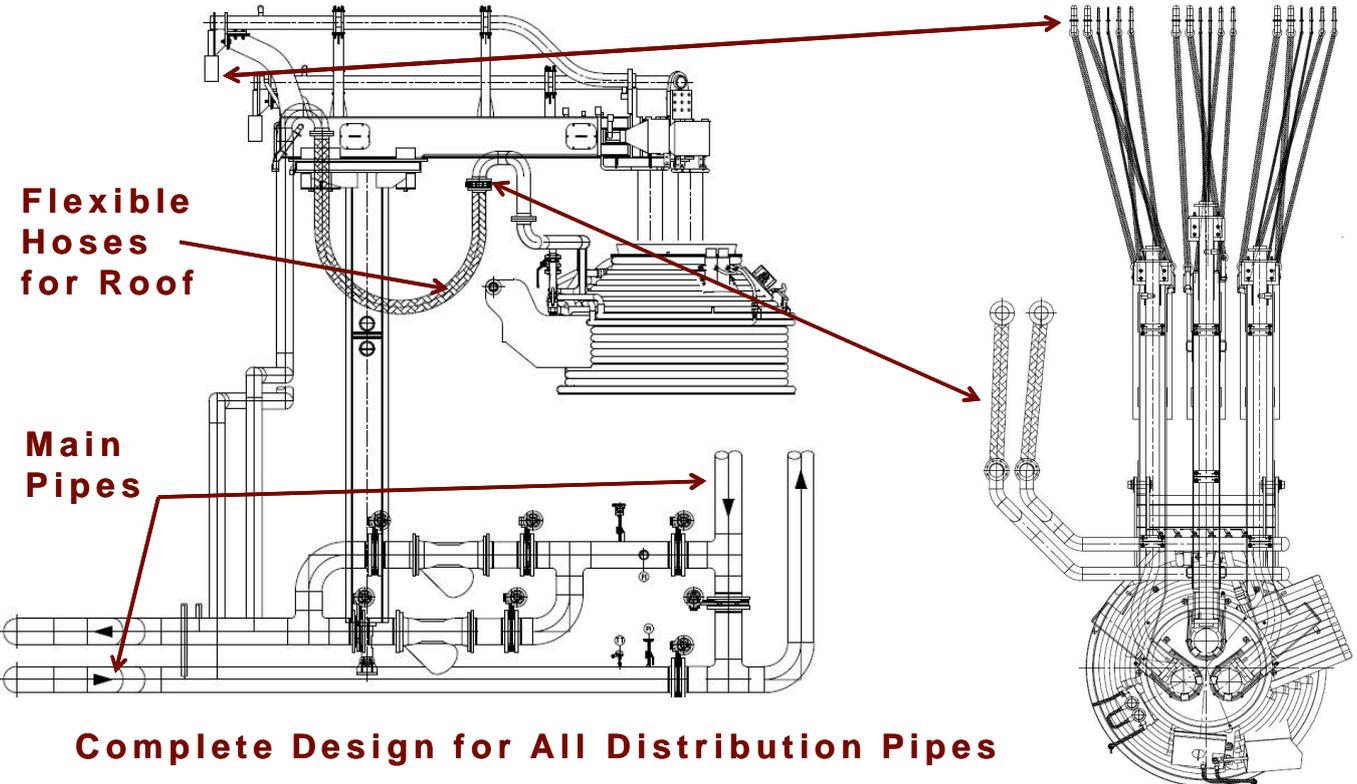
## Lubrication Distributors



# LUBRICATION SYSTEM



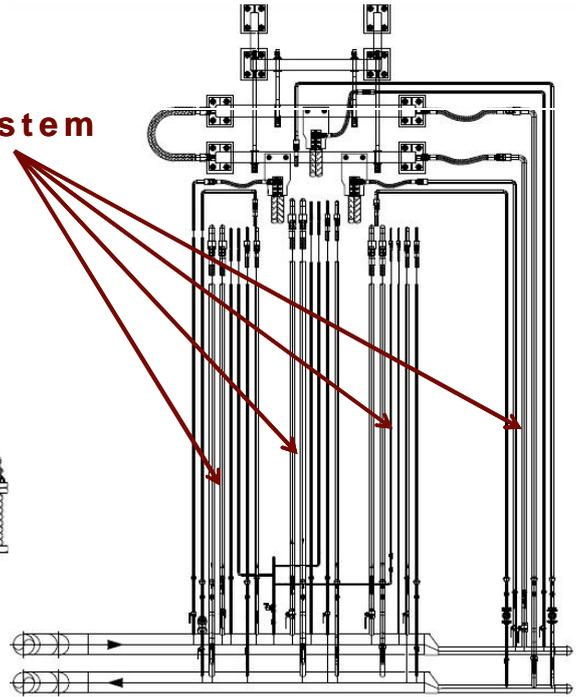
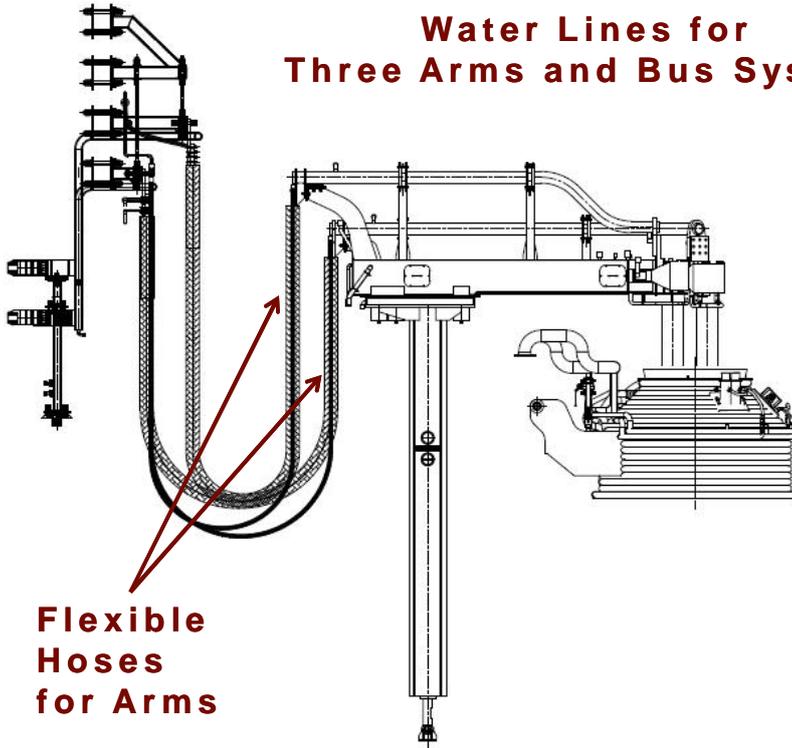
# COOLING WATER



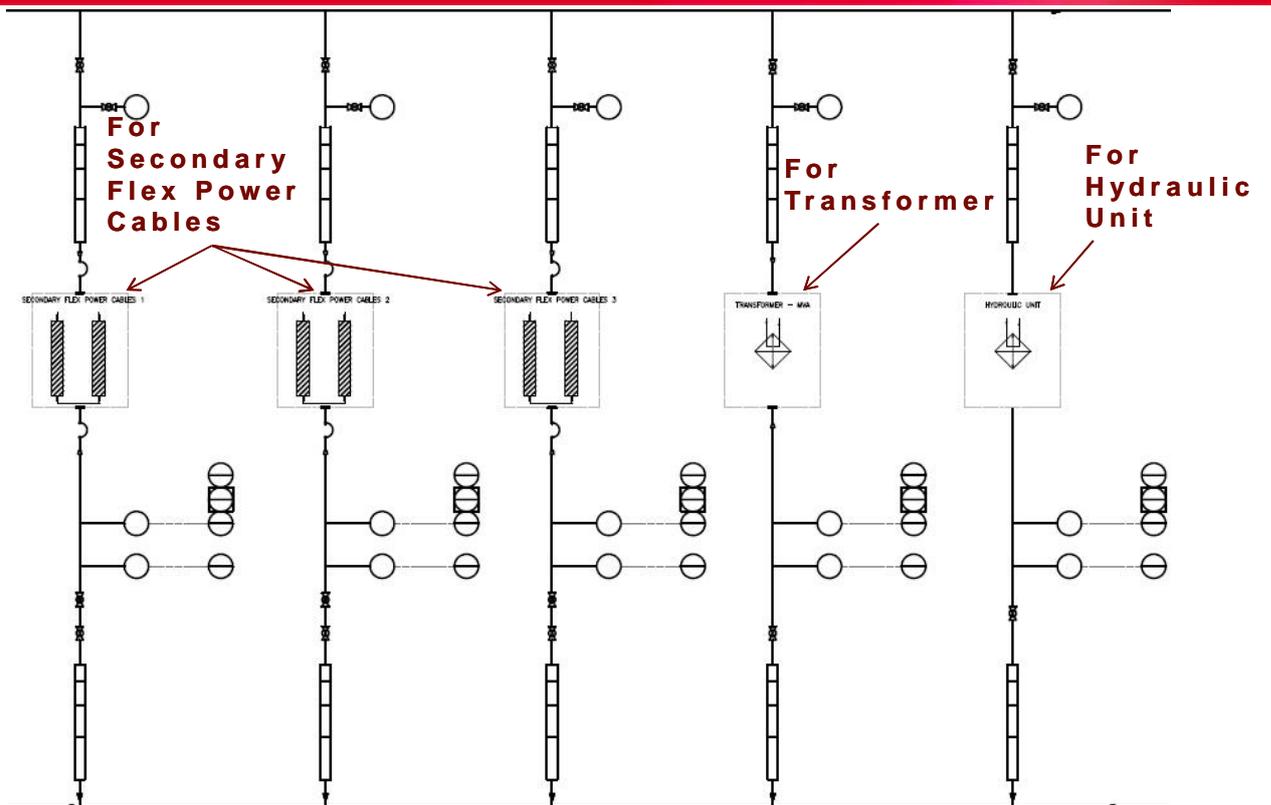
# COOLING WATER



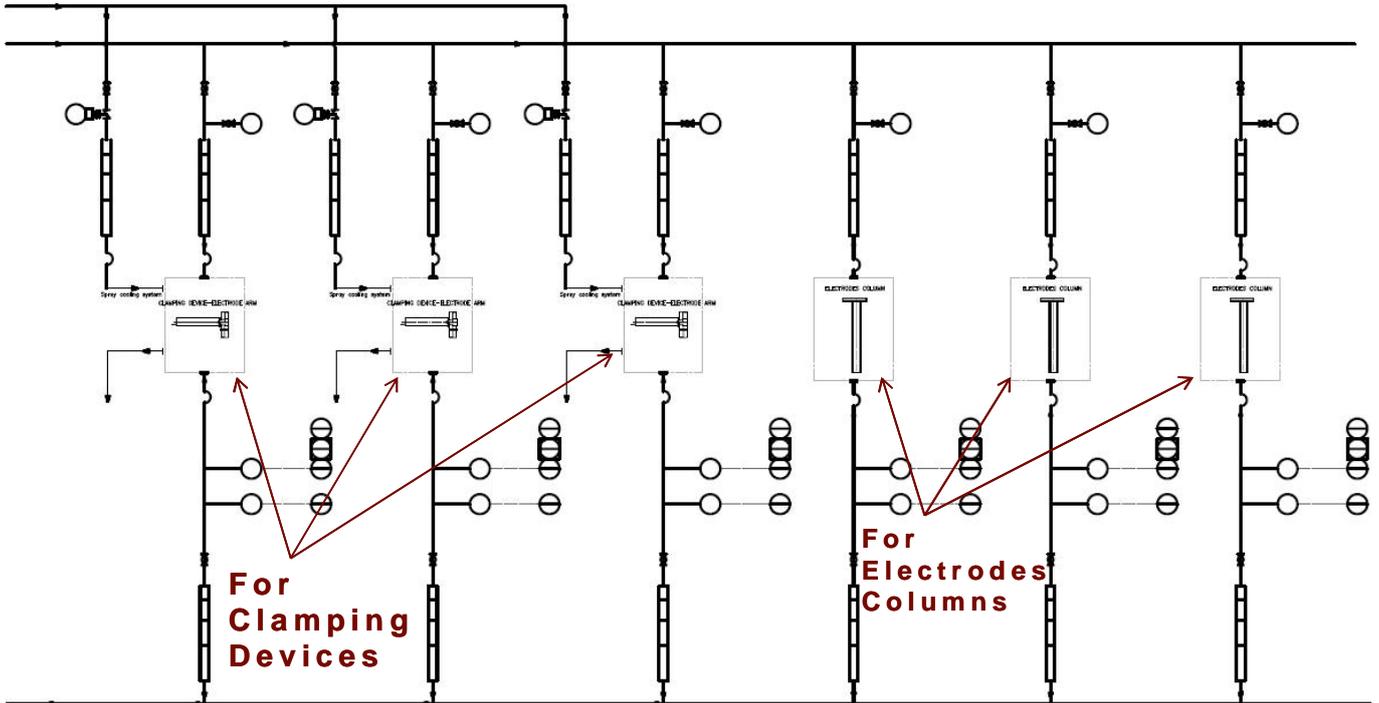
## Water Lines for Three Arms and Bus System



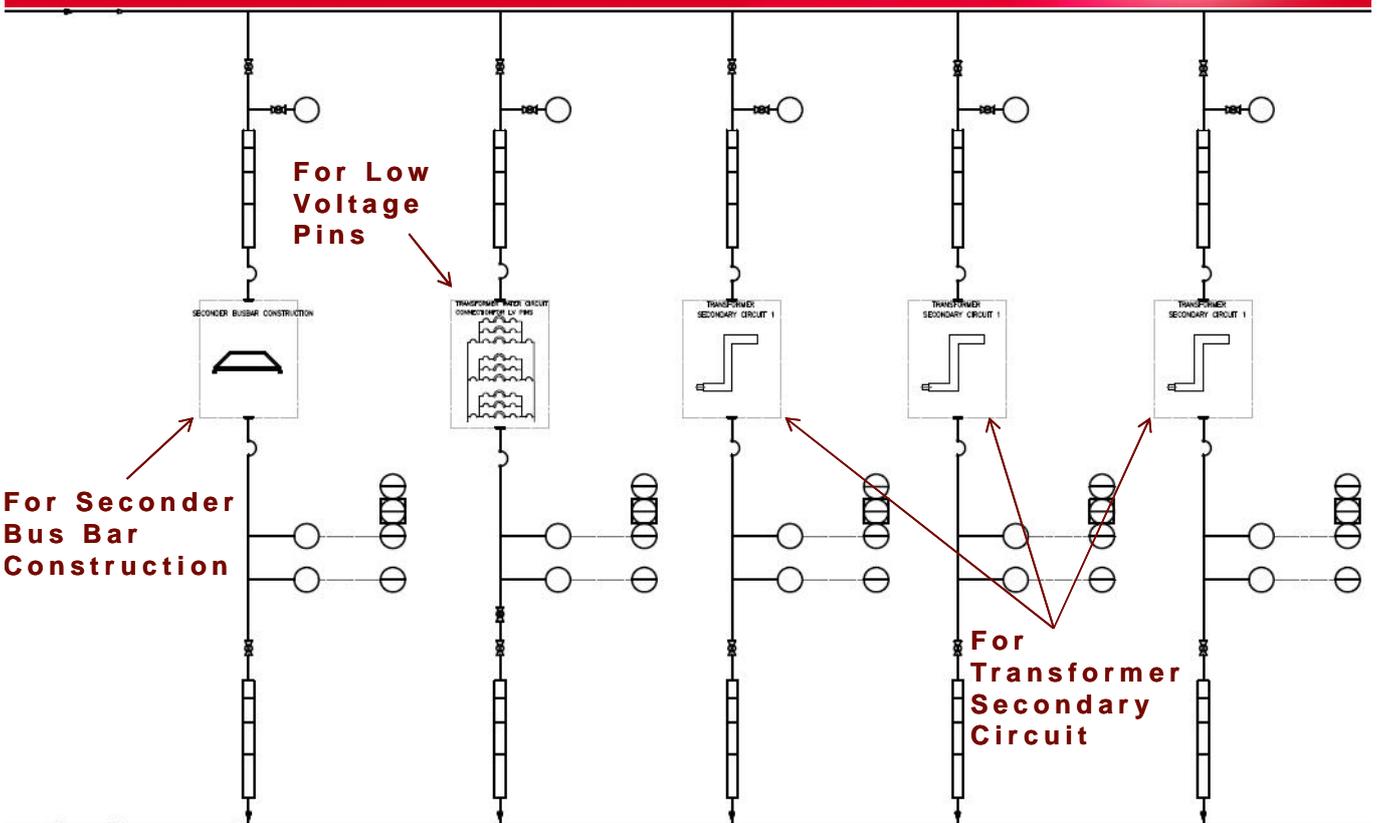
# COOLING WATER - P&I

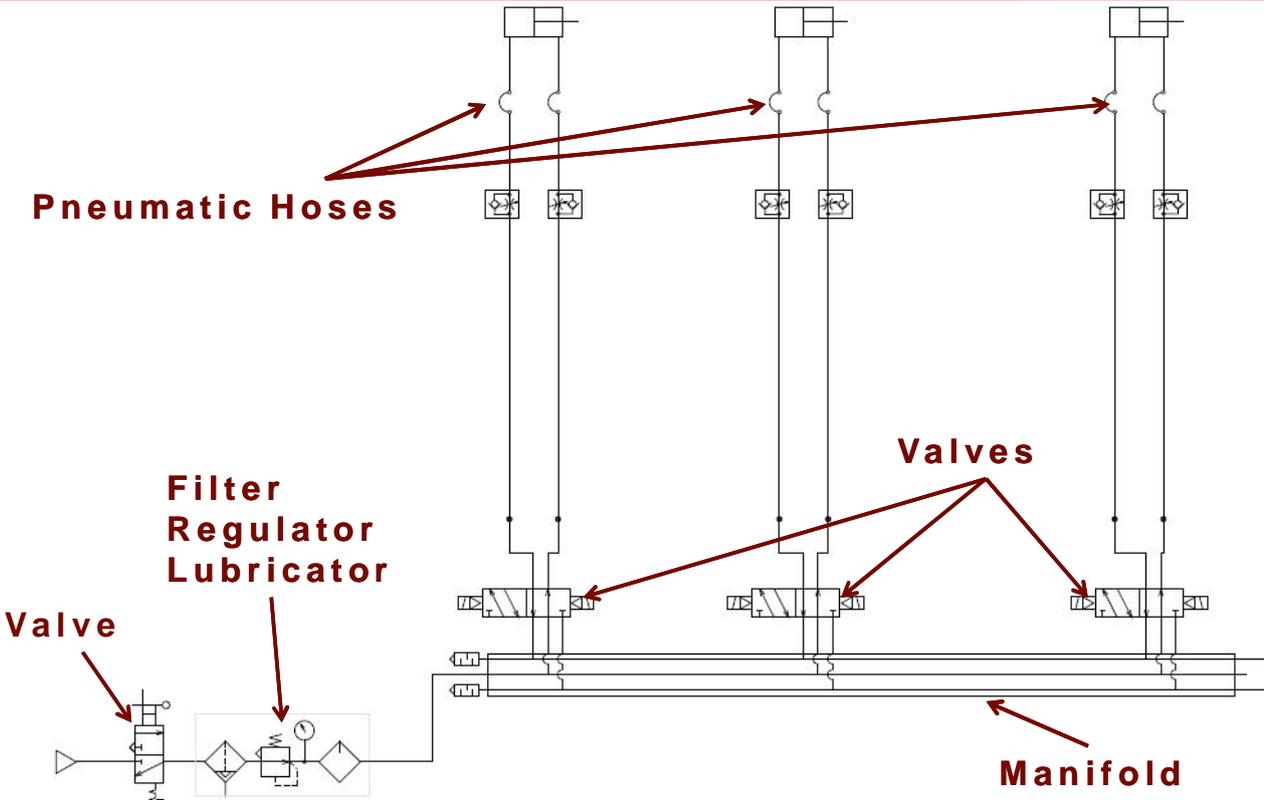


# COOLING WATER - P&I



# COOLING WATER - P&I





Thank You For Your Patience  
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