



CONVE CORP &  
CONVE CORPORATION  
SA DE CV



# Conve Corporation S. A. de C. V. *Corporate Presentation*

*Since 30 Years servicing Worldwide the Chlorine-Caustic and their inorganic derivatives.*



**CloroSur**

**2022**

COSTA DO SAUÍPE



# Who is Conve Corp. & Conve Corporation S.A. de C.V. ?



We are an International Engineering and Construction Company with offices in Miami Fl., USA and Mexico City, with an integrated Multicultural Team of Experts in Chlor-Alkali Technology and Specialists in Chemical Plant Engineering and Construction



# Our Mission Statement

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To Lead as a Recognized Worldwide Supplier of

**Skid Mounted Chlor-Alkali Plants**

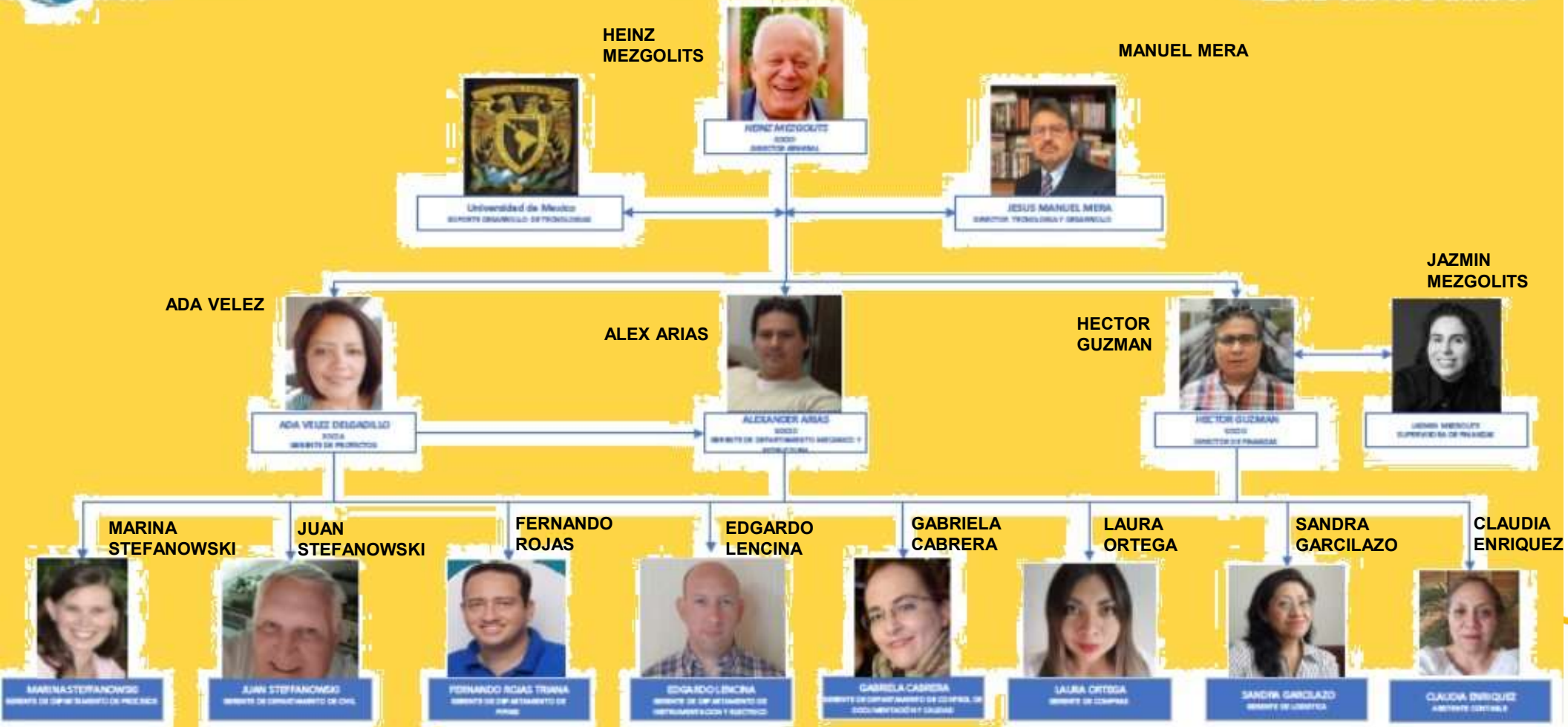
Technology, Engineering & Construction,  
Technical Assistance & Operation Management.



Since 30 years servicing the Worldwide Chlor- Alkali Industry



# Operations Team



# TECHNOLOGY TEAM LOCATIONS

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The background of the slide is a photograph of an industrial facility, likely a water treatment plant, showing various pipes, metal structures, and equipment. A large yellow curved shape is overlaid on the bottom left and bottom center of the image. A blue rectangular bar is located in the top right corner.

**Why Skid Mounting ?**

**The Top 10 Benefits of  
Modular Skid-Mounted  
Process Plants**



# Why Skid Mounting ?

- **I. Manufacturers produce the skid-mounted plants off-site**

- Since a skid-mounted plant is assembled offsite, usually in a fabrication facility or manufacturing site, you can benefit from parallel construction. This benefit facilitates simultaneous upgrades at the plant site.



# Why Skid Mounting ?

## 2. Effortless and flexible installation

Much less effort is required during installation. Even if you need to install a skid-mounted plant in a remote area that doesn't offer simple traditional construction access, you can install a skid-mounted plant easily. It's possible to load a skid-mounted plant into types of sea-going containers if you need to ship it to overseas locations.





## Why Skid Mounting ?

### 3. Less construction infrastructure is required on the plant site

You've got the benefit of requiring less construction infrastructure since all the crafts happen in one location. This option's advantage is that you'll notice minimal plant activity disruption when installing the new process plant.



## Why Skid Mounting ?

### 4. Weather delays mitigation when manufacturers install skid-mounted plants

During installation, your skid-mounted plants contribute to mitigate weather delays. You'll gain this advantage since manufacturers construct skid-mounted plants in indoor locations.





# Why Skid Mounting ?

## 5. Significant reduction of safety incidents

Should you need to modify your plant, you can do so without compromising the safety of your crew with a skid-mounted plant. Skid-mounted plants reduce safety incidents because contractors won't have to work in conditions beyond their training or skillset.



# Why Skid Mounting ?

## 6. Making alterations to scheduling is easy

You'll have expert engineers carrying out the design of your mounted plant, who will also supervise the fabrication phase. During design, they will create detailed drawings and establish specifications. With expert designers working on completing the project, scheduling changes is easy, particularly with direct engineer supervision and feedback.



# Why Skid Mounting ?

## 7. Thoroughly tested systems that are pre-assembled

Your mounted plant will be thoroughly tested before installation, and they are pre-assembled. The rigorous testing ensures exceptional quality and installation efficiency.



# Why Skid Mounting ?

## 8. Shorter construction and installation schedules

It's even possible to reap the advantages of faster construction and installation times without sacrificing the quality of construction compared with traditional onsite construction.

A photograph of an industrial facility showing a long row of skid-mounted equipment. The equipment is blue and white, with various pipes and electrical panels. The facility has a high ceiling with steel beams and lighting fixtures. The background is a light blue wall.

# Why Skid Mounting ?

## 9. Lower costs due to less labor time and uninterrupted operations

Your skid-mounted plant will be faster to construct than traditional onsite construction, which will lead to lower labor costs. You'll also find that since your plant operations will not be interrupted, you will still gain generated profits during installation.



# Why Skid Mounting ?

## 10. Exceptional, quality designs suit your requirements

Skid-mounted plants designed by experts will suit your requirements and offer suitable element compatibility for your components. Quality assessors will check at fabrication shop the quality before installation.



# Why Skid Mounting ?

Mainly because...

very clear cost benefits are given through:


- Advanced Construction while Permits may delay
- Advance in Fabrication while field works may delay
- Ease of Fabrication, while Construction is under development.
- Reduction of Erection Time
- Reductions in Total Project Time.

# PROJECT EXECUTION



## Skid Mounting to Facilitate Installation

- All components of the system are skid mounted, pre-piped and pre-wired to the greatest extent allowable for shipping.
- **Remote I/Os are wired to junction boxes to minimize field work.**
- Tubing comes to a single skid connection point.
- **Each skid includes all necessary interconnecting piping, wiring and instrument air tubing as well as instrumentation.**
- Installation consists of mounting the skid on the foundation, connecting inlet and outlet process lines, connecting power and PLC communication wiring, and connecting instrument air.



## **Our Workshop At Puebla, Mexico**

**The Joint Venture between Conve Corp. and Lapsolite operates a unique Workshop specialized to offer:**

- Design and the Fabrication of Skid Mounted Chemical Plants**
- Special Equipment,**
- Tanks and Piping for the Chemical Industry for handling corrosive fluids with FRP, FRP lined PP, PVC, PVDF**



## COST ADVANTAGES OF SKID MOUNTED CHLOR-ALKALI PLANTS



### CONVE' s Skid Manufacturing Workshops



## Concurrent Modular Construction in Workshop and Civil Work at Site



# ACHIEVING SHORTER CONSTRUCTION SCHEDULES BY 20 TO 25 PERCENT



# EXAMPLE OF A 50,000 MTPY PLANT ERECTED IN U.S.A. NORMAL MECHANICAL COMPLETION IS: 24 MONTHS



CONVENTIONAL ON SITE MOUNTED PLANT - 10,000 MTPD NaOH																															
MONTHS		MH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
<b>ENGINEERING</b>			█	█	█	█	█	█	█	█	█	█	█																		
<b>PROCUREMENT</b>							█	█	█	█	█	█	█																		
<b>CIVIL CONSTRUCTION</b>																															
<b>ERECTION</b>																															
<b>MILLWRIGHT/EQUIPMENT SETTING</b>																															
	STORAGE TANKS													█																	
	LARGE EQUIPMENTS													█	█																
	PIPERACKS / STRUCTURES																														
	SMALL EQUIPMENTS																														
	ELECTROLYZER ASSEMBLY & SET UP																														
<b>PIPING</b>																															
	INTERCONNECT PIPING																														
<b>ELECTRICAL</b>																															
	SUPPORTS, CONDUITS, BOXES																														
	SET GEARS AND PANELS																														
	WIRE AND CABLE INSTALLATION	#####																													
	CABLE TRAYS																														
	CONTROLS																														
	LIGHTING																														
	12 KV AND ABOVE																														
<b>INSTRUMENTATION</b>																															
	BENCH TEST ALL FIELD INSTRUMENTS																														
	INSTALL ALL FIELD INSTRUMENTS																														
	INSTALL CONTROL EQUIPMENT																														
	TERMINATE CONTROL WIRING																														
<b>MECHANICAL COMPLETION</b>																															
<b>COMMISSIONING AND START UP</b>																															



# NEW SKID MOUNTED PLANT WILL CONCLUDE WITH A MECHANICAL COMPLETION REDUCTION FROM 24 TO 18 MONTHS, (nearly 25% reduction)



		STANDARDIZED SKID MOUNTED PLANT - 50,000 MTPD NaOH																								
MONTHS		MH	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
<b>BASIC ENGINEERING</b>																										
<b>DETAIL ENGINEERING</b>																										
<b>PROCUREMENT</b>																										
<b>MODULE FABRICATION</b>																										
	GROUP #1																									
	GROUP #2																									
	GROUP #3																									
	GROUP #4																									
	GROUP #5																									
<b>CIVIL CONSTRUCTION</b>																										
<b>ERECTION</b>																										
<b>MILLWRIGHT/EQUIPMENT SETTING</b>																										
	LARGE TANKS																									
	LARGE EQUIPMENTS																									
	SET IN PLACE MODULES																									
	PIPERACKS / STRUCTURES																									
	SMALL EQUIPMENTS																									
<b>ELECTROLYZER ASSEMBLY &amp; SET UP</b>																										
<b>PIPING</b>																										
	MODULE INTERCONNECTION																									
	INTERCONNECT PIPING																									
<b>ELECTRICAL</b>																										
	SUPPORTS, CONDUITS, BOXES																									
	SET GEARS AND PANELS																									
	WIRE AND CABLE INSTALLATION																									
	CABLE TRAYS																									
	CONTROLS																									
	MV & LV SWITCHGEAR AND LIGHTING																									
	SUBSTATIONS 12 KV AND ABOVE																									
<b>COMPLEMENTARY FIELD INSTRUMENTATION</b>																										
	BENCH TEST ALL FIELD INSTRUMENTS																									
	INSTALL ALL FIELD INSTRUMENTS																									
	INSTALL CONTROL EQUIPMENT																									
	TERMINATE CONTROL WIRING																									
<b>MECHANICAL COMPLETION</b>																										
<b>COMMISSIONING AND START UP</b>																										





## **EPC - Cost Advantages of Skid Mounted Chlor-Alkali Plants**

**THE PACKAGED PLANT CONCEPT IN THE CHLOR-ALKALI INDUSTRY HAS BEEN HIGHLY ACCEPTED AND HAS BEEN SUCCESSFULLY INTRODUCED BY CONVE IN BOTH,**

**Industrialized Countries**

**Developing Countries**

**THE CONCEPT OF SKID MOUNTED CONSTRUCTION WAS FIRST INTRODUCED IN THE WORLD FOR A CL<sub>2</sub> PLANT BY CONVE IN GUAYAQUIL, ECUADOR. THIS CHLOR ALKALI PLANT, OWNED TODAY BY QUIMPAC, IS NOW SUCCESSFULLY IN OPERATION SINCE 1996.**

**CONVE HAS SUCCESSFULLY SERVICED WITHIN 30 YEARS WORLDWIDE MORE THAN 50 CUSTOMERS, SUPPLYING SKID MOUNTED UNITS AND COMPLETE PLANTS.**





# SIGNIFICANT COST SAVINGS

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## Economics of Modularization due to

- **Higher Productivity**
- Less Engineering Effort Due to High Degree of Standardization
- **Lower Labor Costs**
- Shorter Schedules
- **Less Infrastructure needed at Job Site**
- Minimize Work on Site
- **Reduced Safety Risks**
- Construction Proceeds Offsite, no Waiting for Permits
- **70% of Construction Cost can be accurately defined.**

## Cost Advantages of Skid Mounted Chlor-Alkali Plants

THIS PRESENTATION INCORPORATES AN ECONOMIC EVALUATION OF THE TOTAL INVESTMENT COSTS OF AN EPC CHLOR-ALKALI PROJECT CONSIDERING ALL NECESSARY STEPS: PM, ENGINEERING, PROCUREMENT & LOGISTICS, CONSTRUCTION, MECHANICAL COMPLETION AND START-UP UNDER THE ASSESSMENT OF TWO PROJECT CONSTRUCTION ALTERNATIVES:

1. **Conventional or Site Erected Grass Root Plant**
2. **Packaged or Skid Mounted Plant**

**PLANT ERECTION COST ESTIMATION BASIS**

ERECTION / FABRICATION		FIELD USA	FIELD BRASIL / MEXICO	WORKSHOP PUEBLA-MEXICO
CONTINGENCY FACTOR		1.3	1.3	1.1
PRODUCTIVITY FACTOR		1	1	1.4
COST US\$ MAN-HOUR		\$ 65.00	\$ 45.00	\$ 35.00

**CONVENTIONAL PLANT DESIGN- ERECTION EFFORT AND COST**

	MAN-HOUR	COST ESTIMATE USA	COST ESTIMATE BRASIL / MEXICO	
TOTAL FIELD ERECTION MAN-HOUR EFFORT	220,000	\$ 19,000,000	\$ 13,000,000	

**SKID MOUNTED PLANT DESIGN - ERECTION EFFORT AND COST  
50% SKID MOUNTED - 50% FIELD ERECTION**

	MAN-HOUR	COST ESTIMATE USA	COST ESTIMATE BRASIL / MEXICO	COST ESTIMATE FABRICATION
FABRICATION MAN-HOUR EFFORT (Modules)	100,000			\$ 3,500,000
FIELD ERECTION MAN-HOUR EFFORT	80,000	\$ 6,760,000	\$ 4,700,000	
TOTAL	180,000	\$ 10,000,000	\$ 8,000,000	



## EPC - Cost Advantages of Skid Mounted Chlor-Alkali Plants

	Man Hours	Execution Period		
TOTAL FIELD ERECTION MAN-HOUR EFFORT CONVENTIONAL	220,000	24 months	\$ 19,000,000	\$ 13,000,000
TOTAL COMBINED FABRICATION-ERECTION EFFORT MODULAR	180,000	18 months	\$ 10,000,000	\$ 8,000,000
<b>COST SAVINGS SKID MOUNTED AGAINST CONVENTIONAL LUMPSUM PRICING</b>			SAVINGS IN USA	SAVINGS IN BRASIL / MEXICO
			\$ 9,000,000	\$ 5,000,000

## EPC - Cost Advantages of Skid Mounted Chlor-Alkali Plants



COST ADVANTAGES MODULAR SKID MOUNTED PLANTS vs. CONVENTIONAL DESIGNED PLANTS			
INVESTMENT COST ESTIMATION BASIS CHLOR-ALKALI PLANT			
CAPACITY	50,000 MTPY NaOH		
SCOPE WORK	GRASS ROOT - TURNKEY		
CONTRACT BASIS	LUMP-SUM PRICE		
SCOPE OF UNITS	PRIMARY, SECONDARY BRINE TREATMENT, HCL, LIQUID CL2, CAUSTIC CONCENTRATION, PRODUCT STORAGE, UTILITIES		
TOTAL INVESTMENT COST ESTIMATE	CONVENTIONAL DESIGN	SKID MOUNTED DESIGN	TOTAL INVESTMEN
PLANT LOCATION: USA	\$ 54,000,000.00	\$ 45,780,000.00	15%
PLANT LOCATION: BRASIL / MEXICO	\$ 50,000,000.00	\$ 45,000,000.00	10%



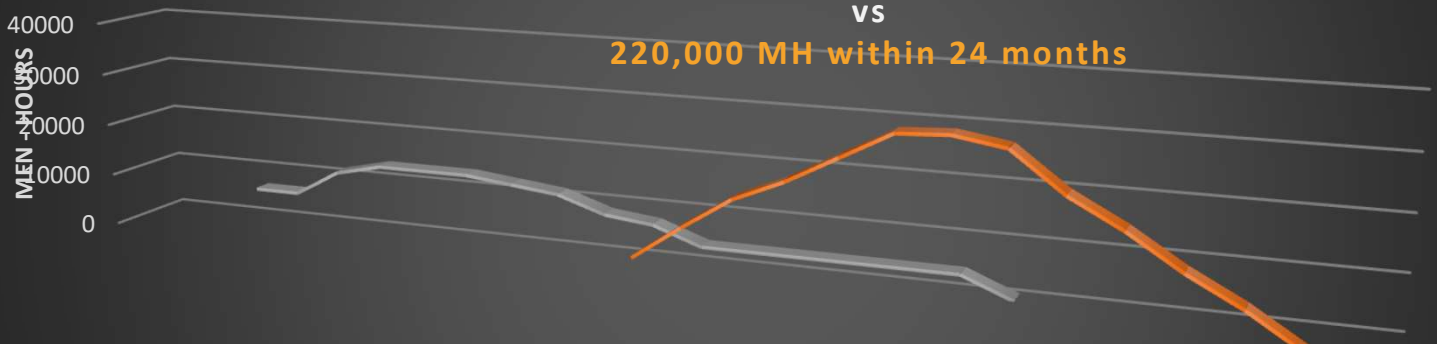
# EPC - COST ADVANTAGES OF SKID MOUNTED CHLOR-ALKALI PLANTS



ON SITE ERECTION ACTIVITIES WITH SKID MOUNTED PLANTS WILL CONCLUDE 5 MONTHS EARLIER THAN WITH CONVENTIONAL ERECTED PLANTS AND LEADS TO 75,000 MH SAVINGS IN FIELD ERECTION

## Total Men-Hours Construction Effort within Project Schedule

180,000 MH within 18 months  
 vs  
 220,000 MH within 24 months



Conventional Construction Plant				6000	6000	11000	13000	13000	13000	12000	11000	8000	7000	3750	3750	3750	3750	3750	3750	0													
Standard Skid Mounted Plant				6000	6000	11000	13000	13000	13000	12000	11000	8000	7000	3500	10000	16000	20000	25000	30000	30500	29000	22000	17000	11000	6000	0							

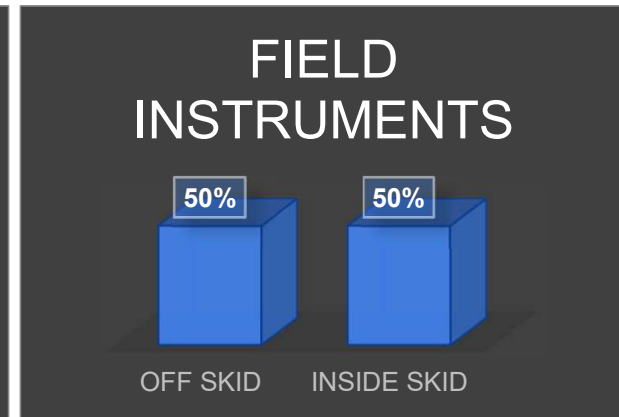
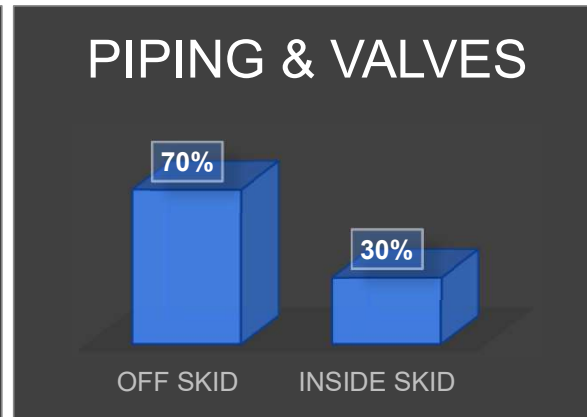
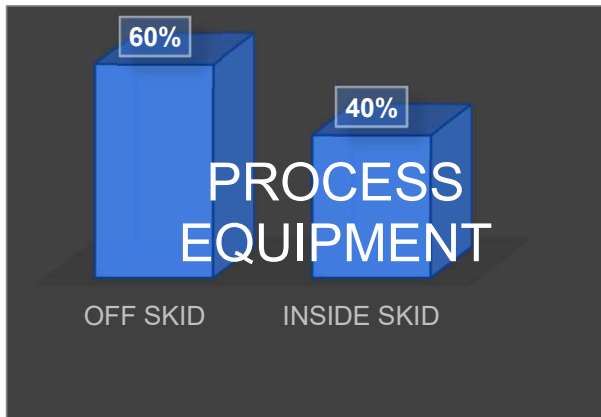
Conventional Construction Plant    Standard Skid Mounted Plant



## EPC - Cost Advantages of Skid Mounted Chlor-Alkali Plants



### Percentage of Equipment integrated in Packaged Units



# EPC - COST ADVANTAGES OF SKID MOUNTED CHLOR-ALKALI PLANTS



12 TPD CL2  
LIQUEFACTION SKID



150TPD SKID MOUNTED PLANT

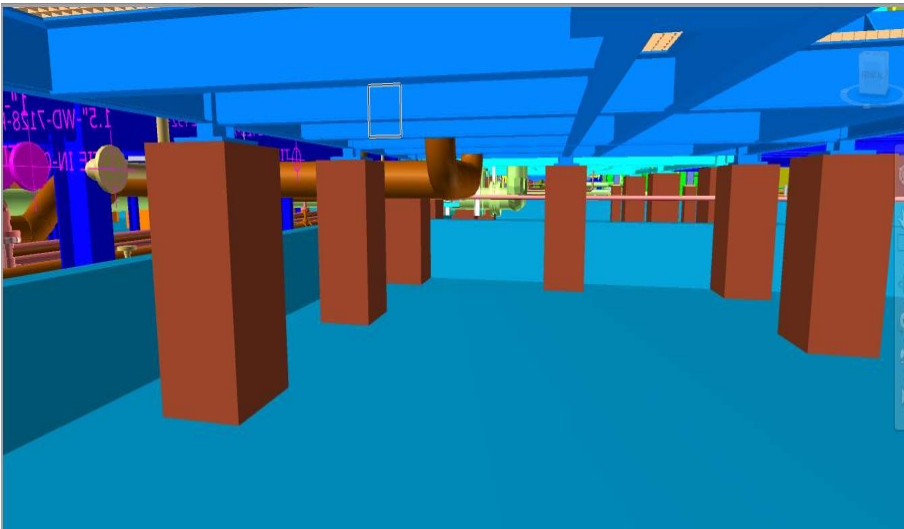




## EPC - COST ADVANTAGES OF SKID MOUNTED CHLOR-ALKALI PLANTS



**THE PACKAGED PLANT ALTERNATIVE LEADS TO SIGNIFICANT COST SAVINGS DURING THE CIVIL CONSTRUCTION PHASE DUE TO FOLLOWING REASONS:**



**CONCRETE PEDESTALS ARE PRE-DESIGNED AND BUILT BEFORE THE MODULES ARE PLACED IN PLACE**



## EPC - COST ADVANTAGES OF SKID MOUNTED CHLOR-ALKALI PLANTS

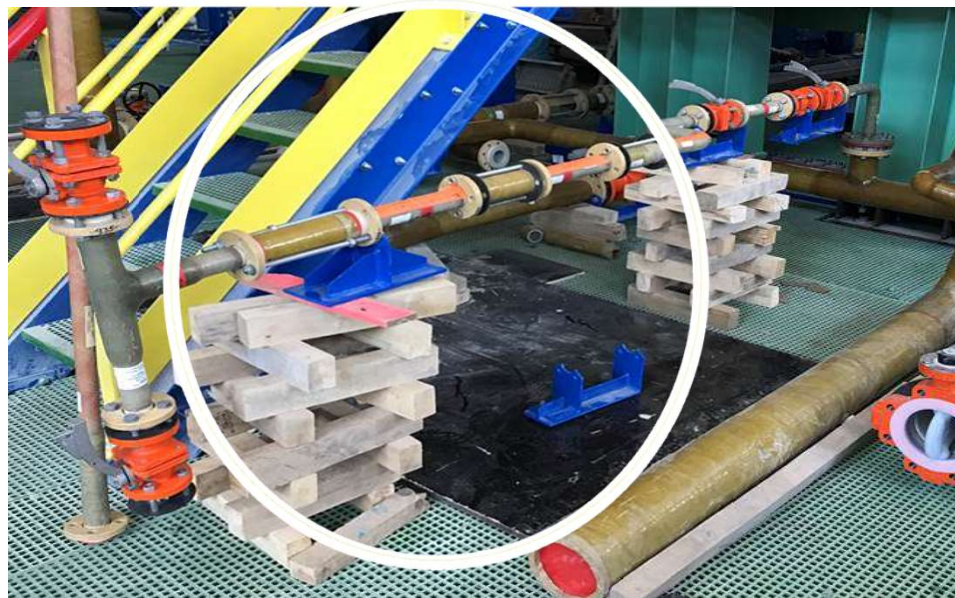


**DURING EQUIPMENT ERECTION ON SITE, CONCRETE FORMWORK ACTIVITIES SCHEDULE DEPENDS ON STRUCTURAL AND EQUIPMENT / PIPING INSTALLATION CONCLUSION.**



## EPC - COST ADVANTAGES OF SKID MOUNTED CHLOR-ALKALI PLANTS

THE CIVIL CONSTRUCTION SCHEDULE WILL ALWAYS DEPEND ON THE EQUIPMENT INSTALLATION ACTIVITIES, CONSEQUENTLY THE CIVIL WORK ACTIVITIES WILL BE EXTENDED BY ABOUT 5 MONTHS VS. THE PACKAGED PLANT ALTERNATIVE



## EPC - COST ADVANTAGES OF SKID MOUNTED CHLOR-ALKALI PLANTS



Either by Ocean or Land, our  
Plants are made Ready to  
Travel!



# TESTING PRIOR TO SHIPMENT

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- Equipment is pre-fitted in the shop prior to shipment and tested.
- Consequently, problems with field installation are greatly reduced. Again, this reduces the total cost to the buyer and improves the reliability.



# HIGH DEGREE OF AUTOMATION

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- WITH INTEGRATED ARCHITECTURE OFFERING ADVANCED PROCESS CONTROL
- WITH SCALABLE, MULTIDISCIPLINED, AND INFORMATION-ENABLED SYSTEMS

## Our solution for plant-wide automation and advanced process control:

- Independent system architecture for Unit control
- Centralized system architecture for Area control
- Distributed system architecture for plant-wide and enterprise operations

# DURABLE CONSTRUCTION

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- **Our Skid–Mounted plants are fabricated with corrosion free structural and fastening materials using largely FRP pultruded elements and SS 316 fasteners.**
- **The Equipment integrated in our plants are from reliable and well-known suppliers**
- **CONVE CORP design offers a robust and efficient system that results in many years of low maintenance**

# EASE OF OPERATION

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- **All gauges, valves, pressure transmitters, flow transmitters, the PLC, the pumps, and other equipment are strategically located on the equipment skids to facilitate easy access for operation and maintenance.**
- **This results in reduced downtime and a better working environment for operating and maintenance personnel.**





# COOPERATION WORLDWIDE

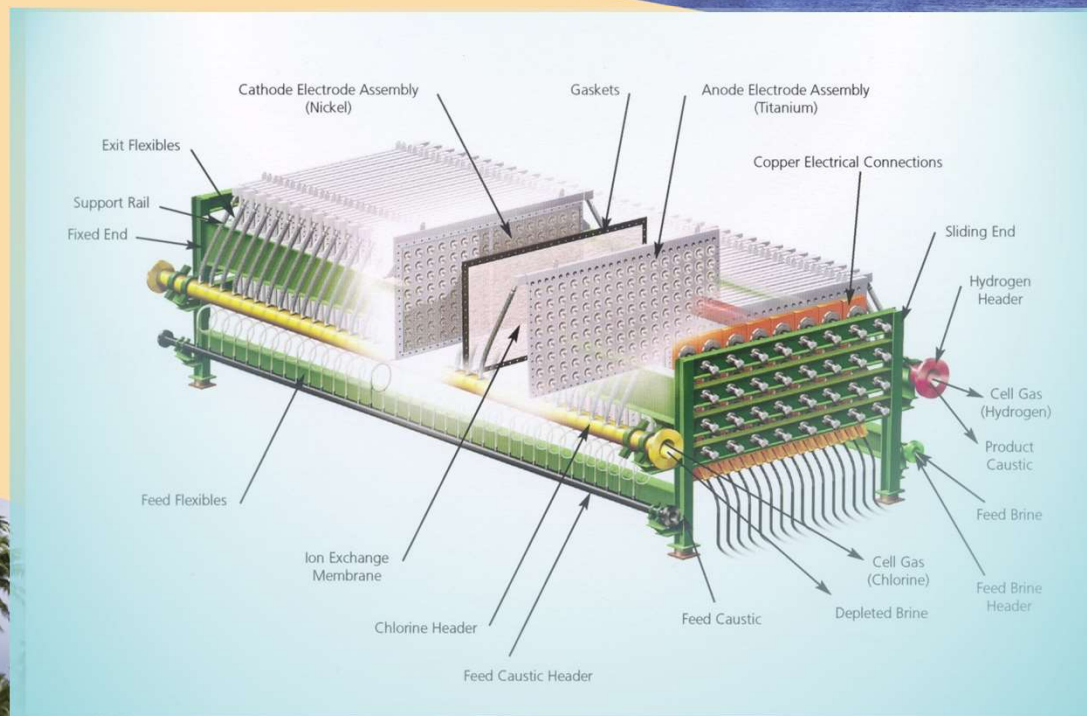
INEOS ENTERPRISES LTD has appointed CONVE as an Approved Contractor for the provision of Chlorine Plant Projects using their Electrolysers and Electrolyser Technology



Ineos Chlor - ETB  
Membrane Electrolyzer Technology



# The BiChlor™ ElectroliZer



# CONVE's experience?

**CONVE, since the beginning also in cooperation with AVS built Skid Mounted CHLOR-ALKALI plants since 1993**



ITEM	COMPANY	PROJECT	COUNTRY	CAPACITY	DATE
9	Central Costanera S.A.	Chlor-Alkali Plant Membrane Electrolyzer Environmental Study	Argentina	10 MTPD Cl <sub>2</sub>	1996
8	Petroquimica Rio III S.A.	Chlor-Alkali Plant Diaphragm Cell Technology Supply of Engineering for Upgrading the Brine System	Argentina	50 MTPD Cl <sub>2</sub>	1996
7	American Sanitary/Clorox Costa Rica S.A.	Chlor-Alkali Plant Membrane Electrolyzer Supply of an "EP" (Engineering and Procurement) Plant Upgrading Project, including Field Technical Assistance	Costa Rica	5 MTPD Cl <sub>2</sub>	1996
6	Petro Quimica Bermudez S.A.	Chlor-Alkali Plant Diaphragm Cell Technology Technical Assistance for Start- up and Operation	Argentina	72 MTPD Cl <sub>2</sub>	1995
5	Coquimisa	Chlor-Alkali Plant Membrane Electrolyzer Pre-Engineering	Bolivia	17 MTPD Cl <sub>2</sub>	1995
4	Electroquimicas Unidas S.A.	Chlor-Alkali Plant Membrane Electrolyzer Basic and Detail Engineering	Chile	13,5 MTPD Cl <sub>2</sub>	1995
3	Norquimica S.A.	Chlor-Alkali Plant Membrane Electrolyzer Feasibility Study	Argentina	7,5 MTPD Cl <sub>2</sub>	1994
2	Keghart S.A.	Caustic Concentration Unit NaOH 70% (flakes). Basic and Detail Engineering	Argentina	8 MTPD Cl <sub>2</sub>	1994
1	Quimica del Norte/Clorox Argentina S.A.	Chlor-Alkali Plant Membrane Electrolyzer "EPC" (Engineering, Procurement and Construction), Turn Key Project, including Start-up Services.	Argentina	45 MTPD Cl <sub>2</sub>	1993

**1993 TO 1996**

4 complete  
plants

**1993 TO 1996**

**2 Complete  
plants**

ITEM	COMPANY	PROJECT	COUNTRY	CAPACITY	DATE
17	Clorox Mexico S.A.	Chlor-Alkali Plant Membrane Electrolyzer Supply of "EPC" (Engineering, Procurement and Construction) Turn Key Project, including Technical Assistance for Start-Up	Mexico	22 MTPD Cl <sub>2</sub>	1999
16	Papelera Tucuman S.A.	Chlor-Alkali Plant Membrane Electrolyzer Supply of a Secondary Brine Purification Unit	Argentina	40 MTPD Cl <sub>2</sub>	1998
15	Proquimsa S.A.	Chlor-Alkali Plant Membrane Electrolyzer "EPC" (Engineering, Procurement and Construction) Turn Key Project, including Technical Assistance for Start- Up	Ecuador	12 MTPD Cl <sub>2</sub>	1997
14	Ergodic S.A DE C.V.	Chlor-Alkali Plant Membrane Electrolyzer Supply of Technical Assistance for Plant Upgrade for Sodium Hypochlorite Production	Mexico	10 MTPD Cl <sub>2</sub>	1997
13	Cia. Agro Industrial Igarassu	Chlor-Alkali Plant Mercury Cell Technology Engineering for Plant Automation	Brazil	70 MTPD Cl <sub>2</sub>	1997
12	Eltech-Electrode CO.	Marketing Study for Electrode Consumers in Latin America	Latin America	-	1996
11	Clorox Chile S.A.	Hypochlorite Production Unit Feasibility Study	Chile	15 MTPD Cl <sub>2</sub>	1996
10	Morro Verde S.A.	Chlor-Alkali Plant Membrane Electrolyzer Engineering and Technical Assistance for Revamping and Operation	Brazil	60 MTPD Cl <sub>2</sub>	1996

ITEM	COMPANY	PROJECT	COUNTRY	CAPACITY	DATE
24	Intradevco Industrial S.A	Chlor-Alkali Plant Membrane Electrolyzer Supply of an "EP" (Engineering and Procurement) Project to relocated a Membrane Cell Chlor Alkali Plant	Peru	50 MTPD Cl <sub>2</sub>	2002
23	Ansa McAl Chemicals Ltd	Chlor-Alkali Plant Membrane Electrolyzer Supply of a Brine Back Pulse Filter	Trinidad and Tobago	10 MTPD Cl <sub>2</sub>	2001
22	Clorox Argentina S.A.	Chlor-Alkali Plant Membrane Electrolyzer "EPC" (Engineering, Procurement and Construction), including Technical Assistance for a Hydrochloric Acid Synthesis Unit at the existing plant	Argentina	60 MTPD Cl <sub>2</sub>	2001
21	Procter & Gamble Co.	Chlor-Alkali Plant Membrane Electrolyzer "EPC" (Engineering, Procurement and Construction), Turn Key Project including Technical Assitance for the Plant Expansion	Guatemala	12 MTPD Cl <sub>2</sub>	2001
20	Mexichem S.A.B. de C.V	Chlor-Alkali Plant Mercury Cell Technology Integration of a Hydrogen De- mercurization Unit, 2000 ton Caustic Storage Tank and Caustic Filling Unit	Mexico	120 MTPD Cl <sub>2</sub>	2001
19	Mexichem S.A.B. de C.V	Chlor-Alkali Plant Mercury Cell Technology Integration of a 200 mtpd HCl Unit. Supply of Engineering, Civil Works, Erection and technical Assistance.	Mexico	200 MTPD HCl	2001
18	Transclor S.A.	Chlor-Alkali Plant Mercury Cell Technology Mercury Cell Plant conversion and expansion. Supply of an "EPC" Project including Technical Assistance, Start-Up and Operation	Argentina	60 MTPD NaOH	2000

**2000 TO 2002**

**4 Complete plants**

ITEM	COMPANY	PROJECT	COUNTRY	CAPACITY	DATE
30	Ledesma S.A.	Technology Plant Conversion from Mercury to Membrane Electrolyzers Supply of Basic and Detail Engineering, Services and Technical Assistance for Construction and Start Up.	Argentina	50 MTPD Cl <sub>2</sub>	2006
29	Confidential	Chlor-Alkali Plant Membrane Electrolyzer "EPC", Turn Key Project for a Membrane Cell Chlor-Alkali Plant. Plant shall produce high quality sodium hypochlorite.	Caribbean	6 MTPD Cl <sub>2</sub>	2006
28	Lapsolite D. P. Q.	Chlor-Alkali Plant Membrane Electrolyzer "EPC" Turn Key Project, Skid Mounted Modules for a Chlor Alkali Plant with (INEOS) membrane Electrolyzer including Technical Assistance and Start Up	Mexico	24 MTPD Cl <sub>2</sub>	2005
27	Quinalsa	Chlor-Alkali Plant Membrane Electrolyzer EPC (Engineering, Procurement and Construction) for a ELTECH Membrane Cell Chlor-Alkali Plant including Technical Assistance to produce high quality Sodium Hypochlorite and Hydrochloric Acid	Bolivia	20 MTPD Cl <sub>2</sub>	2005
26	Transclor S.A.	Chlor-Alkali Plant UHDE Membrane Electrolyzer Supply of Consulting and Engineering Services for the expansion of the existing Membrane Cell Plant	Argentina	17 MTPD Cl <sub>2</sub>	2003
25	Albchem Industries Ltd	Sodium Chlorate Plant Technical assistance Plant Start-Up and HAZOP Studies	Canada	150 MTPD Cl <sub>2</sub>	2002

**2002 TO 2006**

4 Complete plants



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ITEM	COMPANY	PROJECT	COUNTRY	CAPACITY	DATE
36	Huish Detergents Inc.	Chlor-Alkali Plant Membrane Electrolyzer "EPC" Turn Key Project, Skid Mounted Modules for a Chlor Alkali Plant with (INEOS) membrane Electrolyzer including Technical Assistance and Start Up	United States of America- Utah	24 MTPD Cl <sub>2</sub>	2007
35	Huish Detergents Inc.	Chlor-Alkali Plant Membrane Electrolyzer "EPC" Turn Key Project, Skid Mounted Modules for a Chlor Alkali Plant with (INEOS) membrane Electrolyzer including Technical Assistance and Start Up	United States of America- Kentucky	24 MTPD Cl <sub>2</sub>	2007
34	Bertrams Chemical Plant Ltda.	Double Effect Caustic Soda Concentration Unit 32%- 50% for Bohai - China Supply of Detail Engineering, Technical Assistance	Switzerland / Bohai China	750 MTPD NaOH	2007
33	Bertrams Chemical Plant Ltda.	Double Effect Caustic Soda for Bihar- India Concentration Unit 32%- 50% Supply of Detail Engineering, Technical Assistance	Switzerland / Bihar India	225 MTPD NaOH	2007
32	Prodesal S.A. / Mexichem Colombia	Double Effect Caustic Soda Concentration Unit 32%- 50% Supply of Basic, Detail Engineering and Technical Assistance	Colombia - Cali	50 MTPD NaOH	2006
31	Bertrams Chemical Plant Ltda.	Double Effect Caustic Soda Concentration Unit 32%- 50% for Atanor - Argentina Supply of Detail Engineering, Technical Assistance	Switzerland/Argentina	120 MTPD NaOH	2006

**2006 TO 2007**

**2 Complete plants**



**CloroSur**



ITEM	COMPANY	PROJECT	COUNTRY	CAPACITY	DATE
42	EFICE	Engineering, for a Chlor Alkali Plant to produce Hypochlorite with UHDE Membrane Electrolyzer	URUGUAY	100 / 300 tpd CL2	2010
41	KUEHNE CHEMICALS	Chlor-Alkali Plant INEOS Membrane Electrolyzer "EPC" (Engineering, Procurement and Construction) for a complete Skid Mounted Chlor Alkali Plant to produce Hydrochloric Acid and Caustic Soda 50 % with (INEOS) Membrane Electrolyzer	United States of America	120 MTPD CL2	2009
40	Carisal Ltd	Chlor-Alkali Plant INEOS Membrane Electrolyzer "EPC" (Engineering, Procurement and Construction) for a complete Skid Mounted Chlor Alkali Plant to produce Hydrochloric Acid and Caustic Soda 50 % with (INEOS) Membrane Electrolyzer	Trinidad and Tobago	260 MTPD Cl2	2008
39	Coogee Chemicals PTY Ltd	Chlor-Alkali Plant INEOS Membrane Electrolyzer "EPC" Project, Skid Mounted Modules for Expansion of a Chlor Alkali Plant with membrane Electrolyzer (INEOS) including Hydrochloric Acid and Caustic Evaporation Units	Australia	60 / 110 MTPD Cl2	2008
38	Allied New Technologies Corp.	Chlor-Alkali Plant Membrane Electrolyzer "EPC" Turn Key Project, Skid Mounted Modules for a complete new Chlor Alkali Plant with (INEOS) membrane Electrolyzer including Technical Assistance and Start-Up	United States of America- Florida	130 MTPD Cl2	2008
37	Bertrams Chemical Plant Ltda.	Double Effect Caustic Soda Concentration Unit 32%- 50% for PPG USA. Supply of Detail Engineering, Technical Assistance	Switzerland / United States of America	Confidential	2007



**2007 TO 2010**

**4 Complete plants**



ITEM	COMPANY	PROJECT	COUNTRY	CAPACITY	DATE
49	PRODUQUIMICA	Engineering, for a Chlor Alkali Plant to produce Hypochlorite with UHDE Membrane Electrolyzer	BRAZIL	60 tpd CL2	2014
48	Intradevco Industrial S.A	Supply for a Chlor Alkali Plant to produce Hydrochloric Acid, Hypochlorite and 32 NaOH % with UHDE Membrane Electrolyzer	Peru	24 tpd CL2	2014
47	HARRIS & FORD	"EPC" (Engineering, Procurement and Construction) for a complete Skid Mounted Chlor Alkali Plant to produce Hydrochloric Acid Hypochlorite and Caustic Soda 32 % with (INEOS) Membrane Electrolyzer	United States of America	286 tpd Cl2	2014
46	SKYONICS	Engineering, for a Chlor Alkali Plant to produce Hydrochloric Acid Hypochlorite and 32 NaOH % with INEOS Membrane Electrolyzer	United States of America	180 tpd CL2	2013
45	HCV CHLOR LLC	Engineering, for a Chlor Alkali Plant to produce Liquid Cl2 Hydrochloric Acid Hypochlorite and 50 NaOH % with INEOS Membrane Electrolyzer	Kansas City	80 tpd CL2	2012
44	Transclor S.A.	Supply Skid Mounted ALFA LAVAL Caustic Concentration Unit	Argentina	150 tpd NaOH	2011
43	ALEN DEL NORTE	Engineering, for a Chlor Alkali Plant to produce Hypochlorite with ASAHI KASEI Membrane Electrolyzer	MEXICO	30 tpd CL2	2010

**2010 TO 2014**

2 Complete plants



CONVE CORP &  
CONVE CORPORATION  
SA DE CV

ITEM	COMPANY	PROJECT	COUNTRY	CAPACITY	DATE
58	Allied New Technologies Corp.	EPC Turn Key Project, Skid Mounted Modules for a complete new Chlor Alkali Plant with (INEOS) membrane Electrolyzer including Technical Assistance and Start-Up	USA	120 tpd NaOH	2017
57	ALEN DEL NORTE	Supply of a Hydrochloric Acid Unit	MEXICO	10 tpd CL2	2016
53	PRODUITS CHIMIQUES DE LOOS	Engineering, for a Chlor Alkali Plant to produce Hydrochloric Acid Hypochlorite and 50 KOH % with (ASAHI KASEI) Membrane Electrolyzer	FRANCIA	130 tpd KOH	2016
52	NEW HAVEN CHLOR ALKALI	"EPC" (Engineering, Procurement and Construction) for a complete Skid Mounted Chlor Alkali Plant to produce Hydrochloric Acid Hypochlorite and Caustic Soda 32 % with (CHLORINE ENGINEERS) Membrane Electrolyzer	United States of America	80 tpd CL2	2015
51	Transclor S.A.	Supply Skid Mounted BERTRAMS Caustic Concentration Unit	Argentina	240 tpd KOH	2014
50	Transclor S.A.	Supply Skid Mounted Chlorine absorption and Hypochlorite Unit	Argentina	200 tpd CL2	2014

2014 TO 2017

2 Complete plants



CloroSur



**2007 TO 2021**

**2 Complete plants**



ITEM	COMPANY	PROJECT	COUNTRY	CAPACITY	DATE
66	Conve & AVS de Mexico	Incorporacion y Registro de la marca KleenClor	México - USA- Europa	N/a	2020
65	Conve & AVS de Mexico	Desarrollo de método de producción de ácido hipocloroso/Bicarbonato de Sodio, estabilizado, con la marca Kleenclor	México	0.500 tpd	2020
64	Quimpac de Colombia	Desarrollo de un proceso innovado para producción de Hipoclorito de Calcio	Colombia	0.240 tpd	2019
63	Turnkey Inovative Engineering	Pre-Engineering	Australia / Argentina	500 tpd	2018
62	Katrium	Pre-Engineering Plant conversion from mercury to membrane cells	Brasil	120 tpd	2018
61	QUIMPAC DE COLOMBIA	Engineering and Supply for Cl <sub>2</sub> plant improvements	Colombia - Cali	120 tpd	2017
60	QUIMPAC ECUADOR	Engineering and Supply for capacity increase	ECUADOR	50 tpd	2017
59	KATRIUM	Supply of a Hypochlorite and Chlorine Absorption unit	Brasil	120 tpd	2017

# Major Skid Mounted Projects



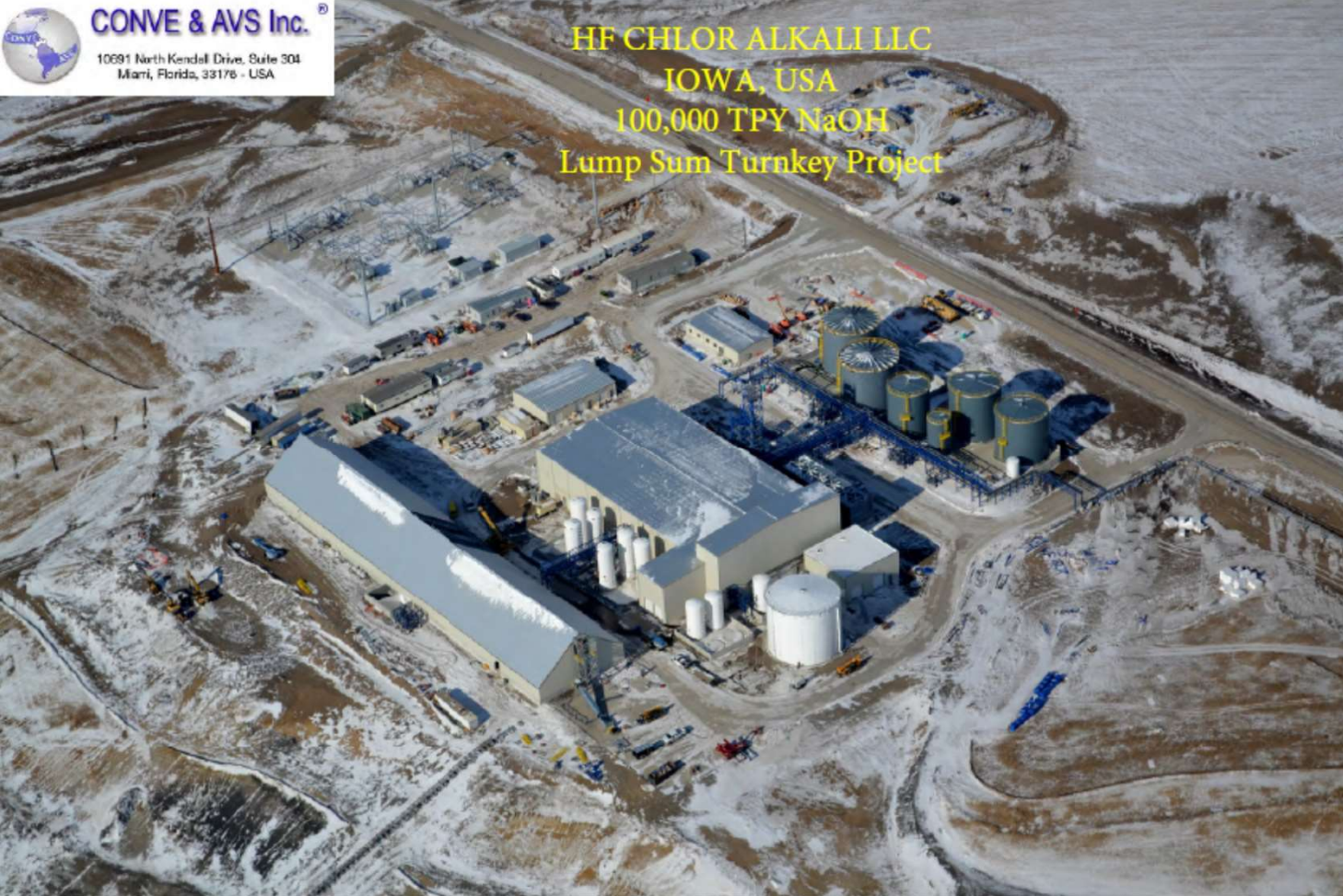
- 100 KTPY PLANT  
AD  
Harris & Ford,
- IOWA, USA



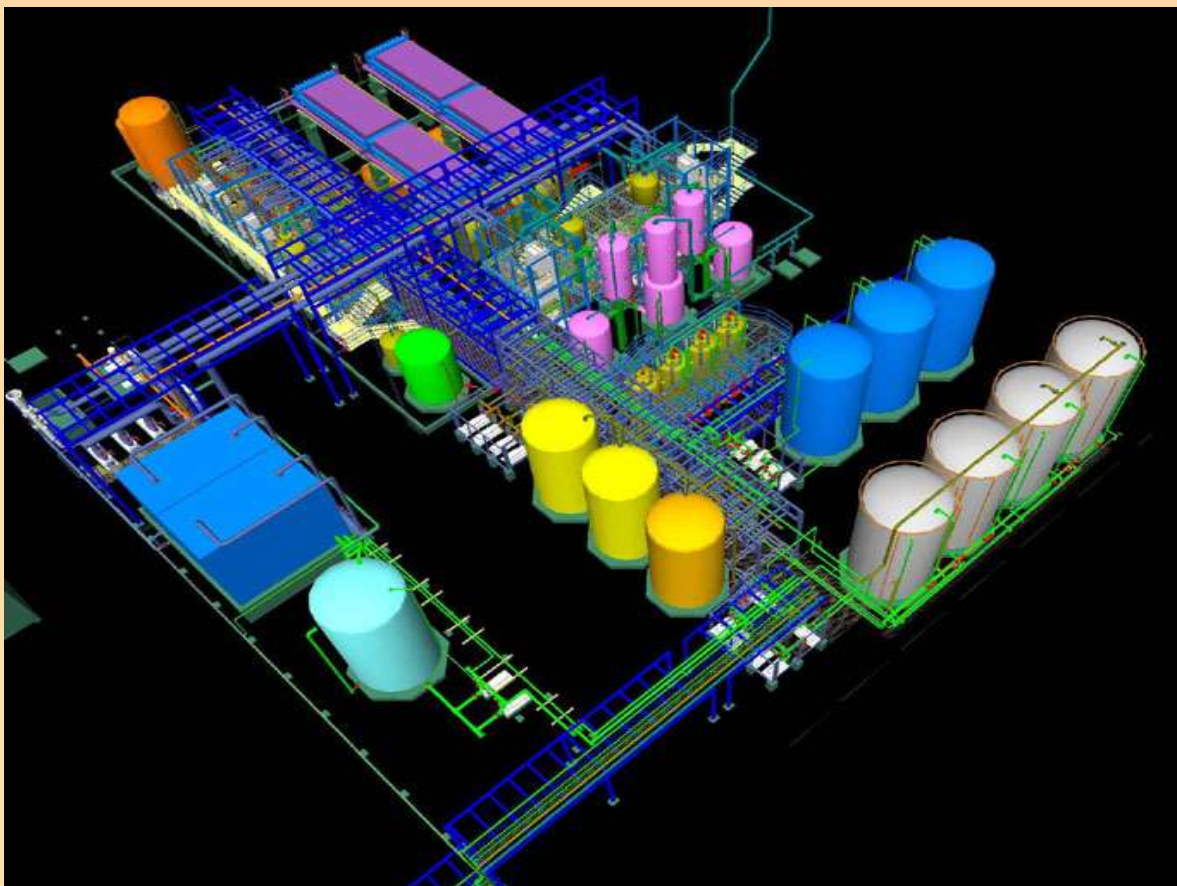
- 100 KTPY PLANT At Harris & Ford,
  - IOWA, USA



HF CHLOR ALKALI LLC  
IOWA, USA  
100,000 TPY NaOH  
Lump Sum Turnkey Project



# Major Skid Mounted Projects



ALLIED NEW  
TECHNOLOGIES, FLORIDA,  
U.S.A.

50 MTPD CHLORINE TO  
HYPO PLANT.

2019



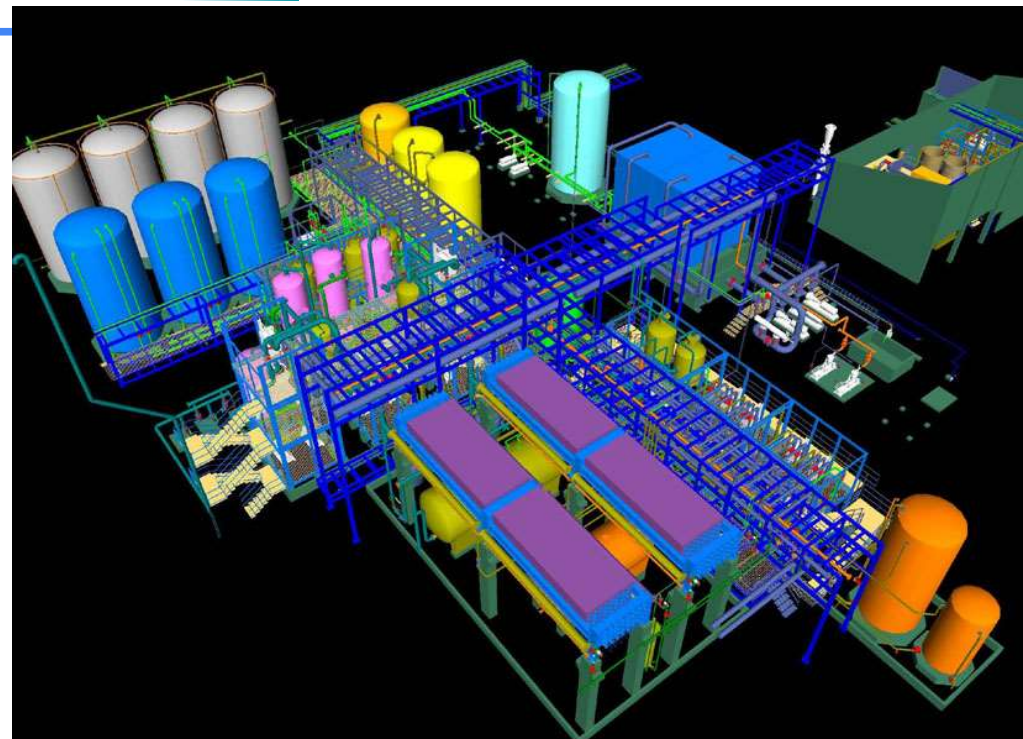
# Major Skid Mounted Projects



ALLIED NEW  
TECHNOLOGIES, FLORIDA,  
U.S.A.

50 MTPD CHLORINE TO  
HYPO PLANT.

2019





# Major Skid Mounted Projects



**CLOROX DE MEXICO – MEXICO CITY**  
Start-Up August 2000

**22 mtpd Cl<sub>2</sub> HSB Hypochlorite Plant**

**2 Bipolar Membrane Cell Electrolyzers**

Power Consumption < 2200 kWh / mt NaOH  
at 5 kA/m<sup>2</sup>

**On line stream factor > 95 %**

PENNWALT – MEXICHEM,  
SANTA CLARA, EDO MEXICO

INTEGRATION OF A SIGRI  
HCL SYNTHESIS UNIT

200 tpd HCl 32%





TWO SKID MOUNTED

36% HCL UNITS 2 x 150 TPD

AT SALT LAKE CITY, IOWA

CLOROX DE MEXICO – MEXICO CITY  
CONTINUOUS SODIUM HYPOCHLORITE PRODUCTION MODULE  
22 MTPD Cl<sub>2</sub>, > 99.5 % REACTION EFFICIENCY



CLOROX DE MEXICO – MEXICO CITY  
DISTRIBUTED CONTROL SYSTEM WITH FIELDBUS



# SHIPPING



CLOROX DE MEXICO – MEXICO CITY  
BRINE FILTRATION & ION EXCHANGE MODULES  
22 MTPD CI2



FRUNOT S.A., GUAYAQUIL - ECUADOR  
Brine Purification & Filtration Module  
13.5 MTPD NaOH



PUENTE DE TUBERIAS  
MATERIAL POLTRUIDO  
DE FRP

TRINCHERA DE TUBERIAS  
REJILLAS DE FRP

PLANTA DE CLORO - SODA, FRUNOT S.A.  
GUAYAQUIL, ECUADOR - NOV.1999  
PRODUCCION 13.5 tpd NaOH

MODULOS DE PROCESAMIENTO  
DE SALMUERA Y FILTRACION A MEMBRANA  
MODO BACK-PULS





FRUNOT S.A., GUAYAQUIL - ECUADOR  
Cl<sub>2</sub> Compression & Liquefaction Module  
13.5 MTPD NaOH



PLANTA DE CLORO – SODA, FRUNOT S.A.  
GUAYAQUIL, ECUADOR – NOV.1999  
PRODUCCION 13.5 tpd NaOH

MODULO DE COMPRESION Y LICUACION DE  
CLORO CON TRANSFERENCIA DE CLORO  
LIQUIDO A ISOCONTENEDOR POR MEDIO DE  
BOMBA HERMETICA



**WE ARE VERY PROUD  
FOR YOUR  
KIND ATTENTION!  
THANK YOU !**

**Any questions?**