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presents

Electro Chlorination Systems

About us

- We offer best in-line solutions for disinfection of water through Electro Chlorination.
- Electro-chlorinators are also known as Sodium Hypochlorite Generators (SHG).
- It uses water, salt and electricity to produce Sodium Hypochlorite which is a strong disinfectant.
- We are based in Atlanta, USA.
- We source our components from leading and trusted brands world-wide.

- **The system can also use Sea water directly to produce Sodium Hypochlorite.**

- **The applications of our systems are mainly for Disinfection and Algae Prevention & Bio fouling control.**

- **More than 1000 systems across 18 countries and 4 continents with capacities ranging from 5gms/hr to 100s of kgs/hr of chlorine have been supplied by us.**

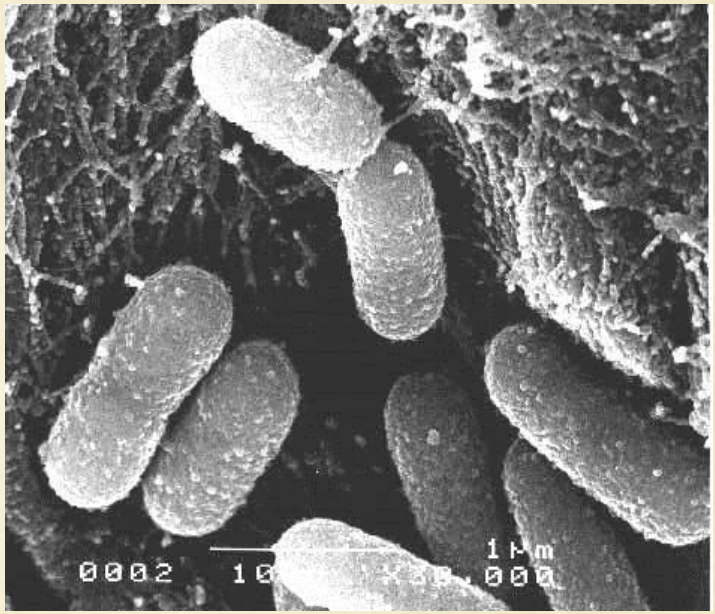
- **We are a lean and agile company powered by a leadership whose experience in the field of design and development of Chlorination Systems spans over 35 years.**

- **We are an ISO 9001-2008 certified company.**

Why is chlorination so essential?

How Chlorine Kills Pathogenic Organisms?

In Disinfection, chlorine surrounds the pathogenic organism, oxidizing its cell wall. The chlorine then penetrates the organism and upsets the natural life cycle processes or alters the cell's enzymes. The end result is the organism dies or cannot reproduce (bacteriologically safe)



Micro Organisms

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How to check the purity of the water you consume ?

- The only way you can know that your water is pure is by checking the chlorine content in the water.
- Chlorine is consumed in the process of killing micro organisms.
- A tiny bit of chlorine in your water, proves that there is no more micro organisms to kill, hence is pure.

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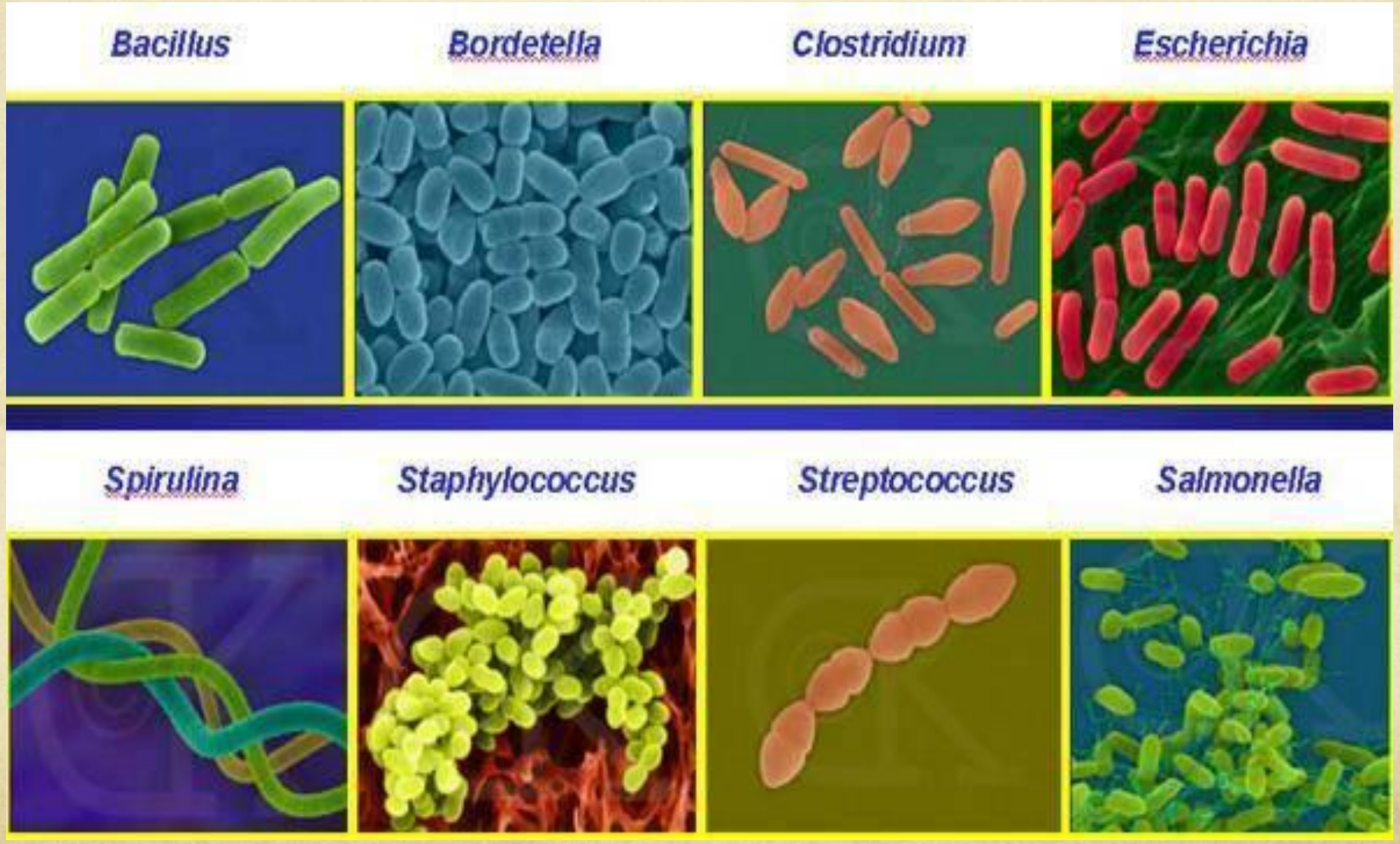
Some of the Dangerous Bacteria



Effect of Chlorination on Inactivating Selected Bacteria

Bacteria	Cl_2 Concentration (mg/l)	Time (min)	Ct Factor (mg-min/l)	Reduction(%)	Reference
Campylobacter ejuni	0.1	5	0.5	99.99	Blaser et al, 1986
Escherichia coli	0.2	3	5	99.99	R am and Malley, 1984
Legionella pneumophila	0.25	60-90	18.75	99	Kuchta et al, 1985
Mycobacterium chelonei	0.7	60	42	99.95	C arson et al, 1978
Mycobacterium ortuitum	1.0	30	30	99.4	Pelletier and DuMoulin, 1987
Mycobacterium ntracellulare	0.15	60	9	70	Pelletier and DuMoulin, 1987
Pasteurella ularensis	0.5-1.0	5	3.75	99.6-100	Baumann and Ludwig, 1962
Salmonella typhi	0.5	6	3	99	Korol et al, 1995
Shigella dysenteriae	0.05	10	0.5	99.6-100	Baumann and Ludwig, 1962
Staphylococcus aureus	0.8	0.5	0.4	100	Bolton et al, 1988
Vibrio cholerae (smooth train)	1.0	< 1	< 1	100	Rice et al, 1993
Vibrio cholerae rugose strain)	2.0	30	60	99.99	Rice et al, 1993
Yersinia enterocolitica	1.0	30	30	92	Paz et al, 1993

Effect of Chlorination on Inactivating Selected Viruses

Viruses	Cl_2 Concentration (mg/l)	Time (min)	Ct factor (mg-min/l)	Reduction (%)	Reference
Adenovirus	0.2	40-50 sec	0.15	99.8	Clarke et al, 1956
Coxsackie	0.16-0.18	3.8	0.06	99.6	Clarke and Kabler, 1954
Hepatitis A	0.42	1	0.42	99.99	Grabow et al, 1983
Norwalk	0.5-1.0	30	22.5	--	Keswick et al, 1985
Parvovirus	0.2	3.2	0.64	99	Churn et al, 1984
Poliovirus	0.5-1.0	30	22.5	100	Keswick et al, 1985
Rotavirus	0.5-1.0	30	22.5	100	Keswick et al, 1985

Effect of Chlorination on Inactivating Selected Protozoa					
Protozoa	**Cl_2 Concentration (mg/l)**	**Time (min)**	**Ct Factor (mg-min/l)**	**Reduction (%)**	**Reference**
Cryptosporidium parvum	80	90	7200*	90	Korich et al, 1990
Entamoeba histolytica	1.0	50	50	100	Snow, 1956
Giardia lamblia	--	--	68-389	99.9	AWWA, 1999
Naegleria fowleri	0.5-1.0	60	45	99.99	de Jonckheere and van de Voorde, 1976

Befouling in Fore bay Screen

Corrosion due to Algae growth

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Zebra mussels blanketing an underwater structure at a power plant.

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Shells and Bio Fouling inside Sea Water Pipe

Electro chemistry of Electro Chlorinator

SALT+ WATER+ ELECTRICITY

=

Sodium Hypochlorite

$$NaCl + H_2O + 2e^- = NaOH + Cl_2$$

$$NaOH + Cl_2 = NaOCl + H_2$$

Different Types and Capacities of Electro Chlorinators

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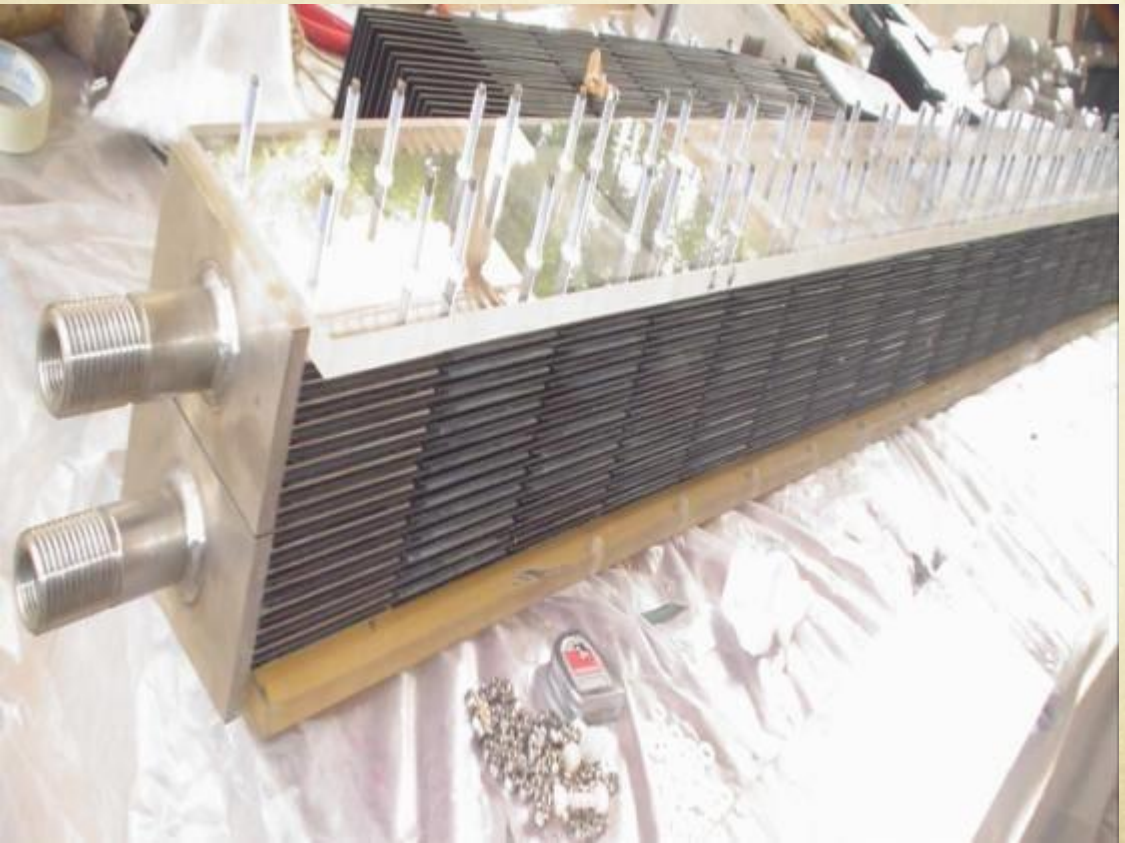

Electrode Technology

The TITANIUM electrodes are plated with layers of PLATINUM group of metal oxides like RUTHENIUM and IRIDIUM in a highly specialised process

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Compact Batch Type Electrochlorinator For Small and Rural Applications

Contains

- Reaction Tank
- Power Supply
- Process Controller
- Storage Tank
- Dosing Pump

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Batch Type Electrochlorinator

Capacities

250 grams/day
to
400 grams/day

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Solar Powered Electro Chlorinators
Capacity
from 5 grams/hr to 100 grams/hr

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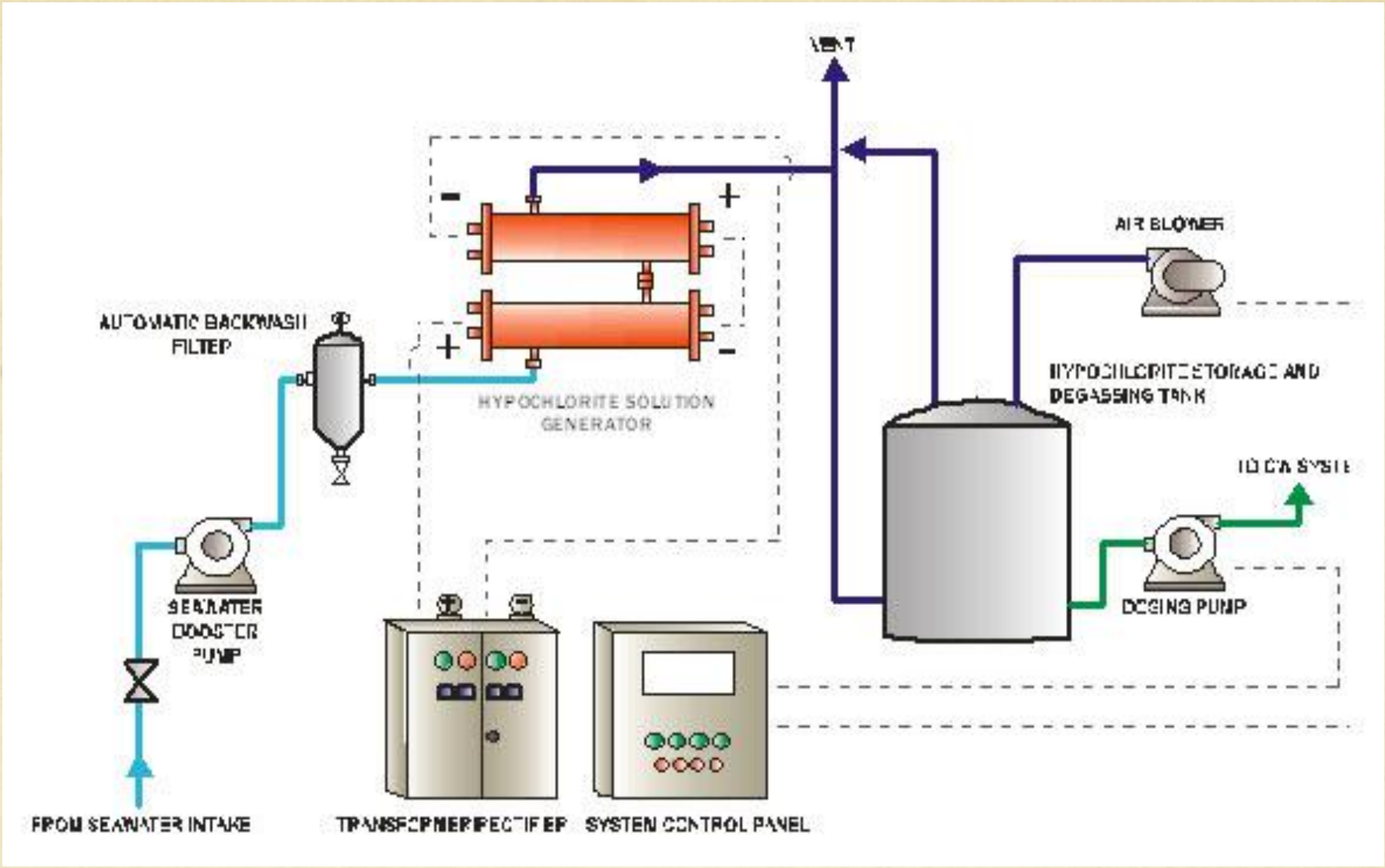
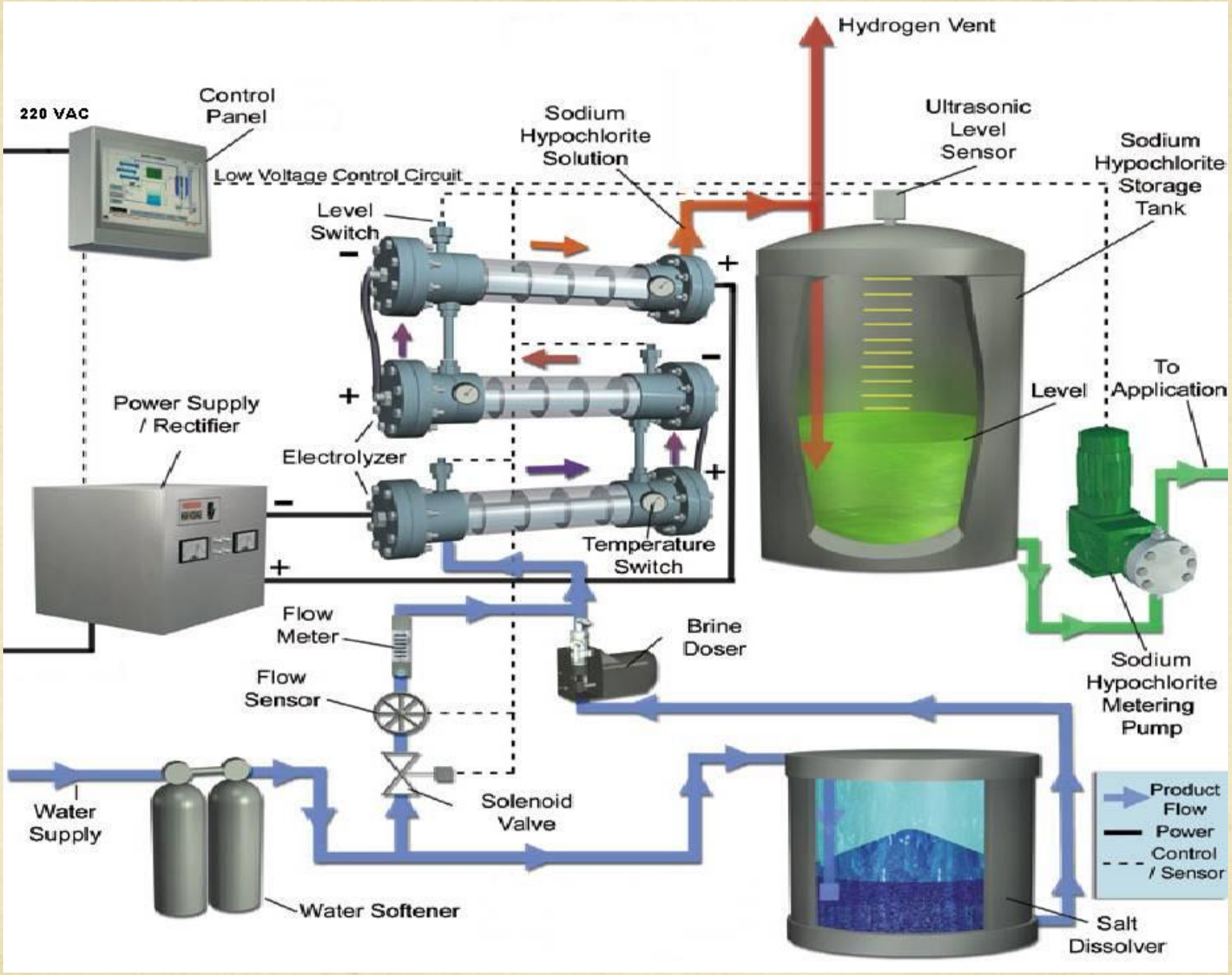
Continuous Production Electrolyzer

500 grams to 500 kgs/hr capacities
For
seawater or brine solution



TYPICAL P&I DIAGRAM OF SEAWATER SYSTEM



TYPICAL P&I DIAGRAM OF BRINE BASED SYSTEM

Floor Mounted Compact Continuous Production System 50 grams/hr To 200 grams/hr

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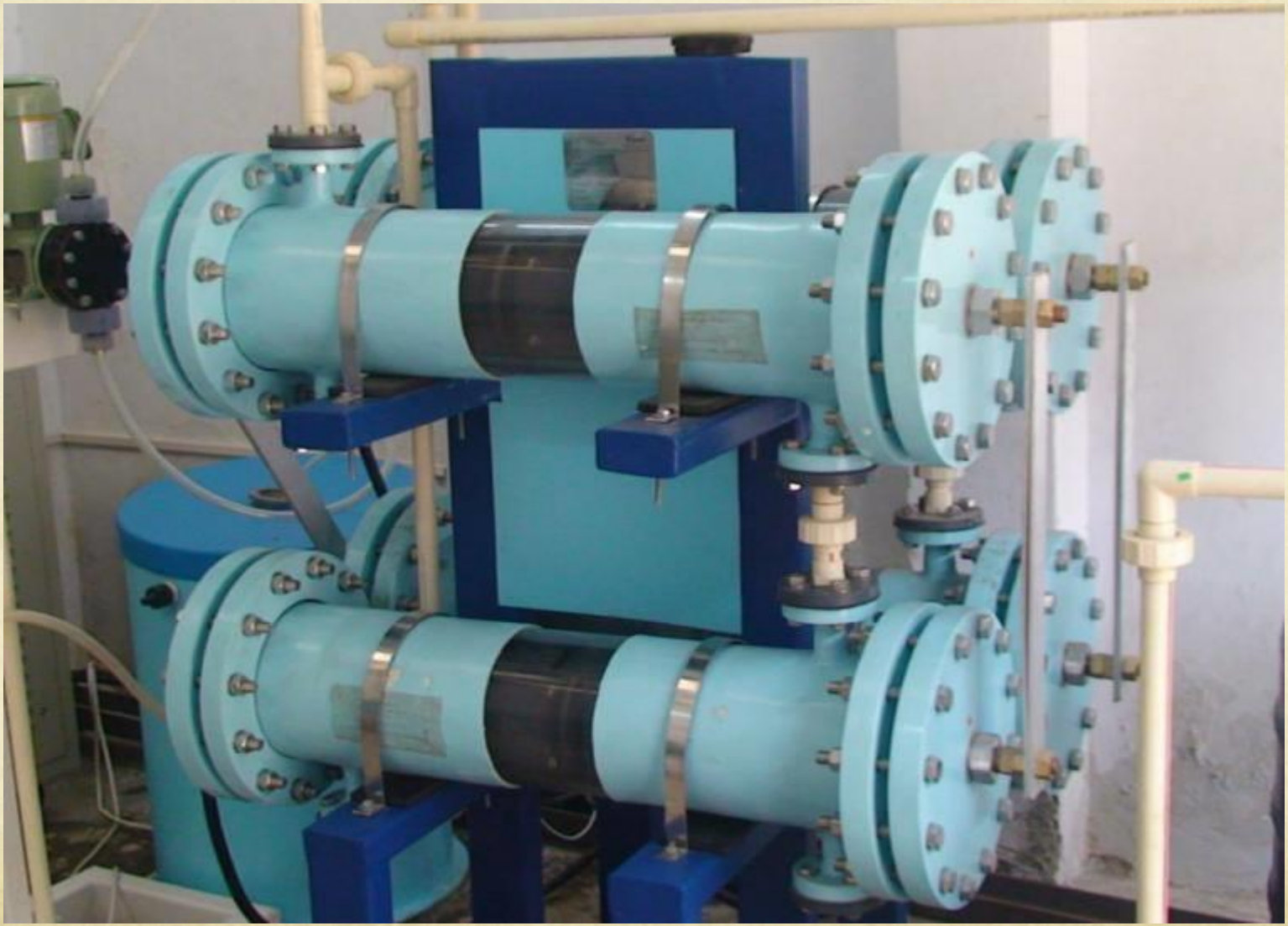
Electrolyzer in a parallel/series arrangement



Brine Based System 32 kgs/hr
Bharat Oman Refinery, Bina. An EIL job

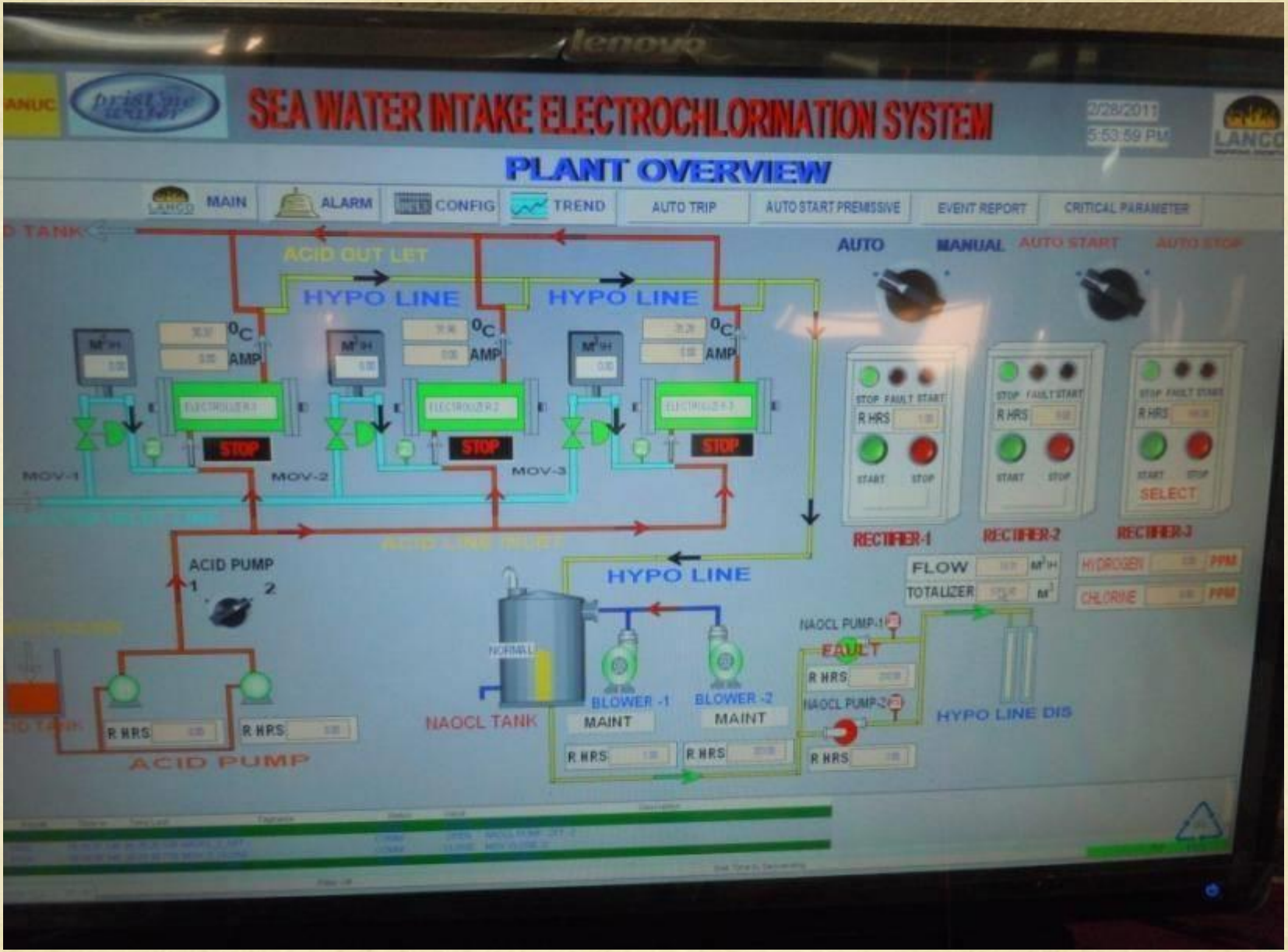
Sea Water Based Electro Chlorination System
2 X 100 kg/ hr. YPL Power Plant, Malaysia

4 x 50 KGS/HR SEA WATER ELECTROCHLOIRINATION SYSTEM
CW CHLORINATION , LANCO UDIPI POWER PLANT

3 x 18 KGS/HR SEA WATER ELECTROCHLOIRINATION SYSTEM SEA WATER INTAKE , LANCO UDIPI POWER PLANT

SYSTEM ON INDIVIDUAL SKIDS, assembled at site
2x72 KGS/HR, SEM CALACA, Philippines

COMPLETE SKID MOUNTED BRINE BASED SYSTEM
2 x 5 kgs./hr. for JSW Bellary.



PLC SREEN SHOT OF ELECTROCHLORINATION PLANT

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AIR COOLED THYRISTORIZED RECTIFIER WITH TRANSFORMER

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AIR COOLED TRANSFORMER WITH THYRISTORIZED RECTIFIER

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HYDROGEN DEGASSING FIBER GLASS TANK CAPACITY 80 m^3

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HYDROGEN VENTING BLOWER BEING ERECTED

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ACID CLEANING SYSTEM FOR SCALE DEPOSIT REMOVAL

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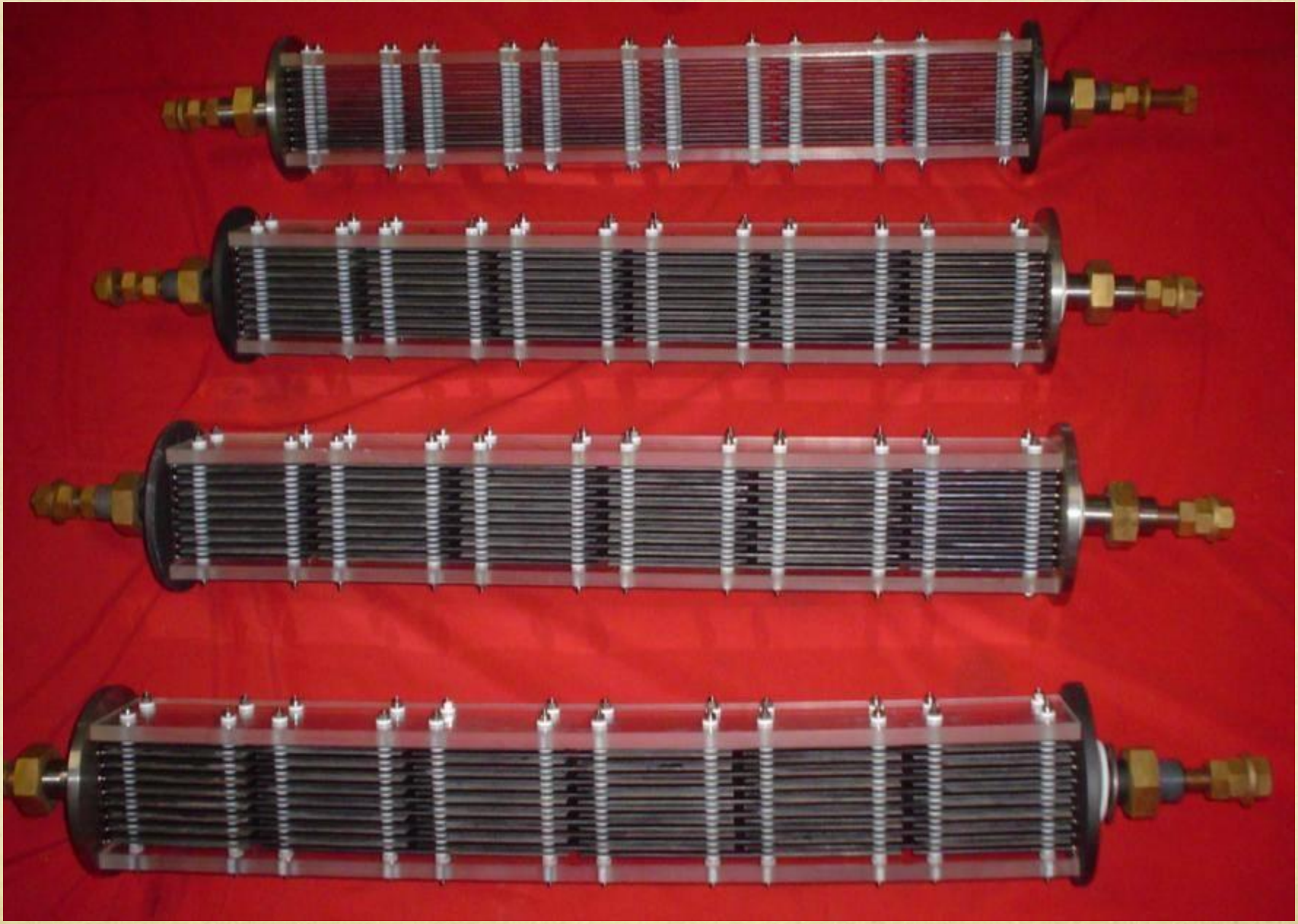
TITANIUM
ELECTROLYZER
WELDING & ASSEMBLY

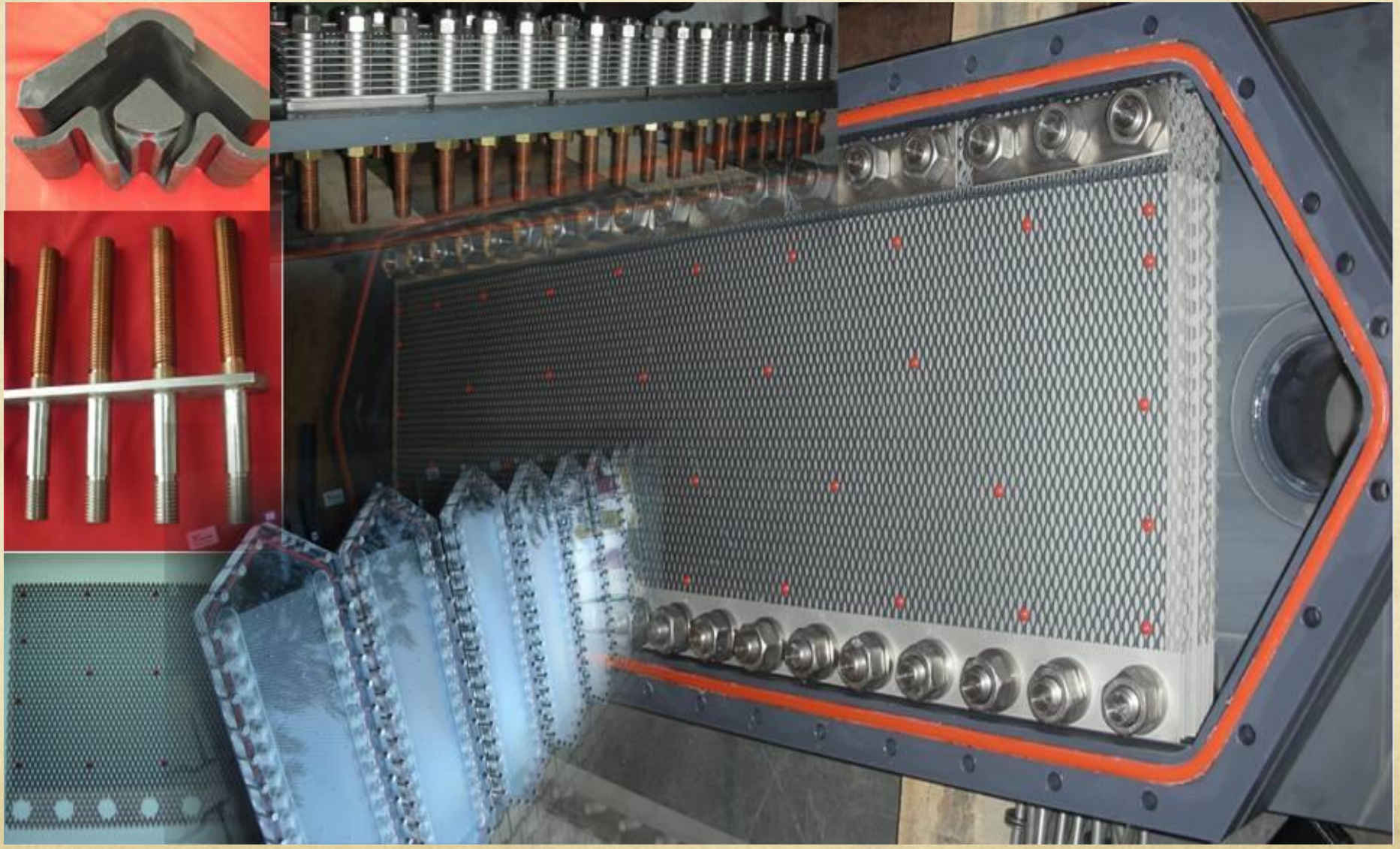


REPLACEMENT ELECTROLYZER OF DENORA

REPLACEMENT ELECTROLYZER OF MITSUBISHI

REPLACEMENT ELECTROLYZER OF CHLOROPAC

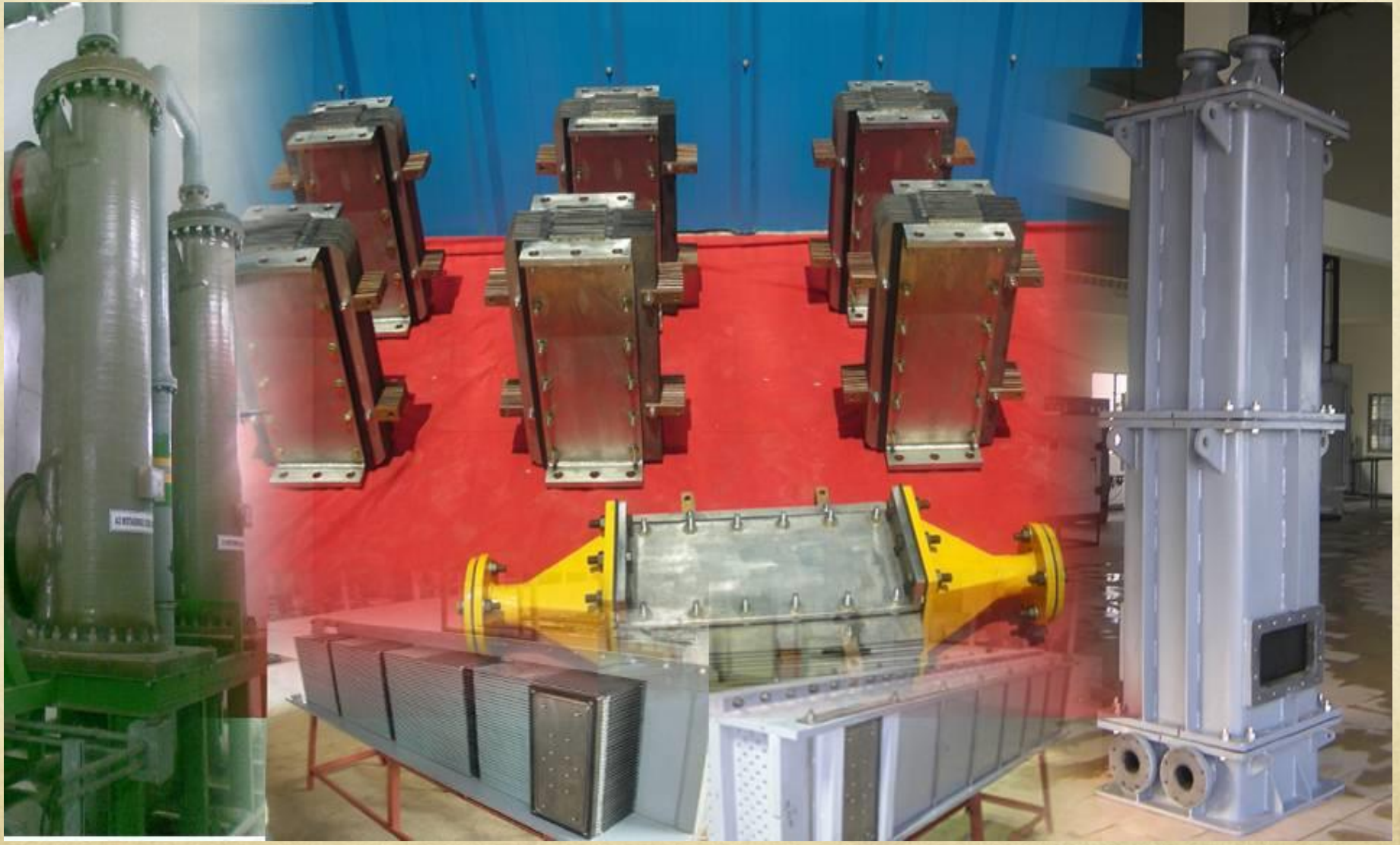
REPLACEMENT ELECTROLYZER OF SANILAC



REPLACEMENT ELECTROLYZER OF SHIPS

REPLACEMENT ELECTROLYZER OF PEPCON

REPLACEMENT ELECTROLYZER OF DIAKI



Thank You

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