



Always at Full Current with

# CELL SWITCHES



郑州轻冶科技股份有限公司

ZHENGZHOU LIGHT METAL TECHNOLOGY CO., LTD

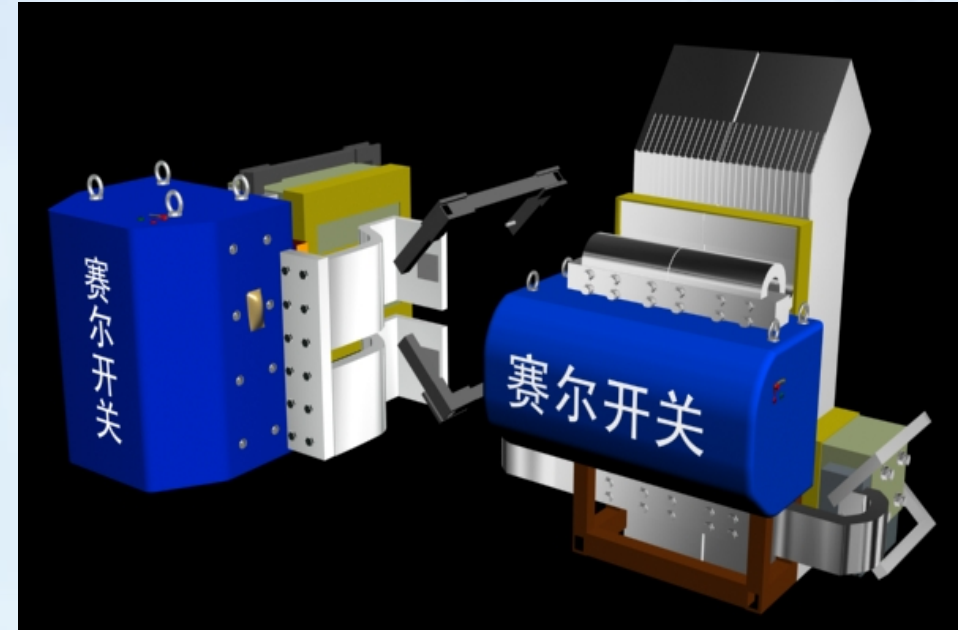
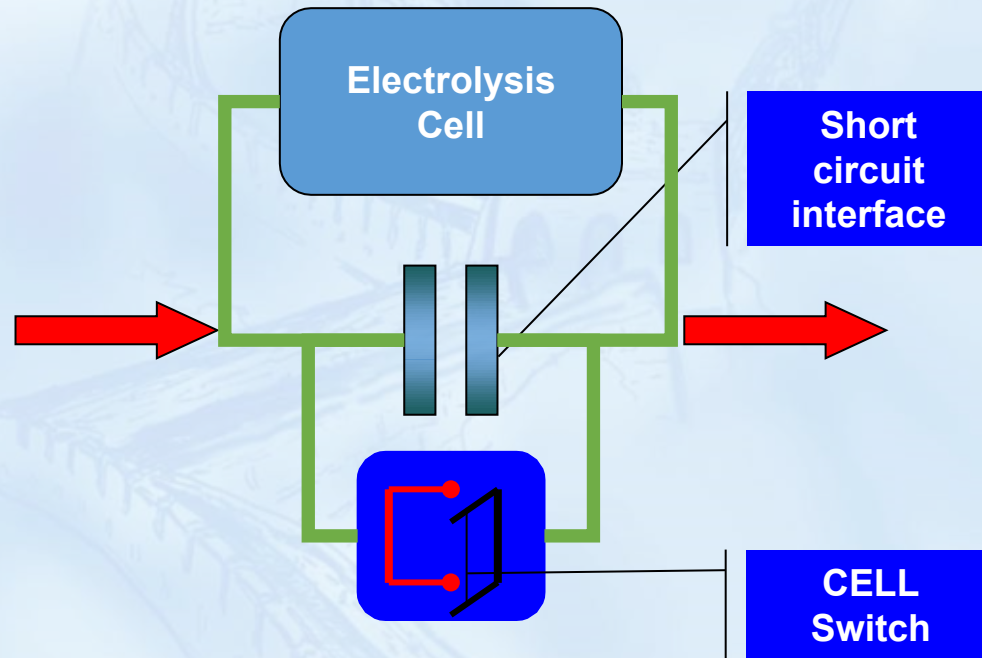
# INTRODUCTION OF COMPANY



- Founded in 1994 in Zhengzhou, Henan Province, China;
- High-Tech company in development of energy-saving, environment protection technologies & equipment;
- From design to engineering;
- Focus on Aluminum industry;
- Key products/technologies: Cell Switches, Emergency short circuit devices, Ladle cleaner, melting and holding furnaces, SPL treatment technology .....
- Around 80 employees including team leader, Mr. LIANG Xuemin, electrolysis experts without more 30 years of experience in research, design and management, 4 professor level senior engineers, 12 with doctor and master's degree;



# INTRODUCTION OF CELL SWITCH



- Cell Switches are specially designed switches parallel connected with a cell at place between anode and cathode.
- Through the shunt function of the switches, short circuit interfaces of each cell can be safely and easily operated under full current without power interruption.
- CELL Switches can be customized according to customers' different situation.



# ADVANTAGES OF CELL SWITCH



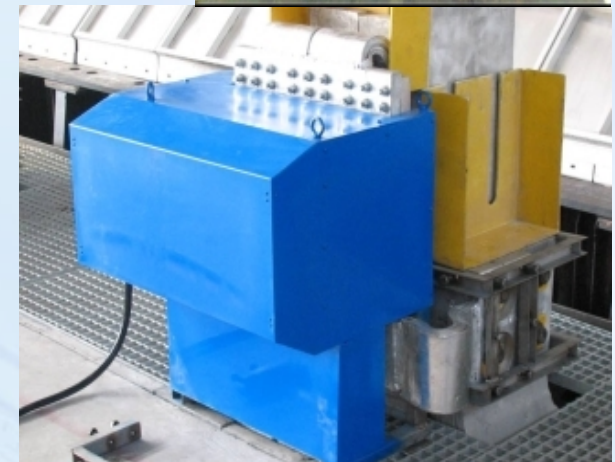
- Very low resistance;
- Excellent heat dissipating ability;
- Excellent conductivity;
- Excellent arc extinguishing design;
- Multi-Protection;
- High synchronization;
- Excellent Anti magnetism;
- Safe and reliable (CE Certification);
- Low cost;
- Low maintenance.
- Simple & easy installation (10 minutes, without modification on cell itself);



# WHEN DO YOU NEED CELL SWITCHES?



- Start up a new pot line;
- Shut down one or several cells from a line for relining;
- Start up one or several cells after relining;
- Emergency application;



# BENEFITS OF USING CELL SWITCHES



## **Smelter:**

Stable production;  
Less anode effect;  
Higher current efficiency;  
Higher production;  
Longer lifetime of cells.

## **Rectifier stations/Power grids:**

Stable operation;  
Longer lifetime.

## **Workers / Equipment:**

VERY SAVE



# DEVELOPMENT OF CELL SWITCH

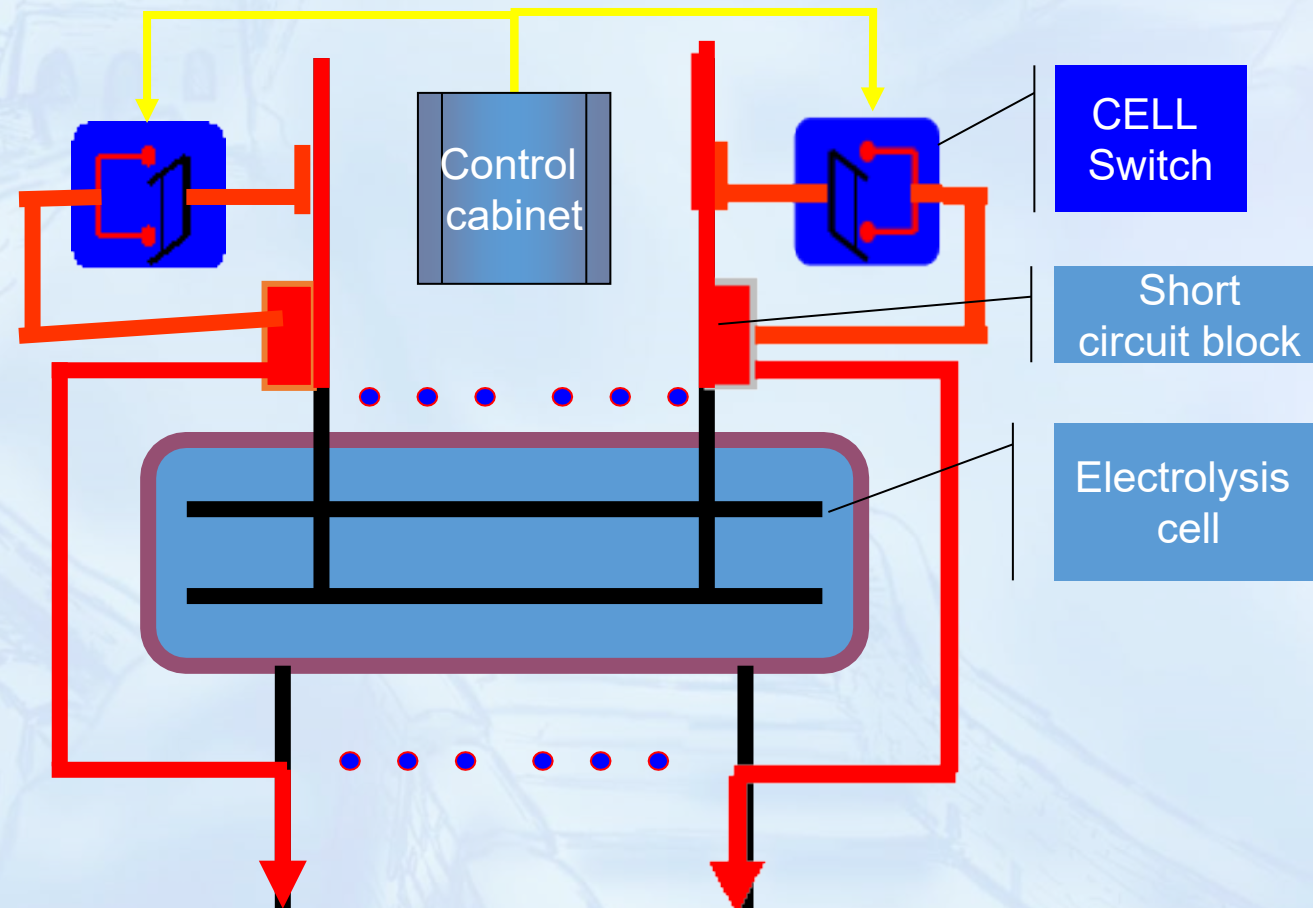


- Dec, 1995, short circuit experiment on a 280KA electrolysis cell at low voltage of 2V was failed with explosion. People started to think about the technology of shut-down or start-up cells without power interruption; It looked impossible at that time;
- 1997, Mr. Liang sent report to GAMI, requiring to start the research;
- Apr, 2004, research team founded;
- June, 2005, the project was approved by NDRC (the National Development and Reform Commission of China);
- Feb, 2006, prototype machine was finished (70KA,10V) ;
- Apr, 2006, test of the switch on a 70KA cell succeeded;
- Jun, 2006, application started on 300KA cell;
- May, 2007, application started on 400KA cells;
- Jul, 2011, application started on 500KA cells;
- Nov, 2014, application started on 700KA cells;
- So far, around 144 sets/793 switches are running worldwide successfully.

# START-UP A CELL IN A POTLINE WITH CELL SWITCH



- Step 1: Couple in CELL Switches (each busbar has one switch)

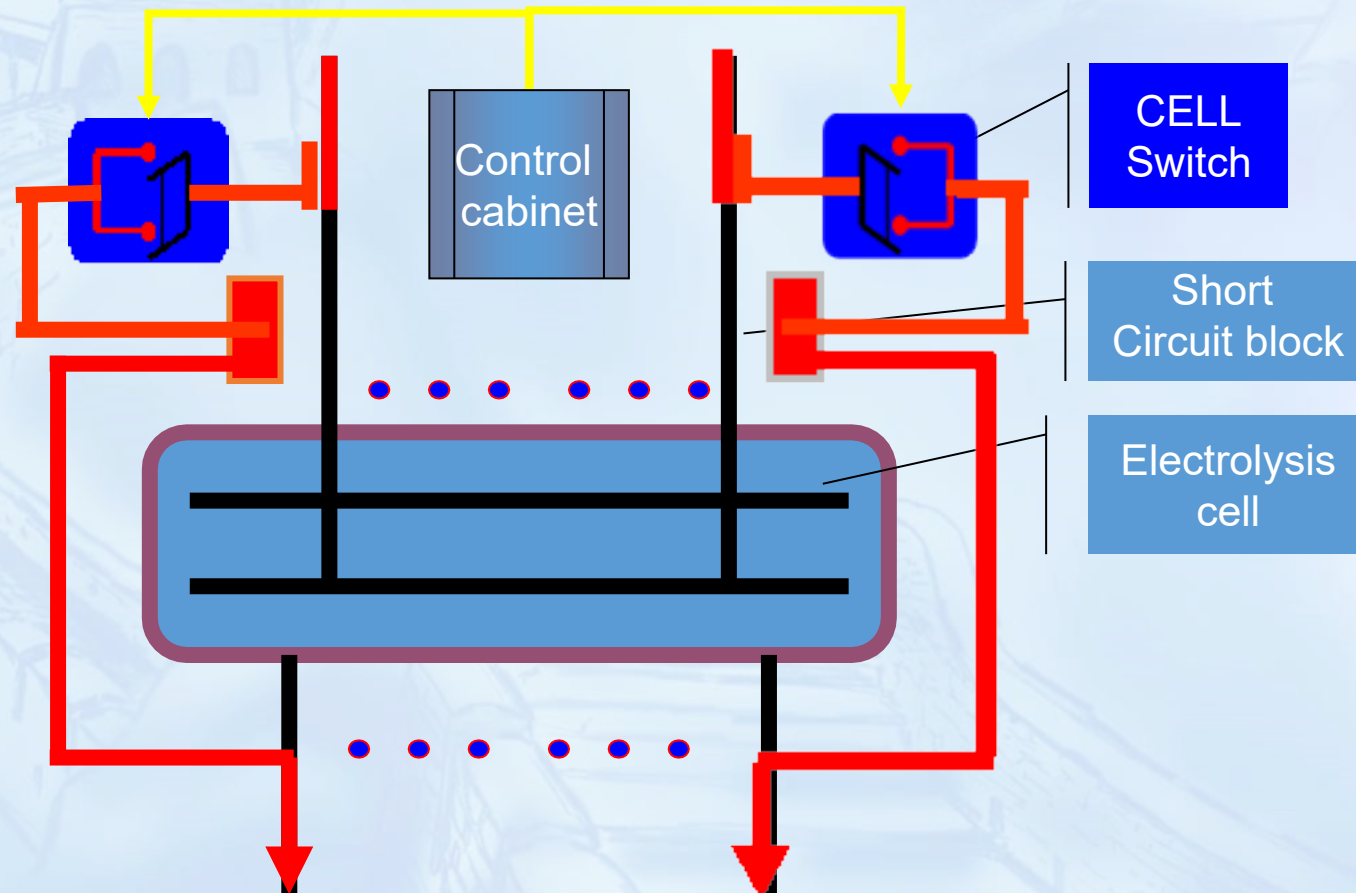




# START A CELL IN A POTLINE WITH CELL SWITCH



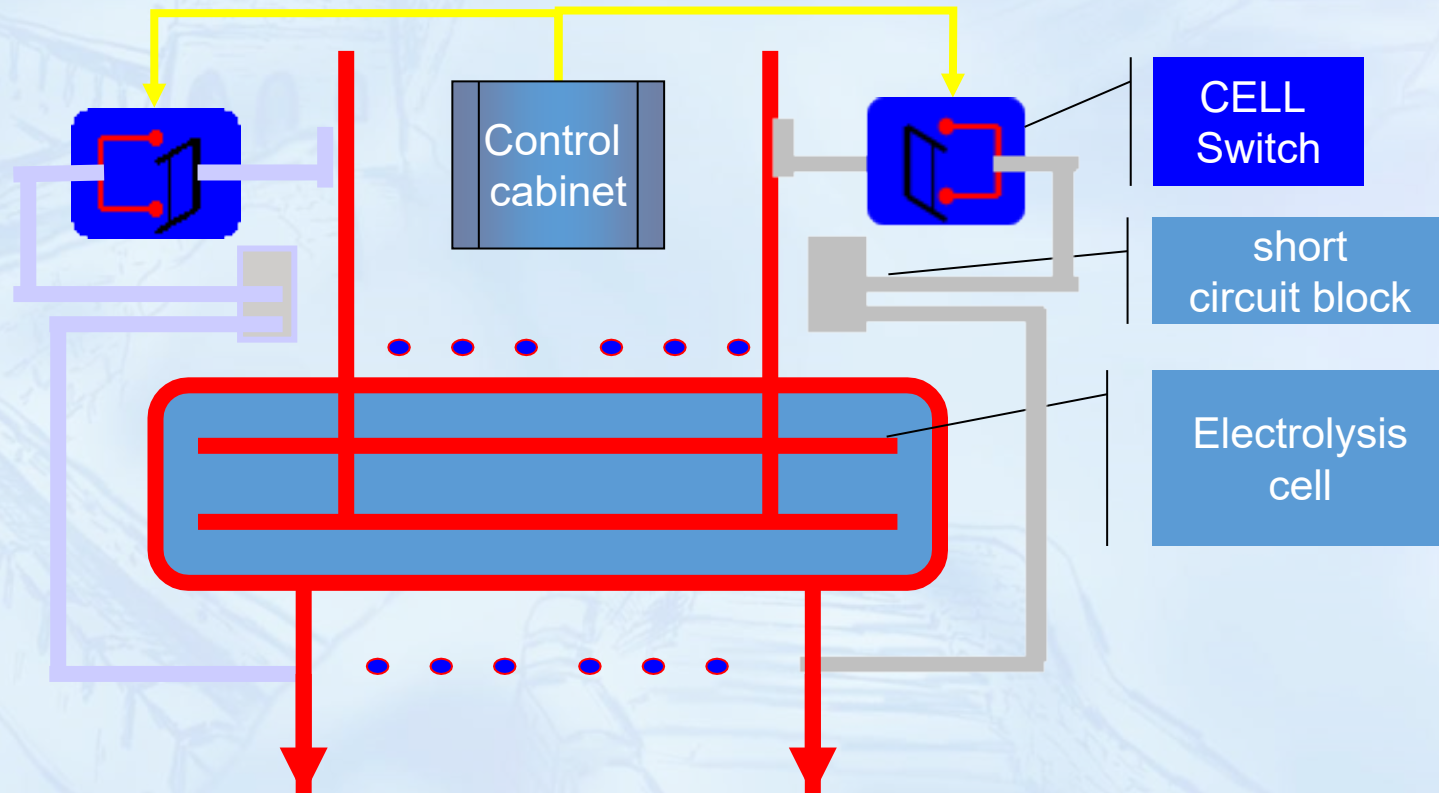
- Step 2: De-energize the short block



# START A CELL IN A POTLINE WITH CELL SWITCH



- Step 3: Switch off CELL switches, finish starting-up



THE PROCESS TO STOP A CELL IN A POTLINE IS IN REVERSE

# TECHNICAL PARAMETER OF CELL SWITCH



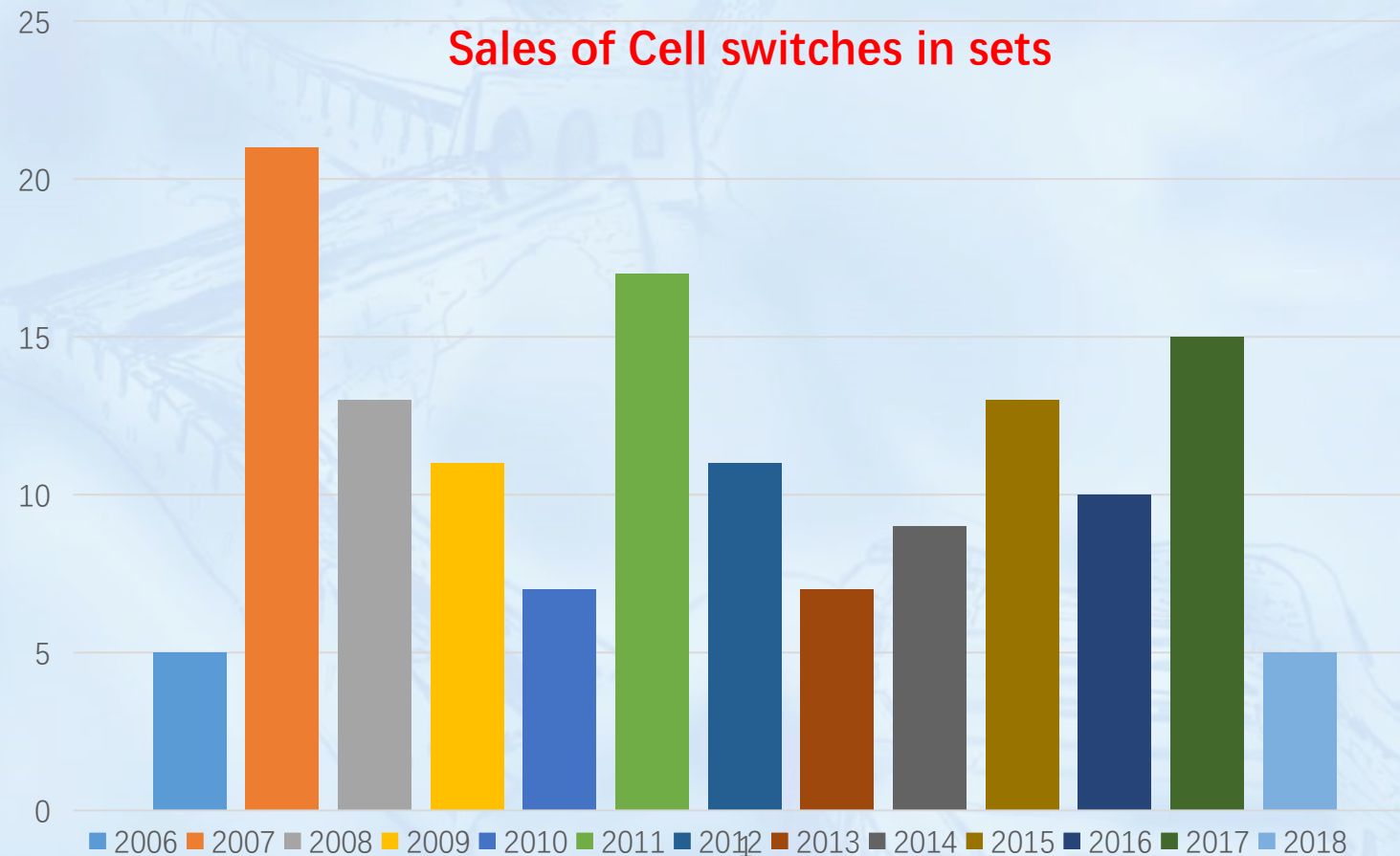
Description	Typical Value
Rated working voltage	DC $\leq$ 10V
Rated working current (complete set)	DC 70-700KA
Voltage drop of single switch at rated condition	$\leq$ 200mV
Operation life of main contact	$\geq$ 1000 times
Life of arc extinguishing contact	$\geq$ 500 times
Continuous current-flow time	$\leq$ 30 minutes
External dimensions (customized)	$\sim$ 850 $\times$ 650 $\times$ 550mm
Equipment weight	$\sim$ 400Kg



# APPLICATION OF CELL SWITCHES



# SALES AND PERFORMANCE OF CELL SWITCH



So far, about 144 sets of 793 switches are being used in more than 70 smelters worldwide. They have been used for more than 150,000 times including stopping and starting up electrolysis cells, **with no power interruption, with safety, without accident.**



# CONTACT INFORMATION



Authorized agent of LM to promote the equipment outside China

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