



The Introduction of the Waterborne Process at Shanghai GM

Vehicle Manufacture Engineering - Paint
Shanghai GM

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Shanghai General Motors (SGM)

Shanghai General Motor (SGM) is a Joint Venture between SAIC (Shanghai Automotive Industry Corp) and General Motors.

SGM was founded in 1997. Now, it has four Assembly Plants and two Power Train Plants in three cities of China.

In the years of 2005 and 2006, SGM becomes the No.1 Car Manufacturer in China.

Now, SGM has 3 Brands, 11 Car Models and a 600,000 Cars / Year Production Capacity in the Chinese Market.

In 2009, the Production Capacity of SGM will reach 1,000,000 Cars / Year.



Introduction of Waterborne Process in Shanghai GM



Overview of Shanghai GM's South Plant Paint Shop

The First Waterborne Paint Shop in China

Plant Location: Shanghai, China

M+E Turn Key Supplier: Dürr

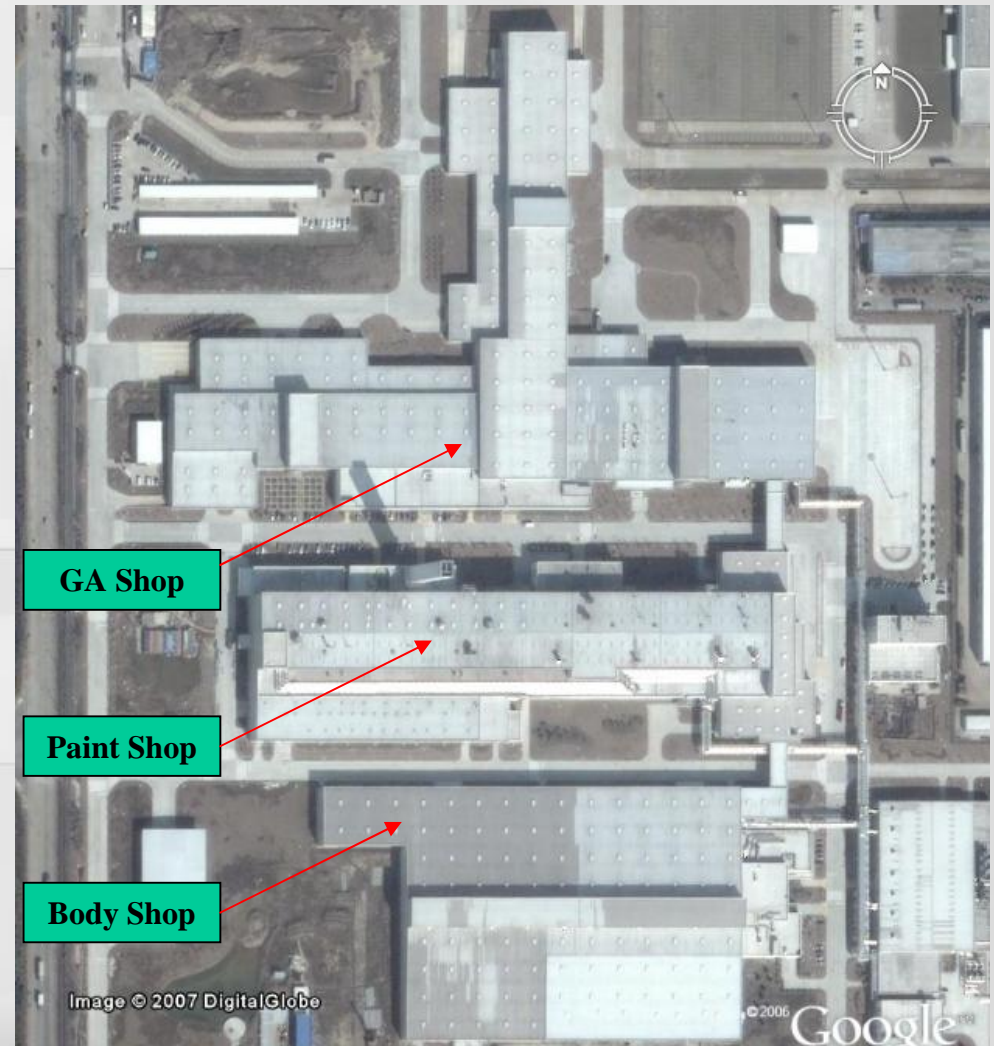
Capacity: 40 Units/Hour (net)

Building :

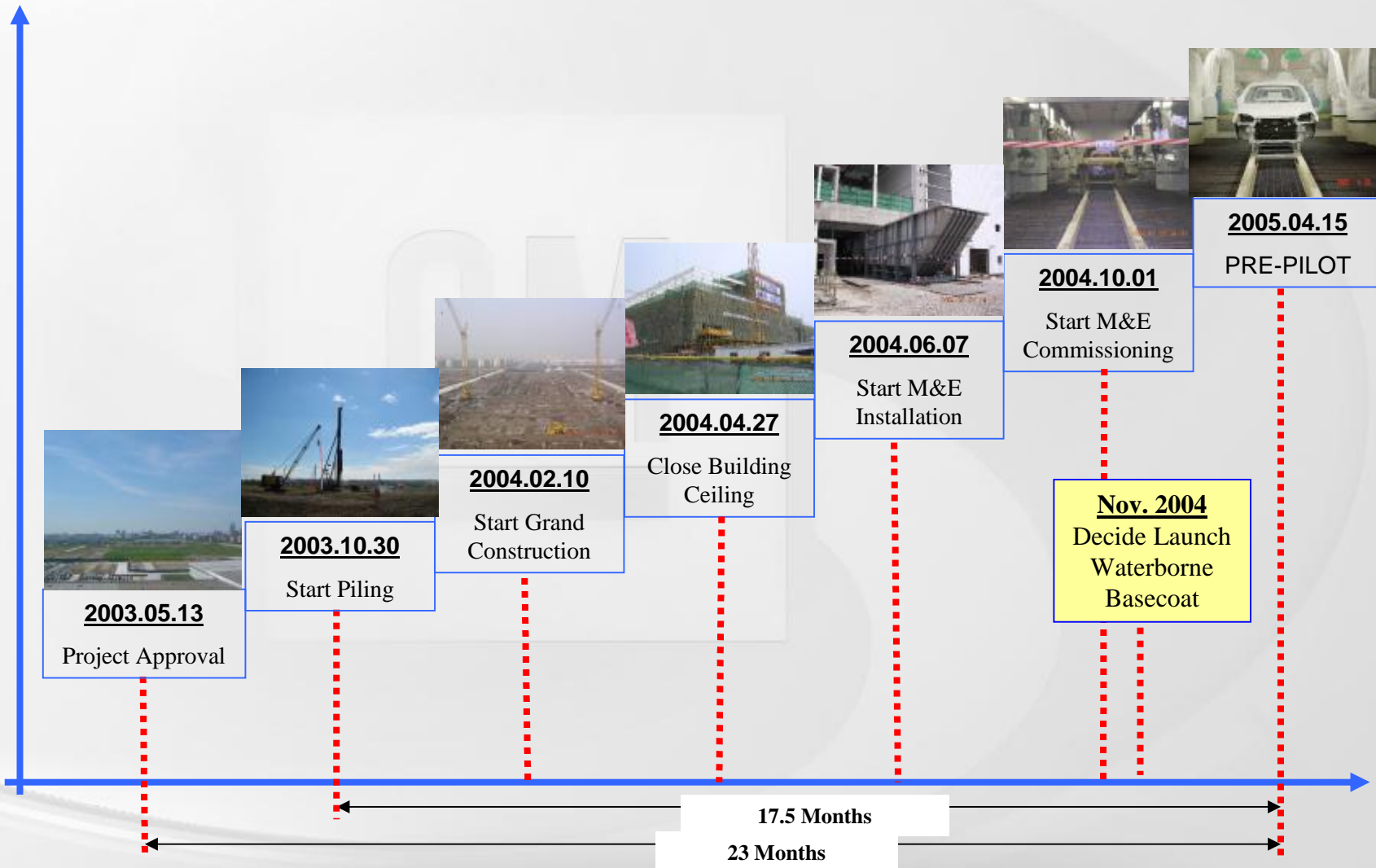
276m(L)*54m(W)*22m(H)

Total Area: 45,576m²

Start of Production: May 17th, 2005



Paint Shop Timing Overview



Waterborne Paint Shop in China

Anticipation on 2005

Status of Waterborne Paint Shop in 2007



Start of Production	Plant	Waterborne Primer	Waterborne Basecoat
Year 2005	SGM Shanghai (south)		○
	Toyota Tianjin		○
	D.C Beijing	○	○
Year 2006	SGM Yantai II		○
	Toyota Guangzhou	○	○
	Honda Guangzhou II	○	○
	KIA Yancheng	○	○
Year 2007 or after	Hyundai Beijing	○	○
	JAC Hefei	○	○
	Nissan Guangzhou II		○
	SAIC Lingang		○
	SGM Shenyang	○	○
	Ford/Mazda Nanjing	3C1B	

Source: files are from china coating manufacturing technology conference



Reasons for Waterborne Basecoat

In Dec. 2004, the Decision is made by SGM to directly Launch Waterborne Basecoat in the South Plant New Paint Shop

- The company image has always been a priority in SGM
- SGM Needs to Develop Capability to catch up good technology.
- Environmentally Friendly Processes are the General Trend.
 - 2007, The National Bureau of Environment Protection released the <Clean Production Standard (automotive coating)>, the waterborne process is recommended.
 - Based on EU Standards, the Beijing Bureau of Environment Protection is making a draft local regulation for VOC control.



Challenges of the Project

- The Decision is made after Paint Shop M&E commissioning, how to minimize the impact on production launch.
- Very Short time for the team to implement M&E and Material Change.
- As the first waterborne paint shop in China, there is no existing experience, the team must work creatively to make it happen.

Waterborne Basecoat Implementation Timing



Oct-Nov.2004

Study &
Decision for
WBBC



Continue
Commissioning
in Other Process



2005.02.05
WBBC M&E
Installation



2005.03.02
WBBC
Commissioning



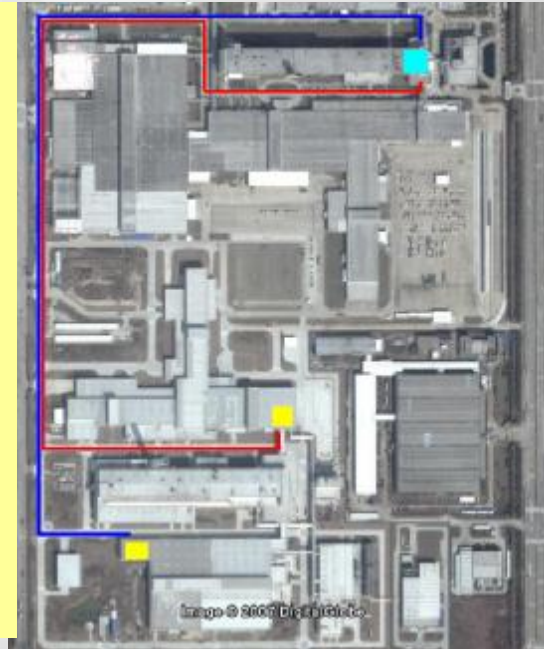
2005.04.15
Paint Shop
Pre Pilot



2004.10.01

Start M&E
Commissioning

Use
North
Plant
Paint
Shop
to
Support
South
Plant
Body
and GA
Launch



2005.05.17

Start of
Production

Major Waterborne Basecoat Scope of Work

1. Add Intermediate Oven and Related ASU.
 - 4 min heating, 2 min cooling.
2. Modification of Basecoat Application.
 - BC1: 6 Dürr *Eco*Paint Robot RP7 with external charge
 - BC2: 4 Dürr *Eco*Paint Robot RP7 with double gun
3. Modification of Basecoat Paint Supply System.
 - Piping Change from Carbon Steel to Stainless Steel
4. Modification of Conveyor.

From Dürr receiving order until finishing waterborne facility installation & commissioning, it just took 3 months for the implementation



Basecoat Process Information



Net Capacity: 40 units/hour

Gross Capacity: 48 units/hour

Pitch: 6.7 m

Conveyor Speed: 5.38m/min

Waterborne Basecoat, Solventborne Clearcoat.

Tri-Coat Applicable

Achievement of Project

The Success is due to Team Work and Quick Response from Dürr as Partner

- The first waterborne paint shop was implemented in time, faster than required by the China National Environment Bureau
- Production in South Plant is launched without delay
- Excellent Coating Quality
 - Gloss: 98.8
 - DOI: Horizontal – 80.3, Vertical – 80.9
 - Orange Peel: Horizontal – 9.5, Vertical – 8.1





Progress of SGM Waterborne Paint Shop

- More than 330,000 Car have been produced in SGM south plant paint shop with the waterborne process.
- In 2006, SGM built a Paint Shop using waterborne basecoat and the bell/bell concept in Yantai with Dürr.
- In 2008, SGM will build a Paint Shop using both waterborne primer and basecoat in Shenyang with Dürr.



Now, more and more new paint shops in China are using waterborne technology, it has become the trend of development !



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Thanks !