



**SAMSUNG
ENGINEERING
BIOPHARMACEUTICAL
BUSINESS**

<http://www.samsungengineering.co.kr/Bio>

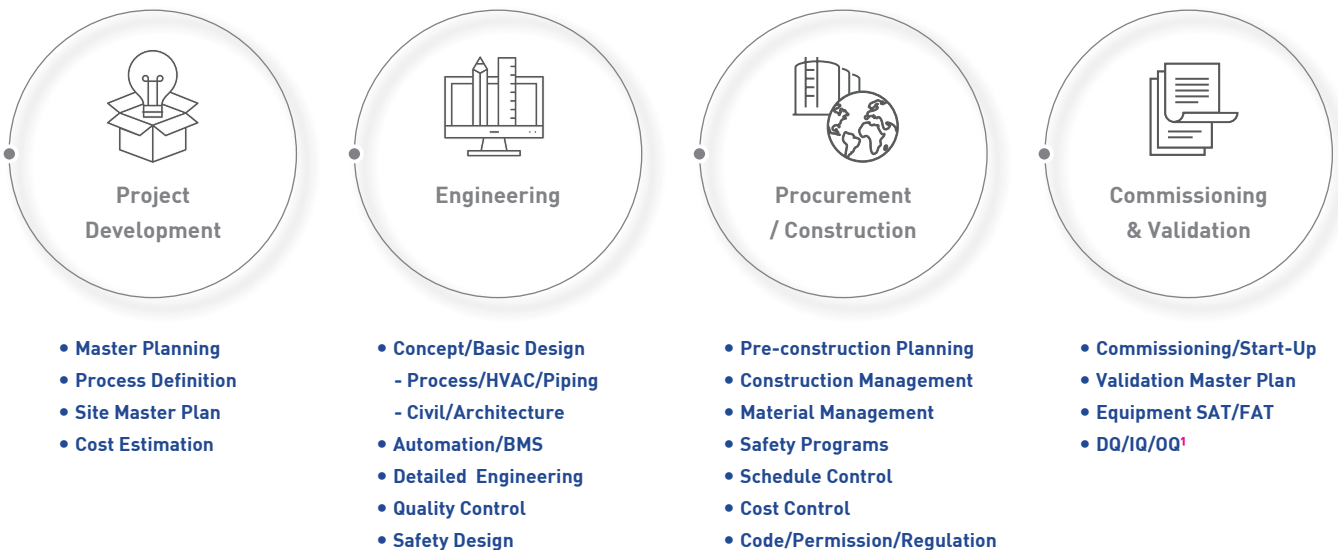
WHO WE ARE?



- **Established** 1970
- **Revenue** USD 6.0B
- **Order Backlog** USD 6.7B
- **Business** Hydrocarbon, Biopharmaceutical, Industrial & Environmental
- **Shareholders** Samsung Affiliates 30%, Foreign 20%, Domestic & Others 50%

WHY SAMSUNG ENGINEERING?

Total EPCV Service Offering



¹ DQ Design Qualification IQ Installation Qualification OQ Operational Qualification



180,000

Max. Bio-reactor capacity



+250

Bio-business employees



7

No. of Projects

Major Biopharmaceutical Projects

	Projects	Origin	Capacity	Scope ²
2011	Samsung Biologics Edison Phase-1 Project	Animal Cell	5,000 L X 6 Bio Reactor	BD/DD/PC/V
2012	Dong-A Meiji Bio Project	Animal Cell	2,500 L X 3 Bio Reactor	BD/DD/PC/V
2013	Samsung Biologics Edison Phase-2 Project	Animal Cell	15,000 L X 10 Bio Reactor 1,000 L X 2 Bio Reactor	BD/DD/PC/V
2014	Hanmi Hwaseong Global Smart Plant Project	Chemical Actives	10 Bil. Tablets / Year	PC
2015	Hanmi Pyeongteak Bio Phase 2 Project	Microorganism (E.coli)	10,000 L X 2 Bio Reactor	BD/DD/PC/V
2016	Samsung Biologics Edison Phase-3 Project	Animal Cell	15,000 L X 12 Bio Reactor	CD/BD/DD/PC/V
2017	Hanmi Pyeongteak Exendin-4 Project	Conjugation	Multiple suites of mAb	CD/BD/DD/PC/V

² CD: Conceptual Design, BD: Basic Design, DD: Detail Design, PC: Procurement & Construction, V: Validation

Proven Management Excellence

Experienced Resource Pool

- SMEs, Engineers with over 20 years

Systematic Management

- Tools for EPCV, Data Management, etc

Partnering Management

- Pre-qualified Vendors & Subs
- Established Global Partner Alliance

Flexible Management

- V/E, Field Engineering, Early Dispatch
- Design Team Overlap with Validation Team

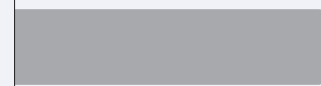
Mega Project Cases (Hydrocarbon)

A PJT
Africa



Project value
2.5B

B PJT
Middle East



> 3B

Successful Completion of World largest Bio Plant

152,000 liter

Samsung Biologics Edison
Phase-2 Project

180,000 liter

Samsung Biologics Edison
Phase-3 Project

Shorter Schedule Adds Value

Integrated Solutions

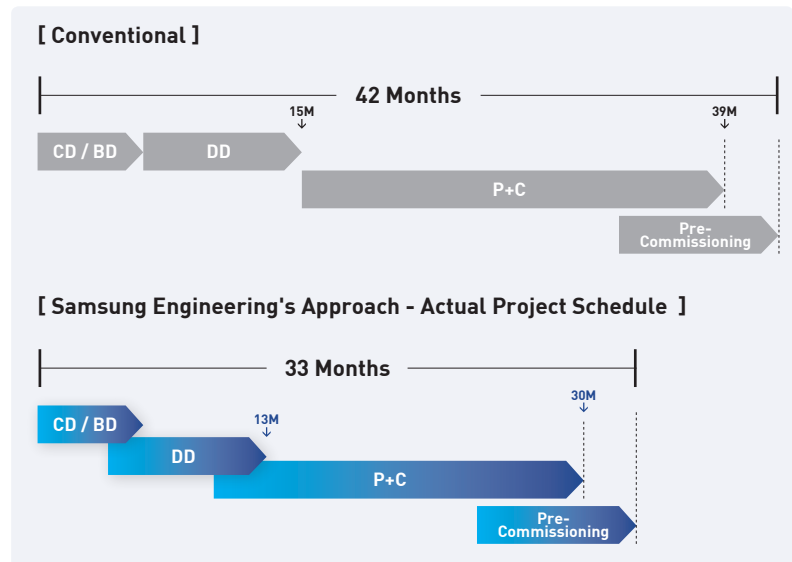
- EPCV Total Package with Less Interface

Fast Track Approach

- Early Start of Construction, Overlapped Phases

Efficient Construction Management

- High Productivity, Using New Technologies



Efficient Construction Management

Constructability Focus

- Consider Constructability from The Start of Project Execution
- Design for Construction (e.g. Minimization of Rework)

Field - oriented Solutions

- Professional on-Site Engineering Team
- Various Solutions for Modularization

New Technologies

- Continuous Application of New Construction methods
 - Automation : Welding, Cable Pooling
 - Advanced Construction Method
- Dedicated Organizations of Technology Development



Samsung Biologics Edison Phase-2 Project