

Business Overview

May 8, 2020 Chiyoda Corporation







- 1 FY2019 Achievements
- 2 Major Ongoing Projects
- **Business Environment**
- 4 Corporate Value Enhancement
- 5 Digital Transformation
- 6 Redefining Engineering Value



Appendix

Vison toward Revitalization and Growth

- Progress and improved profitability of ongoing projects
 - ✓ Improved profitability of Cameron LNG, etc. due to revising contract terms
 - **✓** Freeport and Cameron LNG in the final stages of completion
- Revitalization and growth initiatives
 - **✓ Stringent and comprehensive risk management procedures**
 - ✓ Enhanced EPC execution with digital technology
 - ✓ New business aimed at "redefining engineering values"
- Strengthen financial base to promote growth strategy

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Major Ongoing Projects

Project	Freeport LNG	Cameron LNG	Tangguh LNG	Texas Ethylene	Golden Pass LNG
Client	Freeport LNG	Cameron LNG	BP Berau	Gulf Coast Growth Venture (ExxonMobil- SABIC JV)	Golden Pass Product (ExxonMobil- SABIC JV)
Partner	Zachry McDermott	McDermott	Saipem Tripatra	Kiewit	Zachry McDermott
Status	Train 1, 2 & 3: Commercial operation commenced	Train 1 & 2: Commercial operation commenced Train3: Commissioning work ongoing toward commercial operation	Scheduled completion date 3Q / 2021 Completion: Approx. 80% Construction ongoing	Scheduled completion date 4Q / 2021 Completion: Approx. 58% Module fabrication, shipment to U.S. and construction on site ongoing	Scheduled completion date 2025 Completion: Approx. 12% Engineering, procurement and construction ongoing



Business Environment

Addressing risks and business opportunities in a significantly changed business environment

Changes & Opportunities

- 1. Global recession due to the outbreak of COVID-19 *
- 2. Crude oil and gas prices have fallen sharply. Energy supply-demand balance may fluctuate over the long term
- 3. Investment restraints and delays in the promotion of new projects centered on majors. LNG market moves from growth to maturity
- 4. Paradigm shift to a carbon-recycling society as a measure against global warming
- 5. Accelerate Business innovation by digitalization transformation
- 6. Increased health awareness and deepening the technology of lifescience

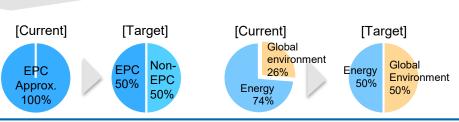
Corporate Value Enhancement

Accelerate transformation of 1) business portfolio and 2) profit structure by responding to changes in the business environment

Business		Initiative for growth	Talent strategy	
EPC Business	Energy	 Select projects with competitive advantage and high degree of realization, and strengthen activities to secure orders and profit Achieve business innovation and strengthen price competitiveness by utilizing digital technology 	Rebuild portfolio of personnel allocation	
	Global environment	 Accelerate shift to global environment <focus areas=""> New energy, storage, and pharmaceutical / medical</focus> 		
New Business/ Non-EPC	Digital transformation [refer to page 5]	 Launching innovative digital products Digital EPC promotion Enhancing IT business infrastructure 	capacity development of Internal human resource	
	Redefining engineering value [refer to page 6] Strengthen organization (Frontier Business Div.) Commercialization of Carbon cycle business / new utility business / life science business		 Utilization of external human resources 	

Targeted Business portfolio transformation (around 2030)

- Ratio of EPC business vs Non-EPC business 50%:50%
- Ratio of Energy vs global environment 50%: 50%



Digital Transformation

Further acceleration toward business innovation & profit

Initiatives	Actions	
Launching innovative Digital Products	 Combining engineering expertise and AI technology Product development to optimized plant operation Products launched to the market and the clients under "EFEXIS™" brand name Early monetization of proven products LNG Plant AI Optimizer ™ (LNG production efficiency improvement) 	
Digital EPC promotion (Innovation in EPC Competitiveness)	 Improved construction management by Chiyoda AWP* Automation of part of engineering work Optimization of construction sites using drones and beacons 	
Further enhanced IT business infrastructure	◆ JV will start with an IT major with TIS Inc. in October 2020. to evolve IT business infrastructure	
Efficiency improved by 20% by promoting company-wide digitalization TARGET 20	◆ Achieve a 20% improvement in efficiency by promoting digitization and RPA ** in engineering, procurement, and construction and corporate management operations	

*AWP: Advanced Work Packaging

**RPA: Robotics Process Automation

Redefining Engineering Value

As a distinguished engineering company valued by our customers, industry and society, realize future growth by integrating pioneering technologies with conventional engineering expertise.

Create non-EPC Business

Business Field	Actions
 Carbon recycling business focused on Clean-Tech Utility business in an Era of Decentralization Pharmaceutical & Life-science 	 Commercialization of technology that effectively utilizes carbon dioxide as a valuable resource Optimal energy provision service utilizing Chiyoda's chemical engineering and hydrogen technology Commercialization of new technology related to cell culture process; key to the development of regenerative medicine

SPERA* Hydrogen®

- ◆ Full-scale commencement of international large-scale hydrogen supply demonstration
- ◆ Together with Singaporean companies and Mitsubishi Corporation, aiming to realize a sustainable hydrogen economy The safety of our technology is evaluated-
- ◆ Together with Hazer (Australian Company), to develop a hydrogen supply business for local production and for local consumption
- ◆ JV development of hydrogen technology with JXTG Energy to produce CO2-free hydrogen



Major Ongoing **Projects**

Digital Transformation

Hydrogen Economy





Major Ongoing Projects





Digital Transformation

Launching innovative Digital Products

EFEXIS™

- ◆ EFEXIS = "Efficiency" + "Expertise"
- Chiyoda's brand name for innovative digital products integrated "Engineering" and "Digital & Al Technologies".
- Contributes the optimization and unmanned operation of industrial facilities.

Digital EPC Promotion

Improve Performance











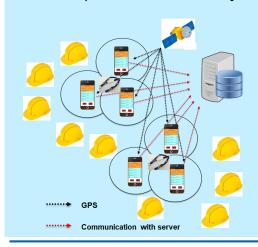
LNG Plant Al Optimizer™

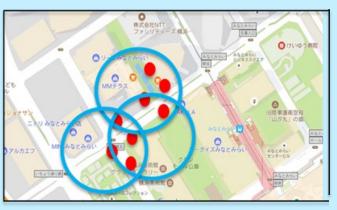
EFEXIS

Value Proposition

- Refinery Process Unit Optimizer
- Distillation Column Operation
 Optimizer
- Fired Heater Optimizer
- Anomaly PredictionFailure Prediction
- . Intelligent Frances
- Intelligent Furnace
- Furnace Coking Prediction
- Tank Corrosion Monitoring
- Gas Leak Detection
- SDM Control Tool
- Inspection Work Support and Automation Tool

FLACS (Field Labor Safety and Control System)





- Worker management tool at construction sites using digital IoT technology.
- Accurately capture the number of mobilized people and their work progress at the construction site.
- Proven tool installed at our construction site.





Hydrogen Economy

- Initiatives and collaboration with 5 Singaporean Companies & Mitsubishi* for a hydrogen economy
- Create synergies Mitsubishi and accelerate Chiyoda's business growth for the future



- ✓ City gas operators (860,000 customers)
- hydrogen in the town gas



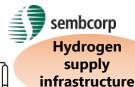
✓ plant to use green **Producer & Retailer** of piped town gas





Introduction of hydrogen into port vehicles

- ✓ Conversion of port vehicles to fuel cells
- ✓ Vision of Hydrogen smart grid



- ✓ Developer (comprehensive development of industrial parks, commercial facilities, housing, etc.)
- ✓ Supporting development for hydrogen economy in Singapore based on know-how of renewable energy and technology integration

Towards a a sustainable hydrogen economy in Singapore





- Valuing SPERA Hydrogen high safety standards
- developing low emissions strategies



Singapore Government

- ✓ LNG receiving terminal operators (terminals, hubs, bunkering, etc.)
- Support the conversion to hydrogen energy by utilizing the port infrastructure of LNG receiving terminal operators

Hydrogen Storage infrastructure



Bunkering

Hydrogen mixed into natural gas pipeline





- Multipurpose Port Operator
- Supports acceleration of hydrogen demand development including utilization for power generation by utilizing existing infrastructure



^{*}Mitsubishi: Mitsubishi Corporation; Chiyoda's largest shareholder

^{**} Global Port Group: PSA is the world's second largest port operator

Sustained Growth and Reinforcement of Our Reputation for Reliability



Chiyoda Corporation IR, PR & CSR Department https://www.chiyodacorp.com/en/

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