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Japan Oil, Gas and metals National Corporation

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## Report of Technical Solutions Training Program [Workshop: EOR and Sustainability with Zero Emission Technology]

Japan Oil, Gas and Metals National Corporation (JOGMEC, President: Hirobumi Kawano) conducted the Technical Solutions Training Program [Workshop: EOR and Sustainability with Zero Emission Technology] from January 12 to February 5, 2016. Sixteen (16) engineers from five countries (Oman, the United Arab Emirates, Qatar, Indonesia, and Mexico) participated, and the course was successfully completed.

This Technical Solutions Training Program is a newly added element to JOGMEC's training scheme and also a component of JOGMEC's active initiative, the "Technical Solutions Project."<sup>1</sup> In this new training program, JOGMEC aims to help all the participants in finding "technical solutions" with applicable Japanese cutting edge technologies to solve the technical challenges they face in their oil and gas E&P fields. JOGMEC is willing to contribute for the participants' organizations by providing technical supports to solve these challenges through future cooperative work.

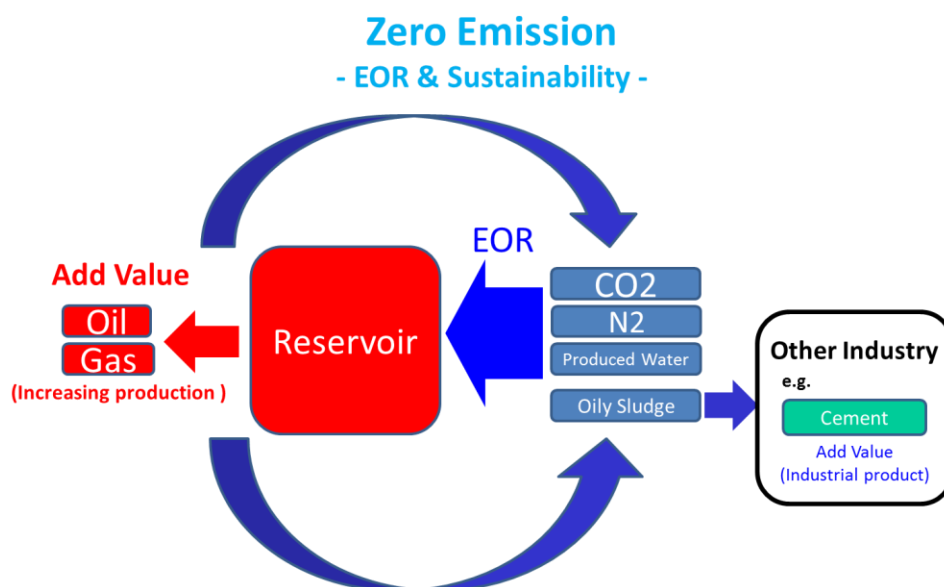


Fig. : Concept of Zero Emission

<sup>1</sup> "Technical Solutions Project": an ongoing initiative, launched in 2013 by JOGMEC, in which JOGMEC conducts technology development collaboratively with a wide range of Japanese industries to customize the Japanese cutting edge technologies and offer "technical solutions" for the various challenges in oil and gas E&P projects. See, *JOGMEC News Special Edition "Your Challenges, Our Solutions – Technical Solutions Project,"* available at <http://www.jogmec.go.jp/content/300266315.pdf>

Zero Emission concept represents a sustainable way of oil and gas development, including but not limited to zero CO<sub>2</sub> emission and zero flaring. The course included lectures concerning EOR, produced water management, and zero waste management which were met with Japanese cutting edge technologies such as advanced CO<sub>2</sub>/CH<sub>4</sub> separation ceramic membrane, CO<sub>2</sub> Micro bubbles for innovative CO<sub>2</sub>-EOR, N<sub>2</sub>/CH<sub>4</sub> separation membrane for effective N<sub>2</sub> management, advanced produced water treatment with ceramic membrane, utilization of waste (e.g. oily sludge) to produce industrial products (e.g. eco-cement), and advanced NORM<sup>2</sup> visualization camera for a sustainable and safety management of oil and gas projects.

Thanks to all the participants, sixteen professional engineers<sup>3</sup> who have respective experiences and expertise in the area of oil and gas production and operation management, lively discussions were held throughout the course.

JOGMEC values the participants' feedback for this training program to ensure continuous improvement and provides an ideal training for the professionals from oil and gas producing countries. JOGMEC is planning the next Technical Solutions Training Program in winter 2017.

#### ■ Course Abstract

1) Name: JOGMEC Technical Solutions Training Program

[Workshop: EOR and Sustainability with Zero Emission Technology]

2) Duration: January 12 – February 5, 2016 (4 weeks)

3) Participants: 16 participants including Production, Operation, Process engineers, and HSE managers from government entities and national companies of oil and gas producing countries

• Oman (4 participants): Ministry of Oil and Gas (MOG), Petroleum Development Oman (PDO)

• UAE (3 participants): Abu Dhabi Company for Onshore Petroleum Operations (ADCO),  
Abu Dhabi Gas Industries Ltd.(GASCO)

• Qatar (4 participants): Qatar Petroleum (QP)

• Mexico (3 participants): Petróleos Mexicanos (PEMEX)

• Indonesia (2 participants): Directorate General of Oil and Gas (DitJen.MIGAS), PT Pertamina

4) Lecturers

JOGMEC, Japan Oil Engineering Co., Ltd. with support of professional lecturers from more than thirteen (13) Japanese leading companies and university.

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<sup>2</sup> NORM : Naturally Occurring Radioactive Materials

<sup>3</sup> For sixteen participants' affiliation, see "Course Abstract."



■ (Left) Workshop of CO<sub>2</sub>-EOR (January 19, 2016)



■ (Right) Workshop of Waste management (February 1, 2016)



■ Picture at Chiyoda corporation (February 2, 2016)



■ Picture at Closing ceremony (February 4, 2016)