DOCKETED	
Docket Number:	19-ERDD-01
Project Title:	Research Idea Exchange
TN #:	234904
Document Title:	Kolodji CorpBlack Swan, LLC Comments - Advanced Combustion - Request for Information - Part 1 of 2
Description:	N/A
Filer:	System
Organization:	Kolodji Corp/Black Swan, LLC
Submitter Role:	Public
Submission Date:	9/24/2020 4:54:40 PM
Docketed Date:	9/24/2020

Comment Received From: Kolodji Corp/Black Swan, LLC
Submitted On: 9/24/2020
Docket Number: 19-ERDD-01

Advanced Combustion - Request for Information - Part 1 of 2

Additional submitted attachment is included below.

From: Brian Kolodji
To: Marc Straub; John Jensvold; Energy - Docket Optical System
Subject: CEC Docket Number 19-ERDD-01 "Advanced Combustion- Request for Information
Date: Thursday, September 24, 2020 4:49:25 PM
Attachments: CEC RFI_19-ERDD-01GeneronBlackSwan09242020.pdf
image005.png
image001.png
image004.png

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Dear Honorable Chair Hochschild,
Please see attached letter from Collaboration by oxygen enrichment from air membrane Supplier Generon and Black Swan Wig Membrane and Oxy-Combustion Membrane Air Enrichment Technology Provider Kolodji Corp/ Black Swan, LLC per email string for the record, below.

Regards,

Brian Kolodji, PE
Kolodji Corp/Black Swan, LLC
Energy Carbon Management

5612 Segovia Way, Bakersfield, CA 93306

2019/2020 Chair Carbon Mgt and Sustainability,
AIChE National Meetings

"...Peace be with you..."

----- Forwarded Message -----
From: Brian Kolodji <bkolodji@sbcglobal.net>
To: John Jensvold <jjensvold@generon-ca.com>; Marc Straub <mstraub@generon-ca.com>
Sent: Thursday, September 24, 2020, 04:14:24 PM PDT
Subject: Re: NATURALGAS-LIST: Advanced Combustion Technologies - Request for Information

Marc,

Much neater in KWH.

Brian Kolodji, PE
Kolodji Corp/Black Swan, LLC
Energy Carbon Management

5612 Segovia Way, Bakersfield, CA 93306

2019/2020 Chair Carbon Mgt and Sustainability,
AIChE National Meetings

"...Peace be with you..."

On Thursday, September 24, 2020, 04:10:50 PM PDT, Marc Straub <mstraub@generon-ca.com> wrote:

How is that?

	Energy Consumption		
	1 tpd [kWh/ ton O2]	**25 tpd** [kWh/ ton O2]	**100 tpd** [kWh/ ton O2]
Cryogenic ASU	n/a	n/a	**11.1**
O2-PSA	**52.5**	n/a	n/a
O2-VPSA	n/a	**14.6**	**12.6**
Traditional "NITROX" Membrane Process	**18.8**	**18.8**	**18.8**
Black Swan / Generon	**10.0**	**10.0**	**10.0**

Best Regards,

Marc Straub
General Manager - Membranes

GENERON
www.generon.com

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Building 992
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O: +1-925-431-1037
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F: +1-925-439-3811
E-mail: mstraub@generon-ca.com

From: Brian Kolodji <bkolodji@sbcglobal.net>
Sent: Thursday, September 24, 2020 3:55 PM
To: John Jensvold <jjensvold@generon-ca.com>; Marc Straub <mstraub@generon-ca.com>
Subject: Re: NATURALGAS-LIST: Advanced Combustion Technologies - Request for Information

Marc,

Did you see Guofu Chen, the ASU expert's reply saying for a 100TPD ASU it takes at lease 1110 KW???

Brian Kolodji, PE

Kolodji Corp/Black Swan, LLC

Energy Carbon Management

5612 Segovia Way, Bakersfield, CA 93306

2019/2020 Chair Carbon Mgt and Sustainability,

AIChE National Meetings

"...Peace be with you..."

On Thursday, September 24, 2020, 03:37:25 PM PDT, Marc Straub <mstraub@generon-ca.com> wrote:

Brian,

See the energy consumptions below:

	Energy Consumption		
	1 tpd [kW/ ton O2]	**25 tpd** [kW/ ton O2]	**100 tpd** [kW/ ton O2]
Cryogenic ASU	n/a	n/a	**266.4**
O2-PSA	**1,260.0**	n/a	n/a

O2-VPSA	n/a	**350.4**	**301.2**
Traditional "NITROX" Membrane Process	**450.0**	**450.0**	**450.0**
Black Swan / Generon	**241.1**	**241.1**	**241.1**

Best Regards,

Marc Straub
General Manager - Membranes

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www.generon.com

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E-mail: mstraub@generon-ca.com

From: Brian Kolodji <bkolodji@sbcglobal.net>
Sent: Thursday, September 24, 2020 2:56 PM
To: John Jensvold <jjensvold@generon-ca.com>; Marc Straub <mstraub@generon-ca.com>
Subject: Re: NATURALGAS-LIST: Advanced Combustion Technologies - Request for Information

Marc,

Here is the version without marked up changes, looks pretty clean! I added only the statement that for the biogas power plant case study, it required only 24% O2 enrichment. The air rate for the unenriched case is 2416 lbmols per hour with 505 lbmols O2. The 25% O2 enriched rate is 1848 lbmols per hour with 443 lbmols of O2. both cases use about 7% excess O2 and have a duty of about 46MM Btu/hr, and use almost identical fuel feed rates of 148 lbmols / hr of methane- so fuel savings is not the benefit here, maximizing sustainable renewable biogas and eliminating all use of non-renewable natural gas was the objective.

Brian Kolodji, PE

Kolodji Corp/Black Swan, LLC

Energy Carbon Management

5612 Segovia Way, Bakersfield, CA 93306

2019/2020 Chair Carbon Mgt and Sustainability,

AIChE National Meetings

"...Peace be with you..."

On Thursday, September 24, 2020, 02:15:41 PM PDT, Brian Kolodji <bkolodji@sbcglobal.net> wrote:

Marc,

Can this letter be addressed form both of us. I significantly shortened, and then lengthened by providing PROMAX case study showing without enrichment and with enrichment for a biogas power plant. Hope we can meet the 5PM deadline.

Brian Kolodji, PE

Kolodji Corp/Black Swan, LLC

Energy Carbon Management

5612 Segovia Way, Bakersfield, CA 93306

2019/2020 Chair Carbon Mgt and Sustainability,

AIChE National Meetings

"...Peace be with you..."

On Wednesday, September 23, 2020, 03:40:13 PM PDT, Marc Straub <mstraub@generon-ca.com> wrote:

Brian,

See attached my draft of the comment that I am planning to up-load to the CEC for Docket #: 19-ERDD-01

What I am still missing is the energy, OPEC and CAPEX comparison between traditional NITROX O2-enrichment in air vs. the Black Swan/Generon approach. John, I need you help on this and please cross-read the attached text.

Brian, any comments?

Best Regards,

Marc Straub
General Manager - Membranes

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E-mail: mstraub@generon-ca.com

From: Brian Kolodji <bkolodji@sbcglobal.net>
Sent: Monday, September 21, 2020 11:38 AM
To: Marc Straub <mstraub@generon-ca.com>; Marc Straub <mstraub@generon-ca.com>; John Jensvold <jjensvold@generon-ca.com>
Subject: RE: NATURALGAS-LIST: Advanced Combustion Technologies - Request for Information

Thank you for the response, Marc! Targeting CEC grant is the topic, with specific clients of interest.

Let's plan for 9AM tomorrow morn. Please call my cell when you are ready at 713 907 874w.

Brian

Sent from AT&T Yahoo Mail on Android

On Mon, Sep 21, 2020 at 11:27 AM, Marc Straub

<mstraub@generon-ca.com> wrote:

> Brian,
>
> What do you need from us at this point?
>
> We can talk this week. Maybe tomorrow at 9:00!?
>
> Best Regards,
>
> Marc Straub
> General Manager - Membranes
>
> GENERON
> www.generon.com
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> Building 992
> Pittsburg, CA 94565
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> O: +1-925-431-1037
> C: +1-713-213-4810
> F: +1-925-439-3811
> E-mail: mstraub@generon-ca.com
>
> **From:** Brian Kolodji <bkolodji@sbcglobal.net>
> **Sent:** Tuesday, September 15, 2020 8:38 AM
> **To:** John Jensvold <jjensvold@generon-ca.com>; Marc Straub <mstraub@generon-ca.com>
> **Subject:** FW: NATURALGAS-LIST: Advanced Combustion Technologies - Request for Information

Hey Marc,

Johns efforts were well received in Bako, with to clients expressing interest. Need to discuss target clients. And proposed paper for LRGCC and USDOE grant.

This email below from SoCalGas regarding CEC. Can we collaborate on this solicitation proposal. I have license to ProMax software that may help.

Please let me know a good time to discuss.

Brian

Sent from AT&T Yahoo Mail on Android

----- Forwarded Message -----

From: "Shiau, Yenshiun (Joe)" <YSShiau@socalgas.com>

To: "Brian Kolodji" <bkolodji@sbcglobal.net>

Cc:

Sent: Tue, Sep 15, 2020 at 8:30 AM

Subject: FW: NATURALGAS-LIST: Advanced Combustion Technologies - Request for Information

FYI. Hi, Brian. The CEC is soliciting proposals that you may fit in well. Please see below.

(Joe) Yenshiun Shiau, PE, CEM

Emerging Technologies Program

SoCalGas

555 Fifth Street, ML GT20B7

Los Angeles, CA 90013

213-244-4130 (O)

949-233-3962 (C)

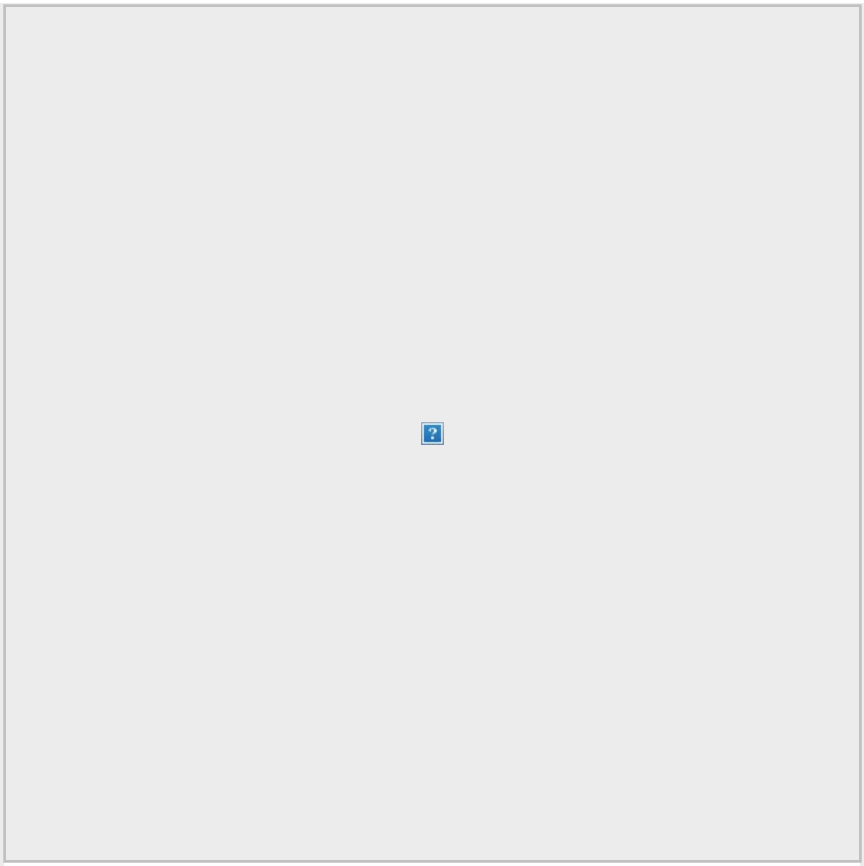
ysshiau@socalgas.com

From: California Energy Commission <listenergia@listserver.energy.ca.gov>
Sent: Friday, September 4, 2020 4:26 PM
To: NATURALGAS@LISTSERVER.ENERGY.CA.GOV
Subject: [EXTERNAL] NATURALGAS-LIST: Advanced Combustion Technologies - Request for Information

*** EXTERNAL EMAIL - Be cautious of attachments, web links, and requests for information ***

California Energy Commission Newsletter Logo

California Energy Commission Newsletter Logo



September 04, 2020

The California Energy Commission (CEC) is gathering information to inform a solicitation for a future solicitation on oxygen-enriched combustion and would appreciate your responses to the following:

1. **The following will help us target our specific research:**
    a. What are major barriers (technical, economical, and other) for wide adoption of oxygen-enriched combustion?
    b. What are examples of research that could eliminate barriers to wide adoption of oxygen-enriched combustion?
    c. What are examples of current or past projects involving oxygen-enriched combustion? What are important lessons learned from these projects?
    d. What California industries could benefit most from oxygen-enriched combustion?
    e. What are technical challenges that could result from higher oxygen content and higher combustion temperature (e.g., increased NOx emissions; accelerated degradation of materials in burners, furnaces, kilns)?
    f. Provide examples of existing projects using centralized oxygen generation, distribution via pipeline networks or other approaches that could benefit from R&D.

2. **The following will help us establish performance metrics and technology status in California:**
    a. Besides cryogenic separation, pressure/temperature swing absorption, ion transport membranes, are there any other promising technologies that should be considered?
    b. For the technologies listed in item 2a:
        i. What is the estimated energy requirement to produce oxygen at the following capacities: 1 metric ton of oxygen per day, 25 metric tons per day, 100 metric tons per day
        ii. What is the estimated capital and operational costs for 1 metric ton per day of oxygen production capacity?
    c. Identify California research teams working on oxygen-enriched combustion.
    d. Identify California companies who develop and sell equipment for oxygen production and oxygen-enriched combustion.

Written comments must be submitted to the Docket Unit by **5:00 p.m. September 24, 2020**.

Written comments, attachments, and associated contact information (e.g., address, phone number, email address) become part of the viewable public record. This information may also become available via any internet search engine.

The CEC encourages use of its electronic commenting system. Please submit your comments to the Docket Unit at https://efiling.energy.ca.gov/Ecomment/Ecomment.aspx?docketnumber=19-ERDD-01. Select or enter a proceeding to be taken to the "Add Comment" page. Enter your contact information and a comment title describing the subject of your comment(s). Comments may be included in the "Comment Text" box or attached in a downloadable, searchable Microsoft® Word (.doc, .docx) or Adobe® Acrobat® (.pdf) file. Maximum file size is 10 MB.

Written comments may also be submitted by email. Include docket number 19-ERDD-01 and "**Advanced Combustion – Request for Information**" in the subject line and send to docket@energy.ca.gov.

For more information:
https://www.energy.ca.gov/publications/displayOneReport_cms.php?pubNum=CEC-500-2019-035
(If link above doesn't work, please copy entire link into your web browser's URL)

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