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Yosemite Clean Energy Biomass-to-Hydrogen

Western Forest Economists

Portland, Oregon
Sept. 29, 2023



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California's Problem

YCE's Solution



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CA forests **destroyed** by wildfires 2016-2022¹

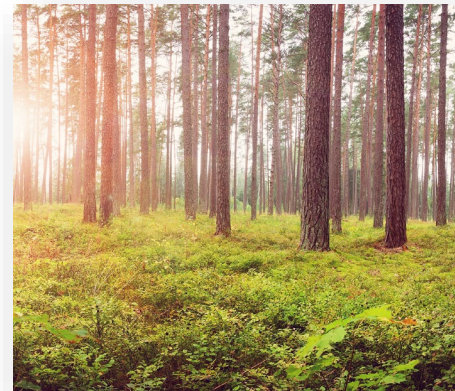
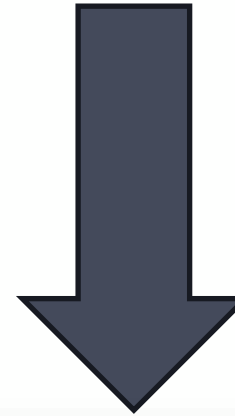
- 11.2+ MM acres burned
- 195+ lives lost
- 51,664+ structures destroyed

CA companies and communities facing **significant liability**

- Utilities mandated to manage forests
- 2MM structures at high or extreme risk,² and homeowners unable to obtain fire insurance
- Government committed to managing 1MM acres/year, or up to 20MM BDT of wood waste

CA orchards currently have **no good options**

- Nut and fruit trees either burned or chipped at EOL
- Particulate matter and pollutants a detriment to air quality
- Chipping, trucking, and added fertilizing costs are a liability for agricultural community



YCE's wildfire, emissions, and ecosystem benefits

- Upcycles 90,000BDT per year per plant, sustainably managing 5,000 forest or ag acres
- Significantly reduces risk of catastrophic wildfire, reducing CO₂ emissions by up to 170,000 tons/year, and particulate emissions by thousands of tons/year³
- Displaces over 100,000 tons CO₂ from transportation industry
- Restores and protects ecosystems and watersheds

YCE's sustainable management plan

- YCE is developing 30 year feedstock analyses and procurement plans for each site
- For plant 1: 70% of feedstock is secured under long-term agreements with JW Bamford Inc. and Old Durham Wood, who are both seed investors. 30% is being negotiated with the local fire safe council
- Source mix will be 70% forest waste, 30% agricultural waste

1. <https://www.fire.ca.gov/incidents/>
2. www.verisk.com/insurance
3. www.arb.ca.gov/resources

Yosemite Clean Energy – Transforming today’s biomass into tomorrow’s green fuels

Company Overview

Yosemite Clean Energy (“YCE” or “Yosemite”) specializes in transforming forest and farm wood waste into carbon-negative hydrogen, providing renewable solutions to California’s energy sectors. Expertise includes:

- Project development / management
- Feedstock Contracting / Management
- Woody biomass to syngas technology

Competitive advantages include:

- Signed long-term feedstock agreements with diversified feedstock
- Exclusive technology license and 20 years of commercial gasification experience
- Site security zoned for projects
- Direct sales and offtakes to end users
- Access to proprietary downstream distribution systems

Team and Partners

Leadership:

YCE has assembled a strong team of staff and consortium partners to successfully execute biomass projects. Yosemite’s team and partners have worked in biomass energy development for many decades, and have strong backgrounds in forestry, agriculture, chemical, civil, electrical, mechanical and process engineering, energy project construction, natural resource economics, banking, social enterprise, energy sales and logistics, business development, and energy and natural resources law.

Partners:

- Primoris – owners engineers and preferred EPC
- Repotec – technology provider
- Hilltop Securities – investment bank
- Kilpatrick Townsend & Stockton – finance law firm
- Gunvor – offtake partner
- California Resources Corporation – sequestration partner

Investment opportunity

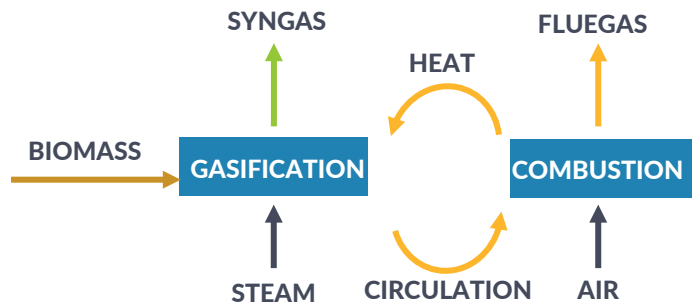


Technology

Technical University Vienna/Austria

Repotec

Dual-Bed Gasifier



Successfully
commercialized in Europe
for over

20 years



Using proven, innovative gasification technology to make

Carbon Negative

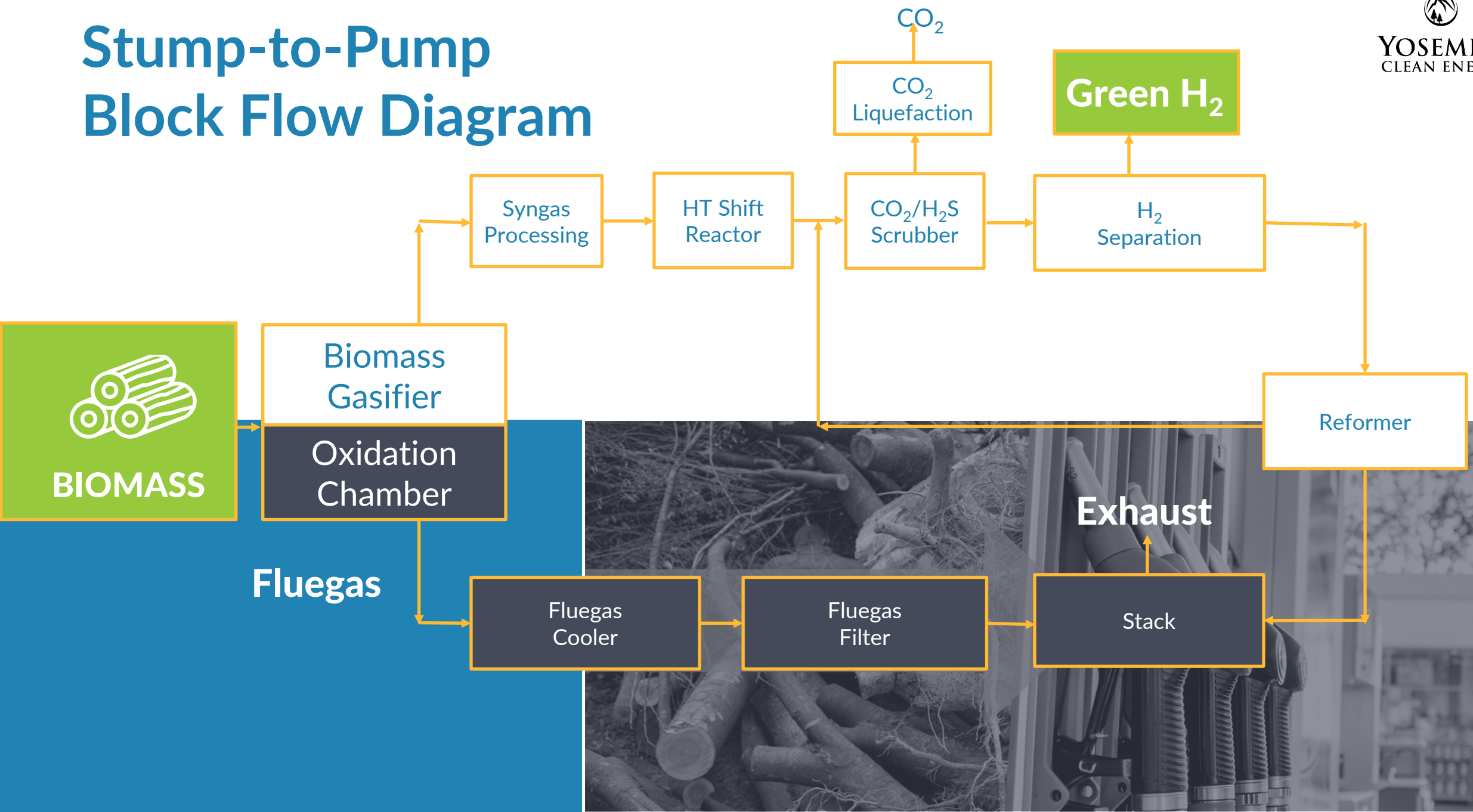
syngas and produce:



Green Hydrogen

- Regional exclusive technology agreement for Repotec's dual-bed gasification technology
- Downstream syngas reformation - licensing Topsoe proprietary technology
- CCS provided by California Resource Corp.
- End-product flexibility for future plants: SAF, Green Diesel, RNG, H2, Electricity

Stump-to-Pump Block Flow Diagram



Gussing Austria First CHP Plant 2002

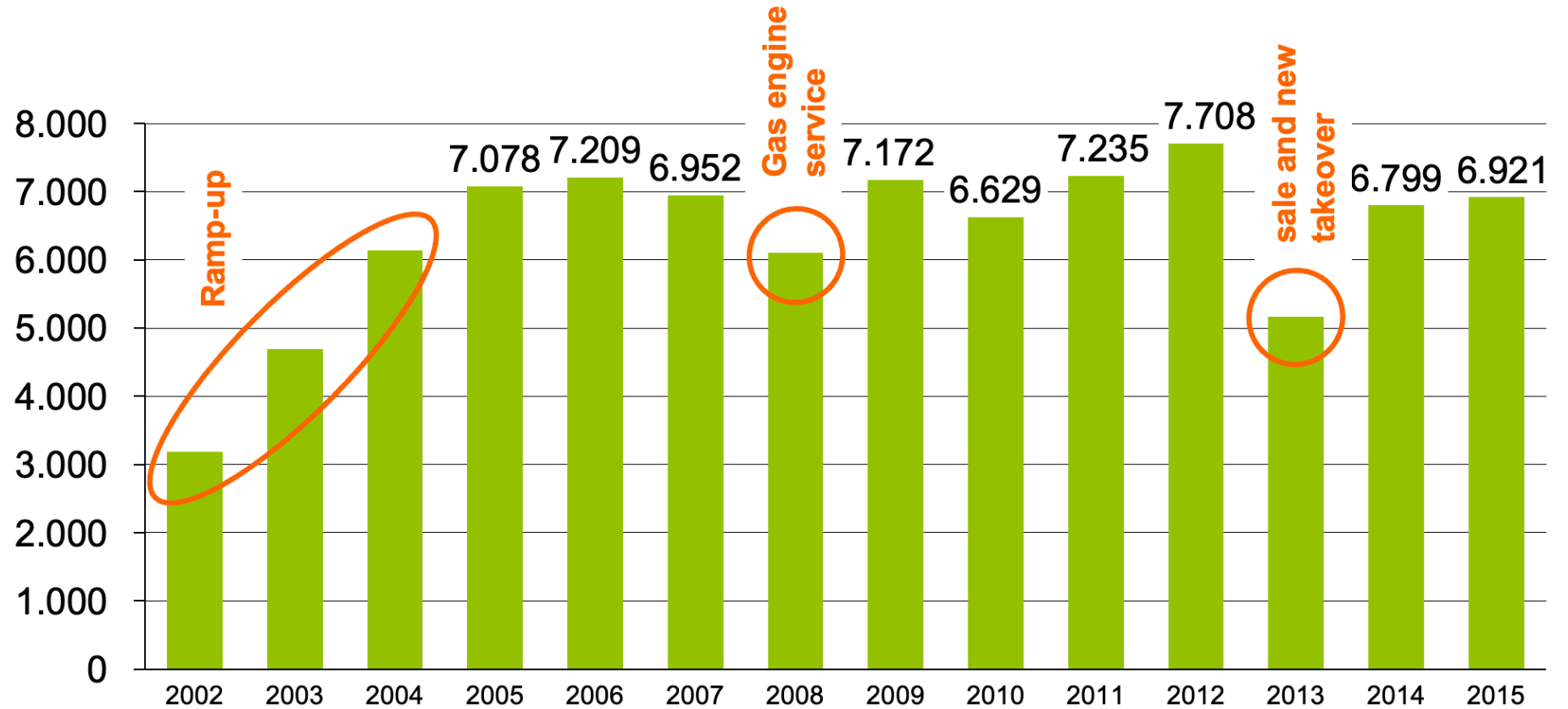


Yearly operating hours of Güssing DFB (1st generation based on woody biomass)



YCE's Target
7000 hr/yr (min)

operating hours / year [h/a]



Repotec -Designed Plants

8 plants globally

2.8 MWe Oberwart, Austria

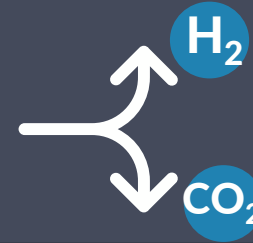
Goteborg, Sweden - SNG



5MWe Senden, Germany



“From Stump to Pump” – YCE’s Process



1. Environmental management operations

2. Wood waste transported to plant

3. Wood waste dried

4. Wood waste gasified (Repotec)

5. Syngas to H₂ (Topsoe)

6. H₂ transported via truck

7. H₂ distributed to end users

1. Forest and agricultural management and operations completed on public and private land: environmental best practices to restore forests, ecosystems, watersheds, and agricultural land
2. Wood waste transported to plant by forest management partners, usually minority owners in the projects
3. Depending on the season, wood waste is dried in an air dryer on site to reduce water content to +/-20 percent
4. Wood chips are gasified in a dual bed gasifier developed by Aichernig Engineering (“Repotec”)
 - *Repotec’s gasifiers are TRL 9 and have over 200,000 hours of commercial run time*
 - *YCE holds an exclusive regional license for Repotec’s technology*
5. High BTU syngas is converted to hydrogen and CO₂ using water gas shift, PSA, and Topsoe tail-gas reformer. CO₂ amine scrubber provided by technical vendor TBD
 - *Amine scrubber and Topsoe’s reformer technology are TRL 9 and commercially available*
6. Hydrogen is compressed to 350 bar, loaded on a tube trailer, and driven directly to fueling sites
7. Trailers dropped and swapped at fueling stations, so as to reduce recompression. Trailers serve as storage for fueling stations, based on best-in-class systems currently in operation



Oroville Project #1. \$250M

Renewable Hydrogen

Location: 65 miles North of Sacramento

Online Date: March 2026

Feedstock: 90,000 BDT woody biomass per year

H₂ Production: 7,000 tons per year

Tuolumne Project #2. \$250M

Renewable Hydrogen

Location: 50 miles East of Stockton

Online Date: September 2026

Feedstock: 90,000 BDT woody biomass per year

H₂ Production: 7,000 tons per year

Visalia Project #3. \$250M

Renewable Hydrogen

Location: 35 miles South of Fresno

Online Date: July 2027

Feedstock: 90,000 BDT woody biomass per year

H₂ Production: 7,000 tons per year



Hydrogen – Midstream and Downstream Systems

H₂ – Panel, loading rack and type IV trailer system

The Transport Module is filled at 350 bar and approx. to max capacity of 450 Kg H₂ per 20' transport module

Each trailer can be filled in roughly 2hrs.





Hydrogen – Midstream and Downstream Systems

Fuel Delivery Rack

Onsite “Drop and Swap” Transport Modules





Downstream Hydrogen Refueling Systems

Municipal Fleet HRS - Layout



Investors and Partnerships



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YCE has received almost all of its seed investment from strategic partners who own or manage biomass on a commercial scale, and has received 5 grants from state and federal agencies

Seed Funding (non-comprehensive):

June 2023: \$5M from CEC

Jan. 2023: \$1M from DOC

Jan. 2023: \$200k from Leslie

Heavy Hauling*

May 2022: \$500k from Cal Fire

May 2022: \$250k from USFS

September 2021: \$1.3M from

Old Durham Wood*

April 2021: \$1.3M from JW

Bamford*

*Feedstock Suppliers

Policy & Advocacy



Funding Partners



Engineering & Technology



Forestry Experts



Local Support



Downstream Partners



Thank You!



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