

WELLONS

Ok, on brûle... et après?

L'utilisation et optimisation des énergies résiduelles des chaufferies à la biomasse

ATELIERS-CONFÉRENCES

SUR LE SÉCHAGE

DU BOIS

24 et 25 avril 2025

Hôtel Le Concorde - Québec



Conseil de
l'industrie
forestière
du Québec



Stéphane Laurin, ing.

Représentant des ventes, Systèmes d'énergie

- **Chez Wellons Canada depuis 2022**
- **35+ années d'expérience en énergie**

SUJETS PRÉSENTÉS

Introduction

Application Typique

Opportunités d'optimisation

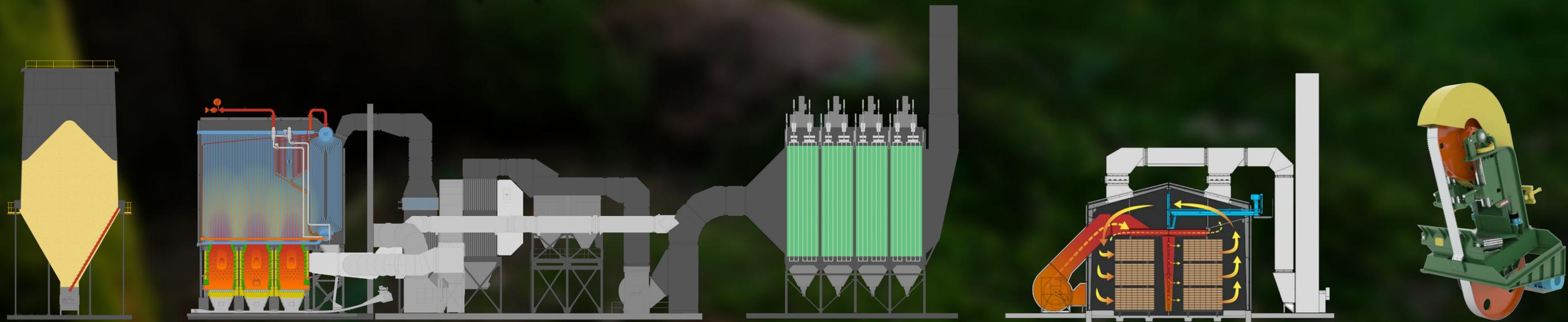
Autres opportunités

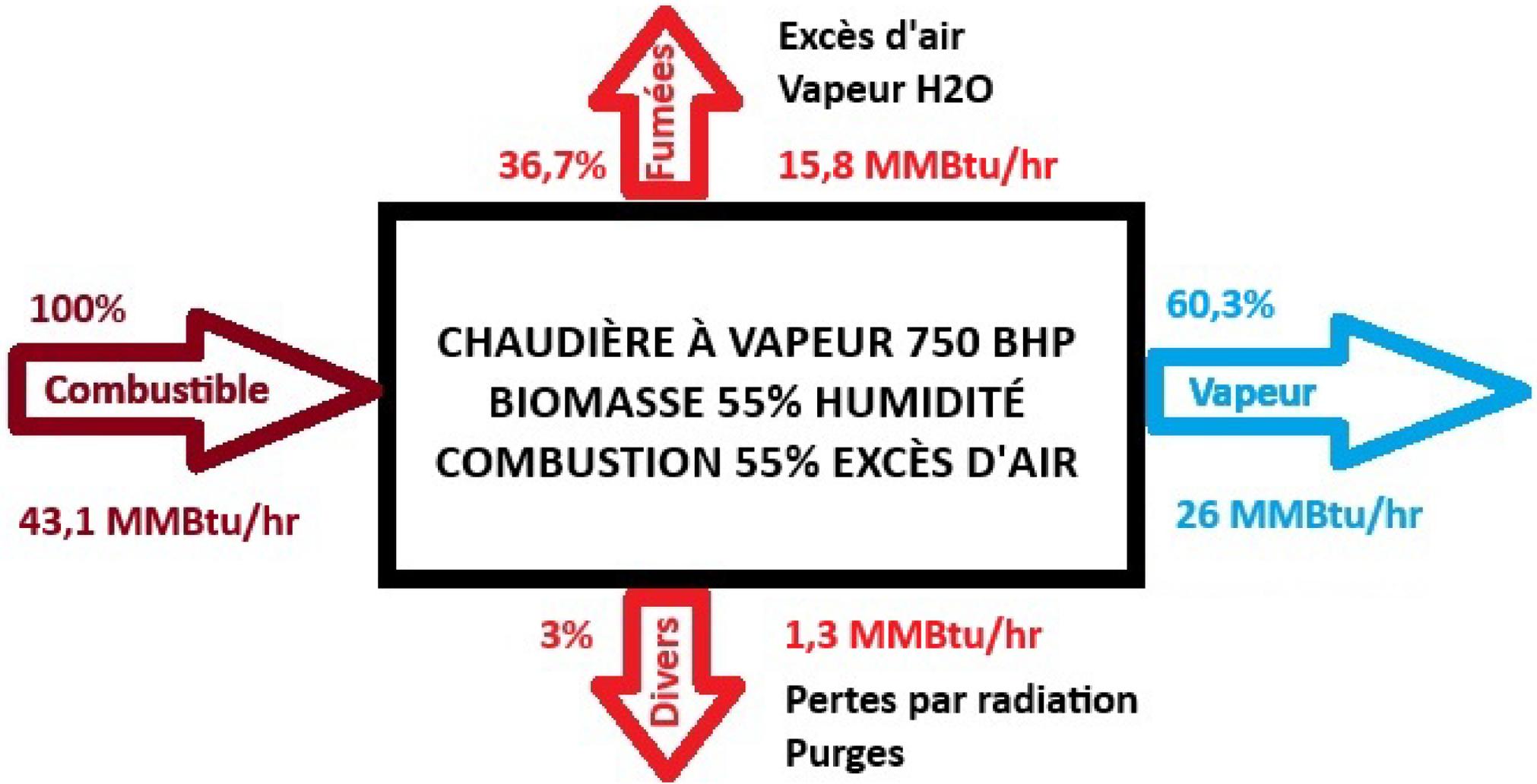
Conclusion



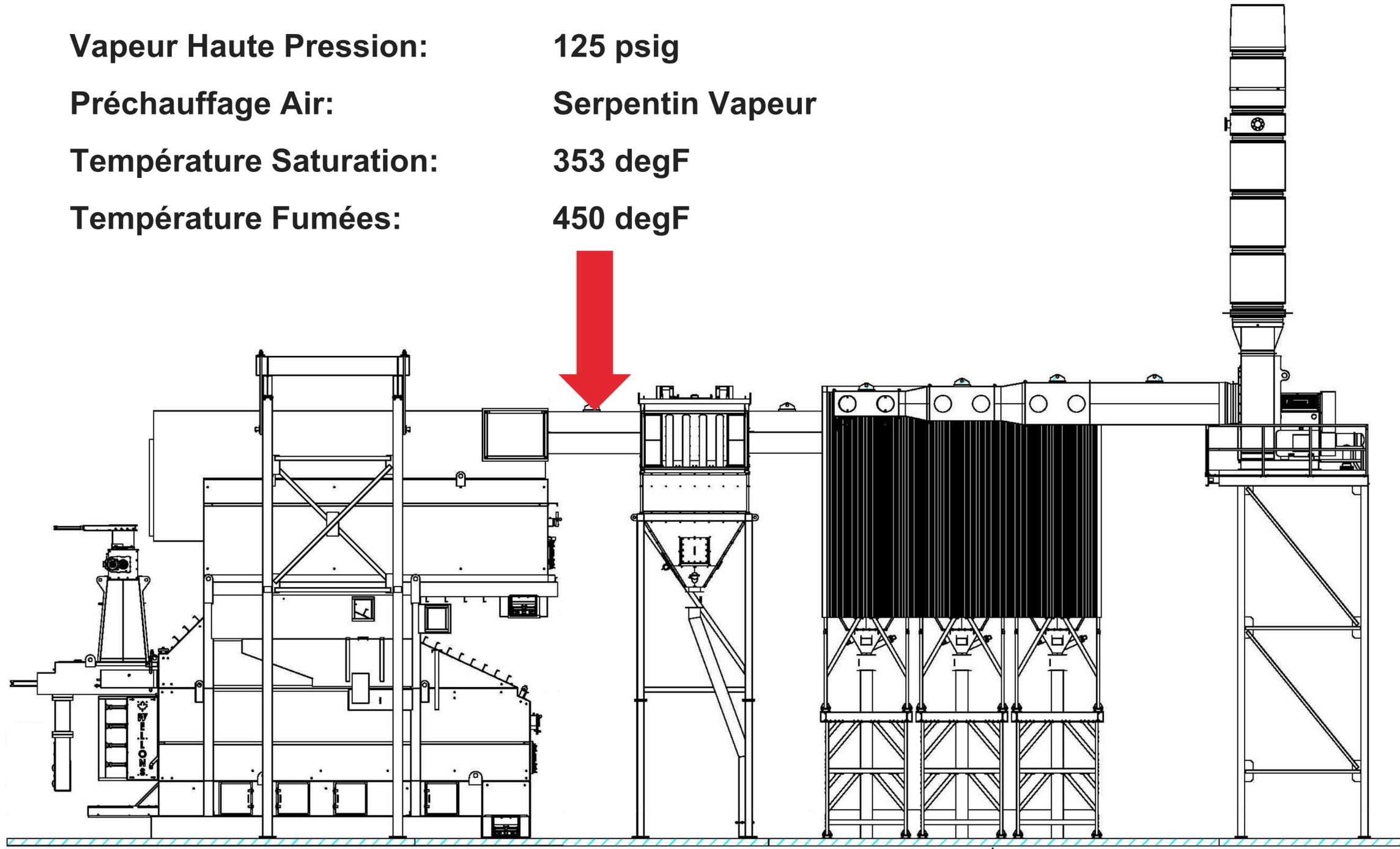
WELLONS

Systemes d'énergie 370+
Projets Cogénération 50+
Systemes Fluide Thermique
40+
Séchoirs à bois 1,500+
Équipements de scierie 7,000+





Vapeur Haute Pression: 125 psig
Préchauffage Air: Serpentin Vapeur
Température Saturation: 353 degF
Température Fumées: 450 degF

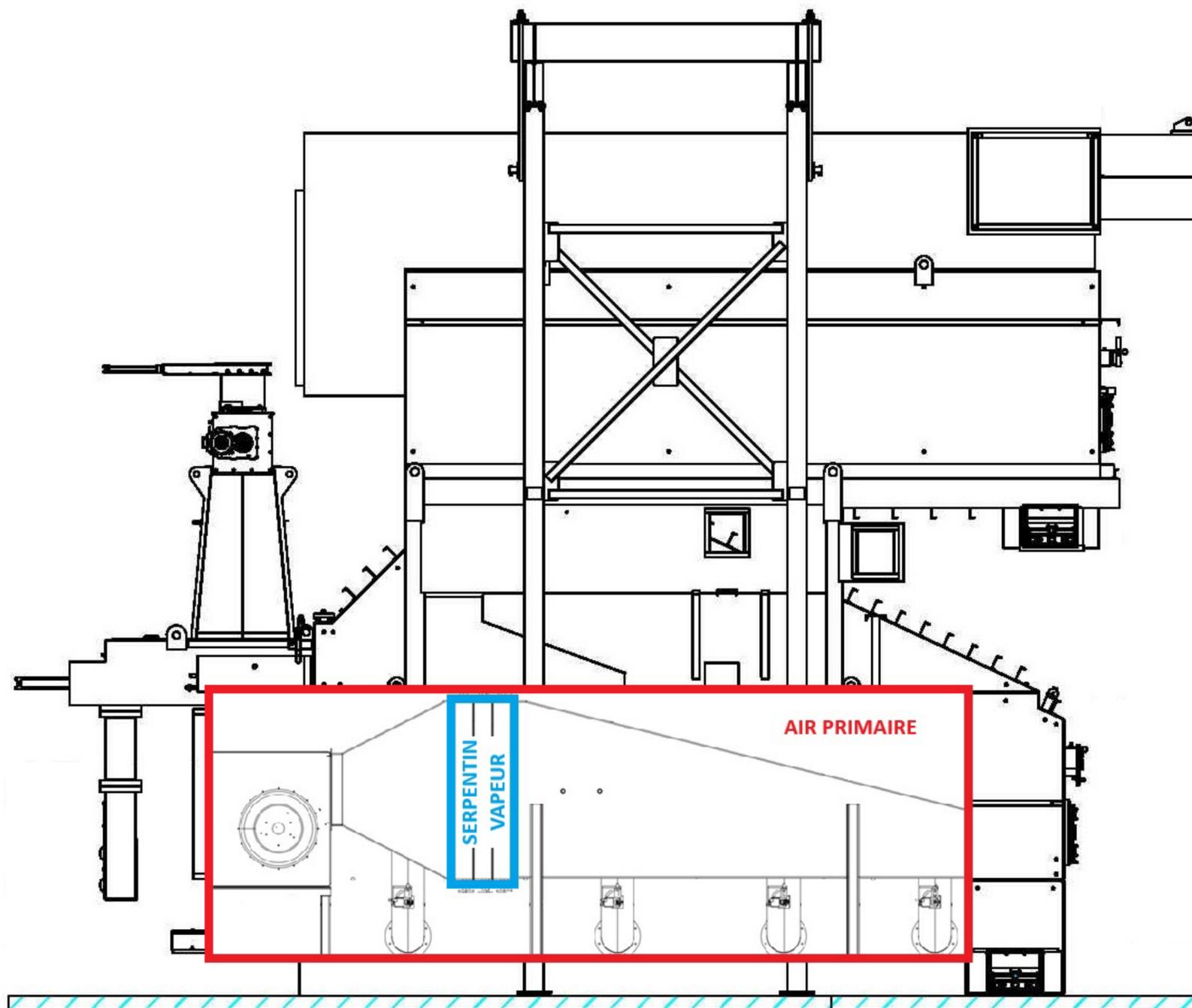


POTENTIEL DE RÉCUPÉRATION

Prémises:

- ▶ Température des gaz à minimum après récupération
- ▶ Risque de corrosion par condensation (soufre dans la biomasse)
- ▶ Opération à charge réduite (efficacité accrue, temp. de fumées plus basses)
- ▶ Approx. 1,5 MMBtu dans les pertes à la cheminée

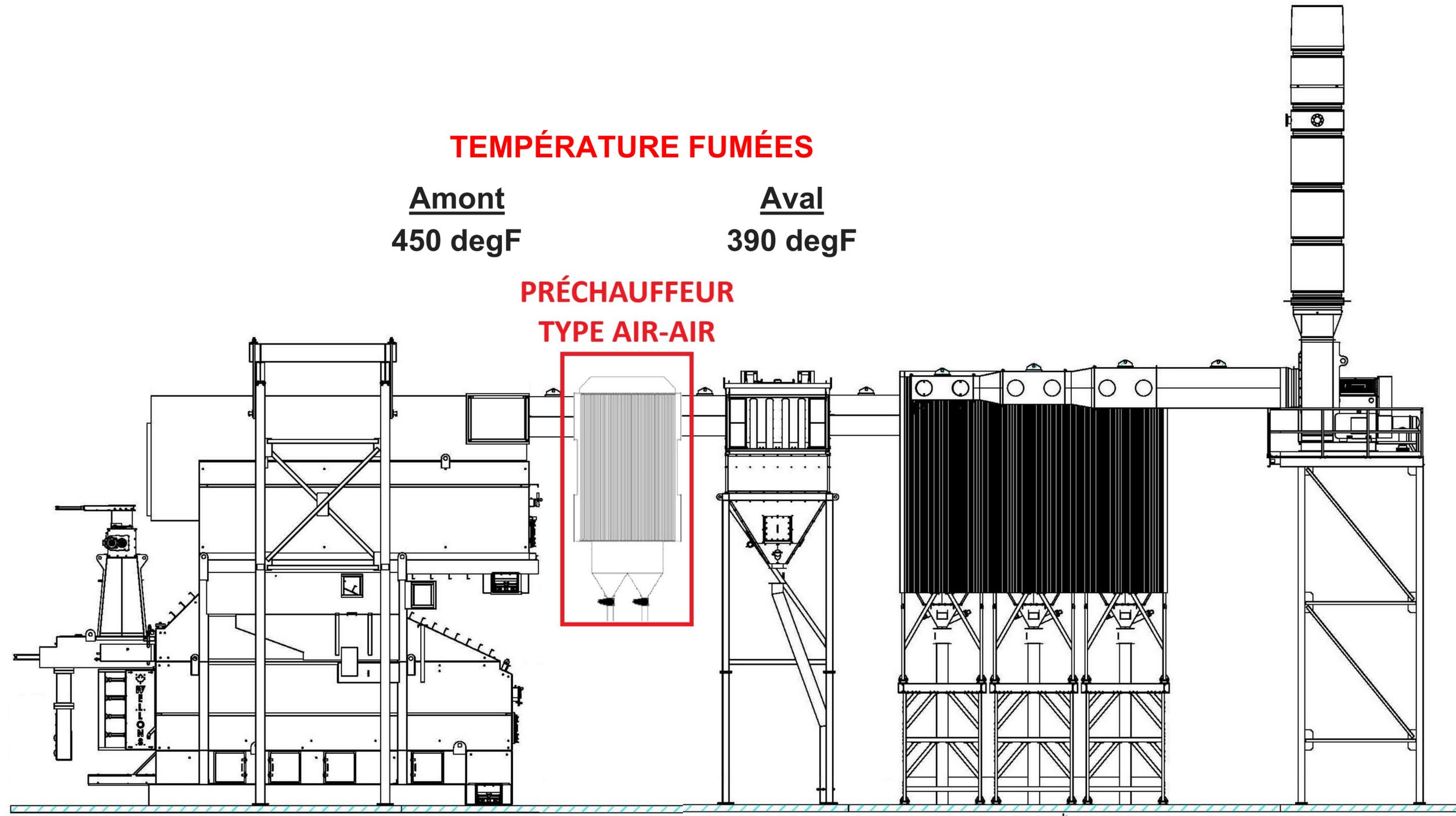
3,5 MMBtu



RAPPEL réchauffage d'air sous grille
ESSENTIEL pour écorces humides

Consommation:

- ▶ Approx. 850,000 Btu/
- ▶ Approx. 9001000 lb/



TEMPÉRATURE FUMÉES

Amont
450 degF

Aval
390 degF

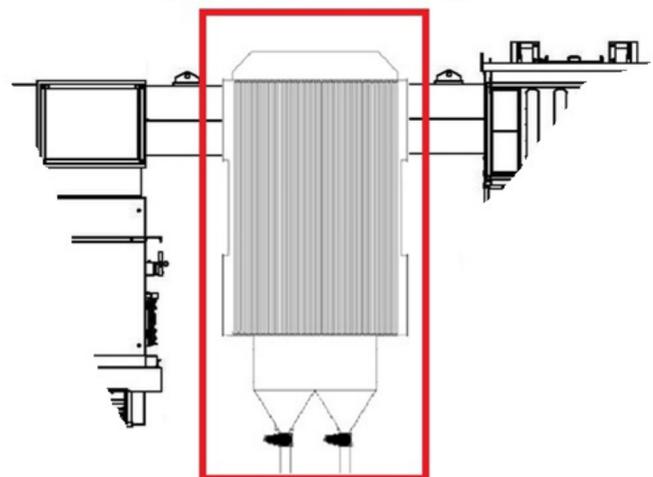
**PRÉCHAUFFEUR
TYPE AIR-AIR**

TEMPÉRATURE FUMÉES

Amont
450 degF

Aval
390 degF

PRÉCHAUFFEUR TYPE AIR-AIR



RAPPEL: réchauffage d'air sous grille ESSENTIEL pour écorces humides

Dimensionnement:

- ▶ Approx. 850,000 Btu (idem au serpentin)

Bénéfices:

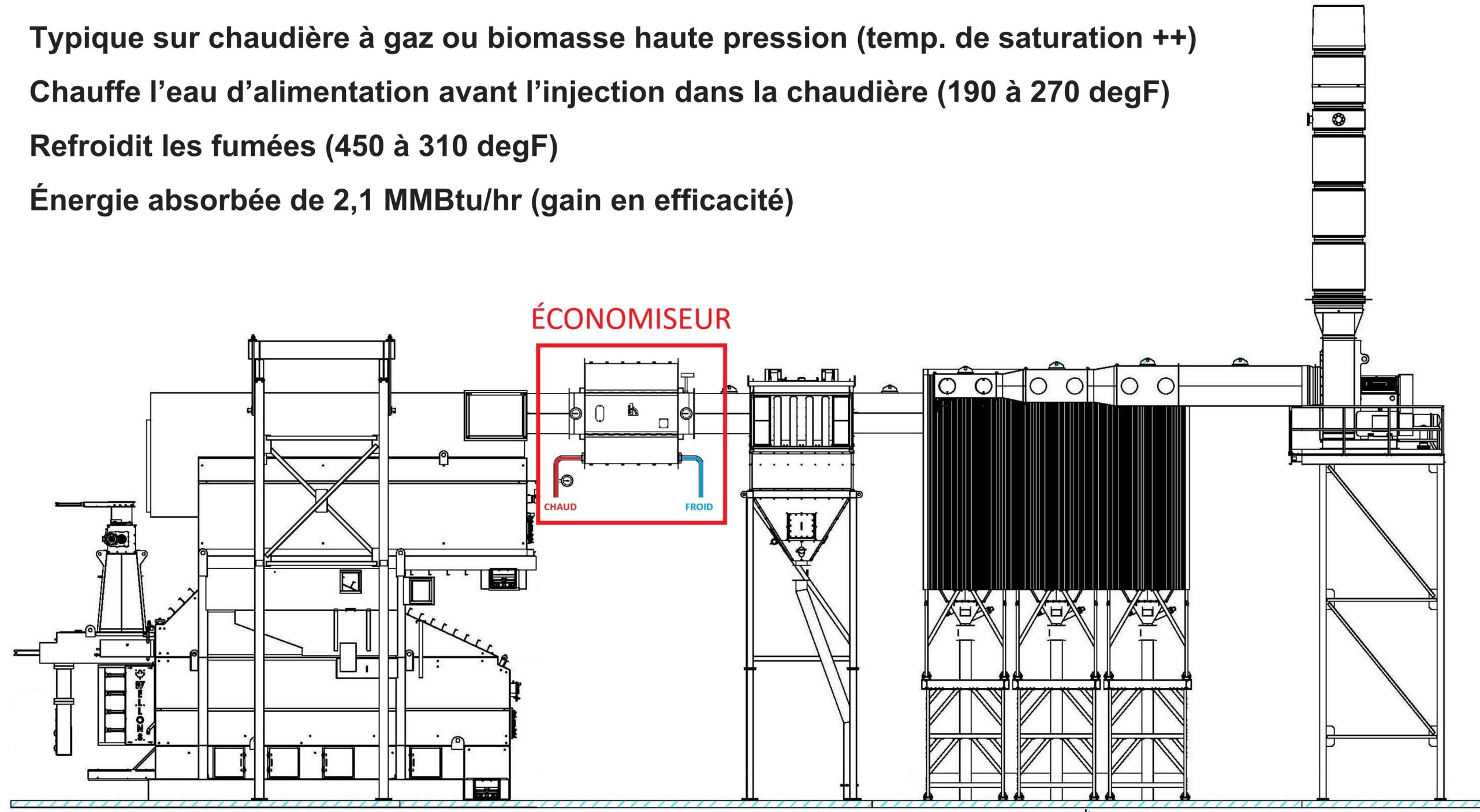
- ▶ Aucune consommation de vapeur
- ▶ Débit de gaz aval plus bas (Aval @ 390 degF)
- ▶ Redimensionnement des équipements (\$\$\$)
- ▶ Baisse de HP au ventilateur de tirage (\$\$\$)

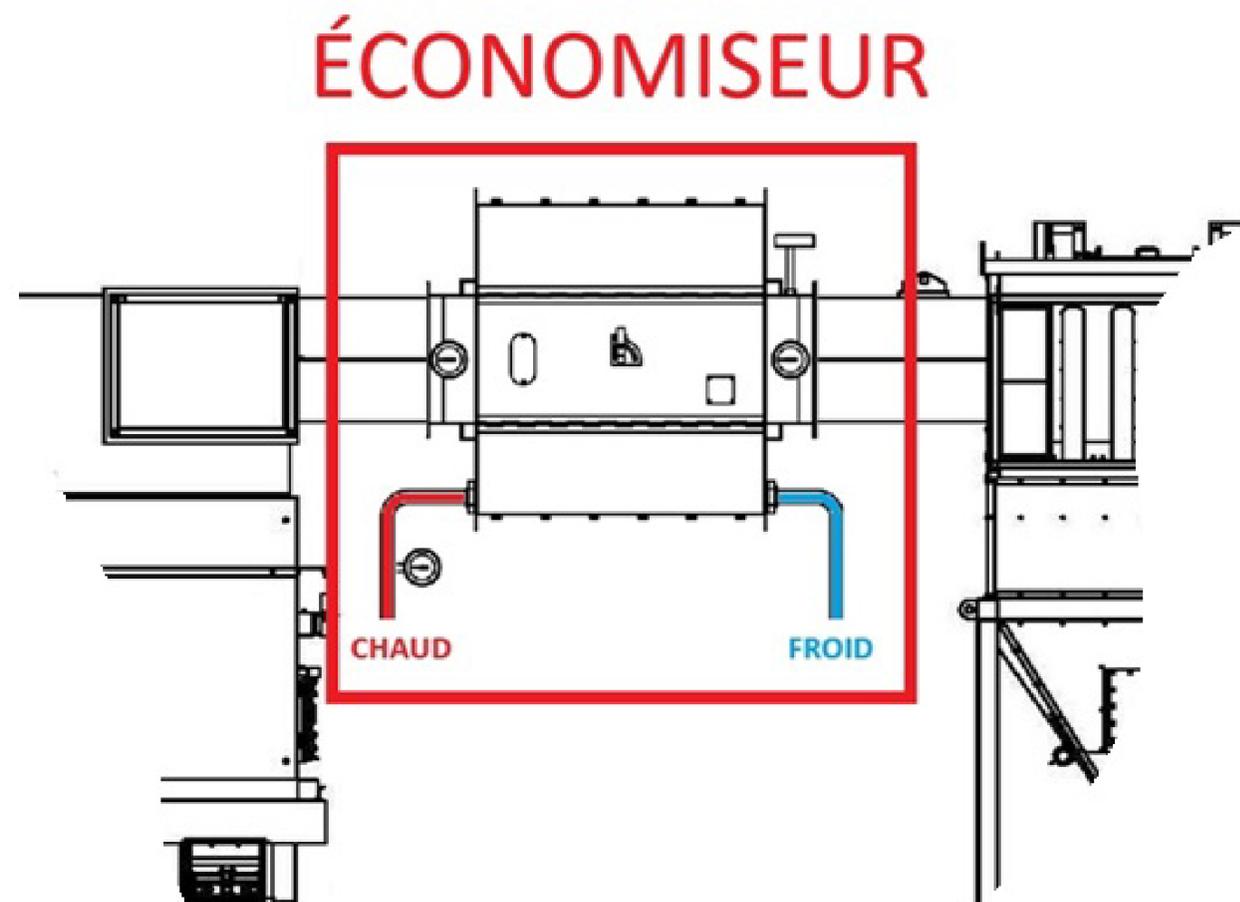
Typique sur chaudière à gaz ou biomasse haute pression (temp. de saturation ++)

Chauffe l'eau d'alimentation avant l'injection dans la chaudière (190 à 270 degF)

Refroidit les fumées (450 à 310 degF)

Énergie absorbée de 2,1 MMBtu/hr (gain en efficacité)





RAPPEL Réduction de température des fumées
AUGMENTATION d'efficacité

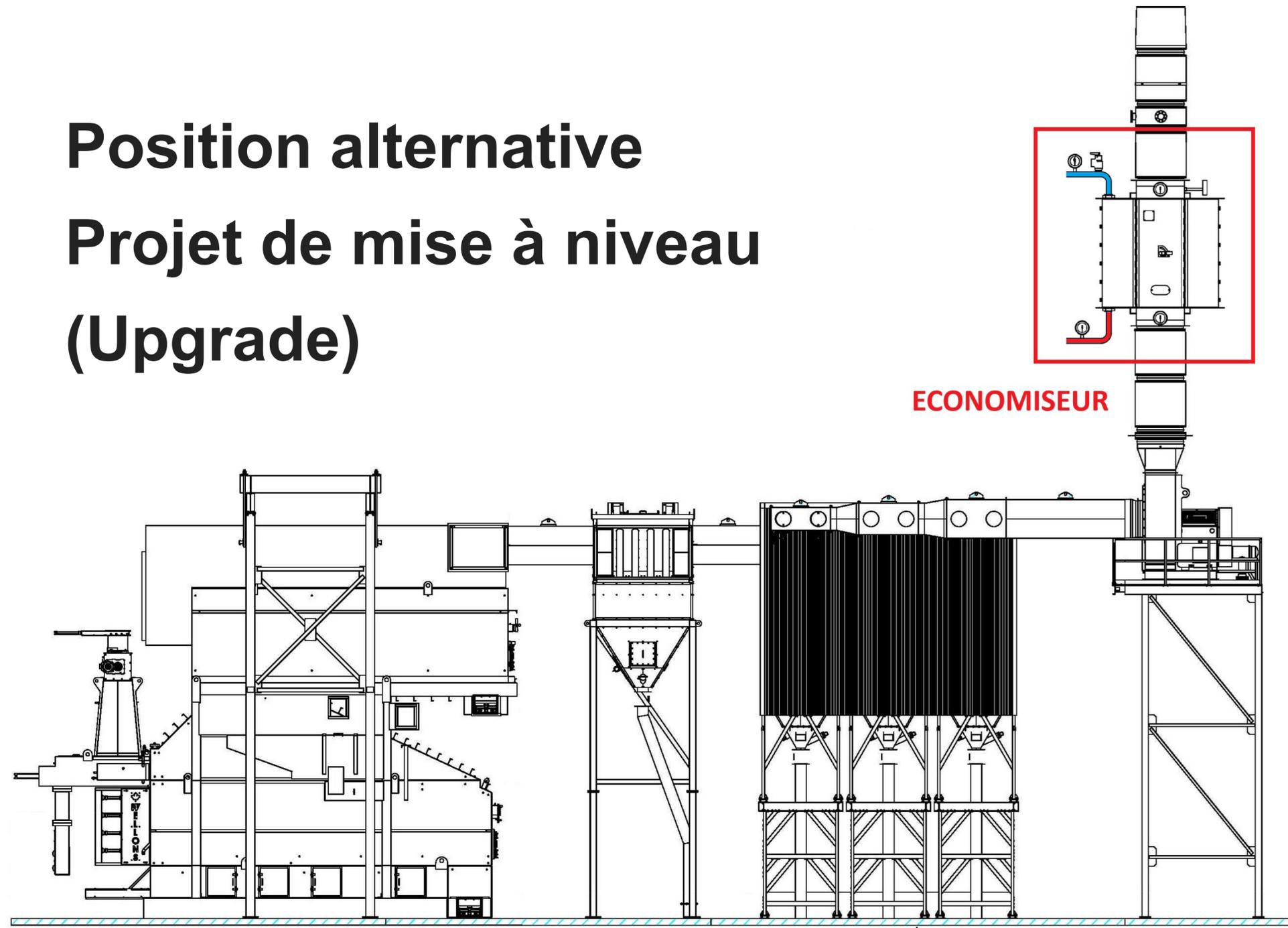
Énergie Absorbée:

- ▶ Approx. 2,100,000 Btu (2,5x le préchauffeur)

Bénéfices:

- ▶ Compense la consommation de vapeur
- ▶ Débit de gaz aval plus bas (AOC @ 300°F)
- ▶ Redimensionnement des équipements
- ▶ Baisse de HP au ventilateur de tirage (30%)

**Position alternative
Projet de mise à niveau
(Upgrade)**



**Mêmes Bénéfices Thermiques
(Énergie Absorbée)**

**Sans Avantages Dimensionnels
(Dépoussiéreur/Ventilateur)**

**Possibilité de combiner (ser
efficacité supérieure (échan
condensation)**

PRÉÉCHAGE DU COMBUSTIBLE (Hypothèse: de 55% à 35% Humidité)

- Technologies de séchoir à bande, rotatif ou à plateaux

AVANTAGES

- Température de combustion plus élevée
- Température sortie chaudière plus élevée
- Réduction des pertes en cheminée (amont séchage)

INCONVENIENTS

- CAPEX élevé
- Implantation difficile (amont de la rés)
- Exigences environnementales incon
- Risque d'incendie accru

PRODUCTION D'ÉNERGIE

- Technologie ORC Basse Température

AVANTAGES

- Ajout de cogénération
- Permet de réduire la charge électrique
- Optimisation en une étape

INCONVENIENTS

- CAPEX élevé
- Implantation difficile (plusieurs équipements)
- Capacités limitées
- Prix de revient élevé (subvention requise)

CHAUFFAGE COMMERCIAL (SERRES, ETC...)

- Production Eau Chaude

AVANTAGES

- Récupération d'énergie aisée
- Optimisation en une étape

INCONVENIENTS

- Avez-vous des voisins????



MERCI

Stéphane Laurin, ing.

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stephane.laurin@wellons.ca

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24 et 25 avril 2025

Hôtel Le Concorde - Québec



Conseil de
l'industrie
forestière
du Québec

▶ Depuis 1964

▶ Plus de 300 employés

▶ Bureaux de ventes et ingénierie

- Vancouver, WA, USA
- Sherwood, OR, USA
- Atlanta, GA, USA
- Surrey, BC, Canada
- Ste-Julie, QC, Canada
- Victoriaville, QC, Canada
- Te Horo, New Zealand

▶ Projets et Services

- Études préliminaires
- Ingénierie et conception
- Achats et fabrication
- Installation mécanique / électrique
- Assistance technique
- Formation
- Service et entretien
- Pièces de rechange

▶ Acquisitions

- Salton Fabrication (Wellons Canada)
- Énergie FEI (Wellons Canada)
- Salem Equipment, Inc.
- Rogue Pro (Wellons RPI)
- McBurney Personnel (Wellons Power Group)
- Séchoir MEC (Wellons Canada)





Wellons

Siège Corporatif, Vancouver WA, USA



Wellons Canada

Siège Canadien, Surrey, BC Canada



Wellons Canada
Sainte-Julie, QC



Séchoir MEC
Victoriaville, QC

Wellons Canada
Surrey, BC
Biomass & Gas Fired Thermal Energy
Systems and Drying Systems

Wellons Canada
Sainte-Julie, QC
Biomass & Gas Energy Systems

Séchoirs MEC
Victoriaville, QC
Drying Systems

Salem Equipment, Inc.
Sherwood, OR
Supplier of Sawmill Equipment

Wellons RPI
Grants Pass, OR
Refractory Installation Specialists
and Mechanical Repairs

Wellons Energy Solutions
High Point, NC
Biomass Steam & Co-Gen Projects
(Build, Own & Operate)

Wellons Sales Office
Pittsburg, PA and Columbia, SC

Wellons Power Group
Atlanta, GA
Biomass Energy Systems

Australasia
Te Horo, New Zealand
Sales & Engineering





Vancouver, WA



Surrey, BC



Sherwood, OR



Grants Pass, OR

CERTIFICATE OF AUTHORIZATION



The named company (ASME) for the scope of activity shown below in accordance with the applicable rules of the ASME Boiler and Pressure Vessel Code. The use of the ASME Certification Mark and the authority granted by this Certificate of Authorization are subject to the provisions of the agreement set forth in the application. Any construction stamped with the ASME Certification Mark shall have been built strictly in accordance with the provisions of the ASME Boiler and Pressure Vessel Code.

COMPANY: _____

SCOPE: **Heating boilers ex**

AUTHORIZED: _____

EXPIRES: _____

CERTIFICATE NUMBER: _____

The American Society of Mechanical Engineers



CERTIFICATE OF AUTHORIZATION



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COMPANY: _____

SCOPE: **Manufacture an**

AUTHORIZED: _____

EXPIRES: _____

CERTIFICATE NUMBER: _____

The American Society of Mechanical Engineers



CERTIFICATE OF AUTHORIZATION



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COMPANY: _____

SCOPE: **Manufacture of pi
by the above loca**

AUTHORIZED: _____

EXPIRES: _____

CERTIFICATE NUMBER: _____

The American Society of Mechanical Engineers



CERTIFICATE OF AUTHORIZATION



The named company is authorized by the American Society of Mechanical Engineers (ASME) for the scope of activity shown below in accordance with the applicable rules of the ASME Boiler and Pressure Vessel Code. The use of the ASME Certification Mark and the authority granted by this Certificate of Authorization are subject to the provisions of the agreement set forth in the application. Any construction stamped with the ASME Certification Mark shall have been built strictly in accordance with the provisions of the ASME Boiler and Pressure Vessel Code.

COMPANY: **Wellons, Inc.
Sherwood Manufacturing Facility
14440 S.W. Tualatin - Sherwood Road
Sherwood, Oregon 97140
United States**

SCOPE: **Manufacture and assembly of power boilers at the above location and field sites controlled by the above location**

AUTHORIZED: **September 12, 2020**

EXPIRES: **September 12, 2023**

CERTIFICATE NUMBER: **19692**

David E. Tuttle
Board Chair, Conformity Assessment

Paul Clary
Managing Director, Conformity Assessment

The American Society of Mechanical Engineers



CERTIFICATE OF AUTHORIZATION



THE NATIONAL BOARD OF BOILER & PRESSURE VESSEL INSPECTORS

This is to certify that

**Wellons Power Group
3305 Breckinridge Blvd.
Ste 102
Duluth, Georgia 30096
United States**

Acceptable Abbreviation: WPG

is authorized to use the R Symbol in accordance with the provisions of the National Board Inspection Code and NB-415, Accreditation of "R" Repair Organizations.

All activities within the scope of this Authorization shall be controlled by the above location.

The scope of this Authorization is limited to:

Metallic
Repairs and Alterations
At
Shop and Field Locations

Certification Number: 10599

Issue Date: September 14, 2020

Expiration Date: July 30, 2023

Executive Director: *John Christ*



CERTIFICATE OF AUTHORIZATION



THE NATIONAL BOARD OF BOILER & PRESSURE VESSEL INSPECTORS

to certify that

**Wellons, Inc.
Sherwood Manufacturing Facility
14440 S.W. Tualatin-Sherwood Road
Sherwood, Oregon 97140**

is authorized to apply the "NB" mark and register boilers, vessels or other pressure retaining items with the Board.

The scope of this Authorization is limited to items manufactured at the above location.

The use of the R Symbol in accordance with the National Board Inspection Code and NB-415, Accreditation of "R" Repair Organizations.

All activities within the scope of this Authorization shall be controlled by the above location.

The scope of this Authorization is limited to:

Metallic
Repairs and Alterations
At
Shop and Field Locations

Certification Number: 3583

Issue Date: June 29, 2020

Expiration Date: September 12, 2023

Executive Director: *John Christ*

CERTIFICATE OF AUTHORIZATION to Register



THE NATIONAL BOARD OF BOILER & PRESSURE VESSEL INSPECTORS

to certify that

**Wellons, Inc.
Sherwood Manufacturing Facility
14440 S.W. Tualatin-Sherwood Road
Sherwood, Oregon 97140**

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At
Shop and Field Locations

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Issue Date: June 29, 2020

Expiration Date: September 12, 2023

Executive Director: *John Christ*

Systèmes d'énergie à biomasse

- Centrales thermiques
- Production d'électricité



Systèmes de séchage de bois

- En continu
- Par lot conventionnel
- Chargement frontal



Systèmes d'alimentation

- Silos de stockage
- Réserve plancher mobile
- Convoyeurs



Filtre Electrostatique



Études Préliminaires (FEED)

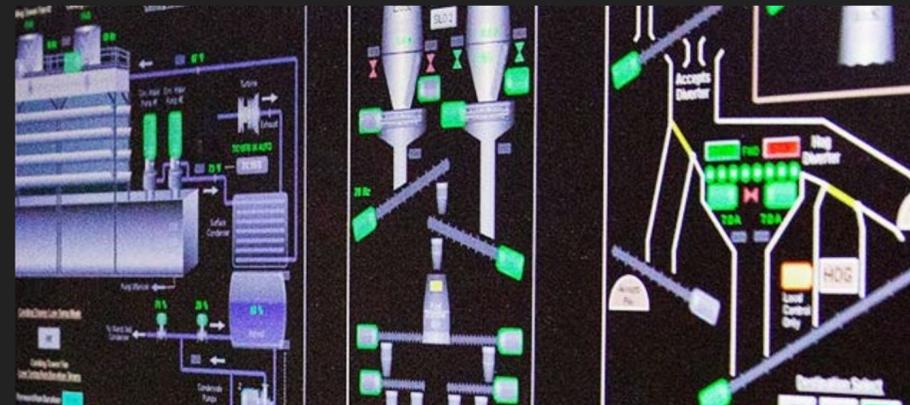
- Analyses de combustibles
- Tests de combustion
- Schémas de procédé
- Dessins d'arrangements
- Schémas P&ID
- Schémas électriques
- Estimés préliminaires

Ingénierie et Conception

- Systèmes d'alimentation
- Systèmes de combustion
- Chaudières
- Auxiliaires mécaniques
- Tuyauteries
- Structures et bâtiments
- Systèmes de contrôle et E&I

Ingénierie-Achats-Construction (EPC)

- Gestion de projet
- Approvisionnements et logistique
- Échéancier de projet et suivi
- Contrôle de qualité ASME
- Surveillance de chantier
- Mise en service et formation





MERCI

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