The Biorefinery of Pomacle Bazancourt Reims, France

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The BRI platform Biorefinery Research & Innovation

Jean-Marie Chauvet, PhD
ARD is Owned by a Large Consortium of French Agrobusinesses

53.20 % SICLAE
An industrial and financial agro-business player with significant expertise in processing and valorizing plant products (consolidated turnover: 1 638 M€). Belongs to Vivescia (one of the leading European grain producers stemming from the merging between Champagne Céréales and nouricia), EMC2, other shareholders (Champagne Coligny, Coopérative Agricole de Sézanne…), FSI, Unigrains, Crédit Agricole du nord Est, Subsidiaries: Malteurop, Nutrixo, Kalizea, Chamtor, Nestal, Inéos-Champlor, LMT-Oléagineux

17.82 % Cristal Union
Sugar & ethanol producer from sugar beets (turnover €1,5 Bn€). Trademark: Daddy Sucre

14.59 % Crédit Agricole du Nord Est

7.92 % Chamtor
Wheat refiner, subsidiary of SICLAE. Produces starch, glucose, gluten, wheat bran, etc…

4.18 % LRD
Union of alfalfa producers

1.35 % CRD
Union of cereals cooperatives

0.94 % Unigrains
ARD is a Private Mutualised Research & Development Centre

Who we are

- ARD is a private mutualised R&D centre in the field of biotechnology and bio-based chemistry

What we do

- We develop innovative processes to produce chemicals derived from biomass

What we stand for

- We add value to agricultural products via R&D and we introduce new outlets for the agricultural economy.
- We develop innovative and competitive products and processes that are sustainable and ecologically sound alternatives to petrochemicals.
- We focus on bio-refinery concepts that are designed to process all plant fractions to valuable products.
- We capitalize on synergies among various crops for discovery of innovative molecules.
- We actively promote utilization of bio-based resources in industrial applications and more generally in the economy and the society.
ARD’s Activities are Focused on Biorefinery Management

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ARD offers an Open Biotech Platform for Process Scale-up

- With all necessary DSP equipment (filtration, ion exchange, electrodialysis, evaporator, crystalliser, centrifuges, etc…)
- ARD scaled-up several technologies: Eladium™ (exo-polysaccharide), biolygel, hyaluronic acid, dihydroxyacetone, bioethanol, sophorose lipids, 5-ceto-gluconic acid, succinic acid…
- ARD’s partners can benefit from this platform for their own process scale-up
A leading company in the field of bio-based chemistry since 1989:

- Almost 100 employees in its facility, among which 70 are directly involved in R&D
- ARD budget : 11 Mn €
- Investment budget : 500 000€

Investment development not included
ARD is an Historical Member of The World Class Competitiveness Cluster Industry And Agro-Ressources

The goal of the IAR cluster is to structure the agro-industrial value chain around non-food applications of biomass

- Located mainly in Champagne-Ardenne and Picardie regions
- 20 industrial corporations and 38 SMEs representing more than €17Bn in sales
- A leading R&D network: 4 universities, 2 graduate schools, 2 INRA centers, demonstration platforms.
- Sustainability and biorefineries are the key words for IAR.
The development of the biorefineries is fully integrated in the “new bioeconomy” as defined in the USA as well as in Europe.

For Europe, it is one of the top priorities of its strategy for 2020 and for Horizon 2020*.

It represents a important opportunity for rural development .

The challenges are global, but the local contexts will be determinant.

The Biorefinery of Bazancourt-Pomacle is located 15 km north of Reims, in the middle of a vast agricultural area that counts among the most productive in Europe...

...in the perimeter of the competitiveness cluster Industrie et Agroressources.

On this site, 2 « ecosystems » coexist: One is industrial and the other one is dedicated to research and innovation.
This Biorefinery is one of Most Integrated Existing Biorefineries

- **Chamtor**
  Wheat processing

- **BioDémo (ARD)**
  Industrial demonstration plant

- **Cristal Union**
  Sugar beet refinery

- **Procéthol 2G**
  FUTUROL Project
  2nd generation ethanol production

- **ARD**
  Mutualised research center

- **Cristanol**
  1st generation ethanol production

- **Soliance**
  Actives and ingredients for cosmetics
Within this Site a lot of Synergies have already been established...
On Site 2 Types of « Ecosystems » can be identified...

... An industrial complex...
On Site 2 Types of « Ecosystems » can be identified…

… & an Innovation Platform (BRI)
The Innovation Platform
BRI
Bioraffinerie Recherches & Innovations
BRI: an Open Innovation Platform built around ARD

**Biorefinery Research and Innovation**

- Teaching & academic research
- Applied research
- Technopole
- Lobbying

Foundation:
- Cristal Union, Cristanol, Champagne Céréales, Siclaé, Chamtor, ARD

With the financial support from:
BRI: a Platform dedicated to sugars and fermentation...

- Starch and sucrose
- Cellulose and hemicelluloses
- Fermentable sugars (« Building blocks »)
- Ethanol

Synthetic Biology
Biodémo: a Demo Plant owned by ARD

An investment of € 21 million funded with € 16 million in private funds and up to € 5 million from public funds
Coming soon: a New Building for welcoming Academic Partners

In connection with

BRI-PLATFORM
Artistic view of the innovation platform BRI

Plate-forme B.R.I. – mars 2010
FUTUROL: a Major Project near BRI

This project focused on ethanol 2G is carried on by a consortium of 11 partners gathered in a company so-called: Procéthol 2G
Industrial Synergies
Industrial Synergies: the main players

- CRISTANOL Ethanol plant
- A.R.D. Research center & Soliance Cosmetic
- CHAMTOR Wheat refinery
- Cristal Union Sugarbeet refinery
Water synergy

50 000 m³ of water coming from the sugar production sent to CHAMTOR during the campaign.

Benefit: less withdrawing into the groundwater and energy saving
Steam Synergy

**Cristal Union**

**CRISTANOL**

**CHAMTOR**

**Mutual help**

**benefit**: reliability of industrial tools
Effluent Synergy

Water treatment – Storage – Spreading

Benefit: Global management of the agronomic approach

CHAMTOR

CRISTANOL

Cristal Union

Soliance & A.R.D.
Product Synergy

Ethanol production from different sources of substrates locally produced.

Wheat/sugarbeet coproducts

- Wheat
- Sugarbeet
- CHAMTOR Amidonnerie-Glucoserie
- Cristal Union Sucrerie de Bazancourt
- Site de la distillerie CRISTANOL
Project of Combined Heat & Power Plant from Biomass:

Benefit:
• whole plant valorization
• 100,000 t of CO2 avoided
• substitution of fossil energy
Cooperative research programs between the different shareholders of ARD.
Succinic Acid Production in BioDémo for BioAmber: the future is now!

Sugar Refinery

OUTPUT: Sucrose

Wheat Refiner

OUTPUT: Glucose

Ethanol Plant

OUTPUT: CO₂

Succinic Acid Plant

BioDémo

ARD
Thank you for your attention

www.a-r-d.fr