Development of an acidic shape-selective mineral catalyst added pelletised fuel from organic wastes (ASMICAF)

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BIO-ENERGY
ENLARGED PERSPECTIVES

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The CRAFT Consortium

TECCON INNOVATION

Coordination; Intelligent Control Technology (D)

TRADEBE

Waste Management (E)

RELUX Recycling & Umwelttechnik

Waste Management (D)

PYROMEX ECO-TECHNOLOGY IN ACTION

HT Pyrolysis (UK)

SME

BSMA

Process Control (F)

RTD

IBiS

Research, Environmental Engineering (D)

inasmet Fundación

Research, Chemical
and Environmental Engineering (E)

Essence of ASMICAF

- Solid Secondary Fuel from organic waste (Pellets)
- Solution for hard to treat organic wastes
- Inertisation of Halogenides and Heavy metals during production and use of the pellets
- Additives for tar prevention during pyrolysis
- Production of Energy from waste, electrical energy, heat and/or hydrogen
- Conservation of fossil fuels
- Economically feasable even on smaller scales
- Unleachable Residues can be used for construction purposes

Whats in?

Waste Fractions

- Non Recyclable Industrial Waste
- Light shredder fraction from Car-recycling
- Sewage sludges
- Municipal Solid Waste
- Loaded Activated coal or other adsorbents

Additives

- Lime
- Coal
- Catalysts
- Adsorbents

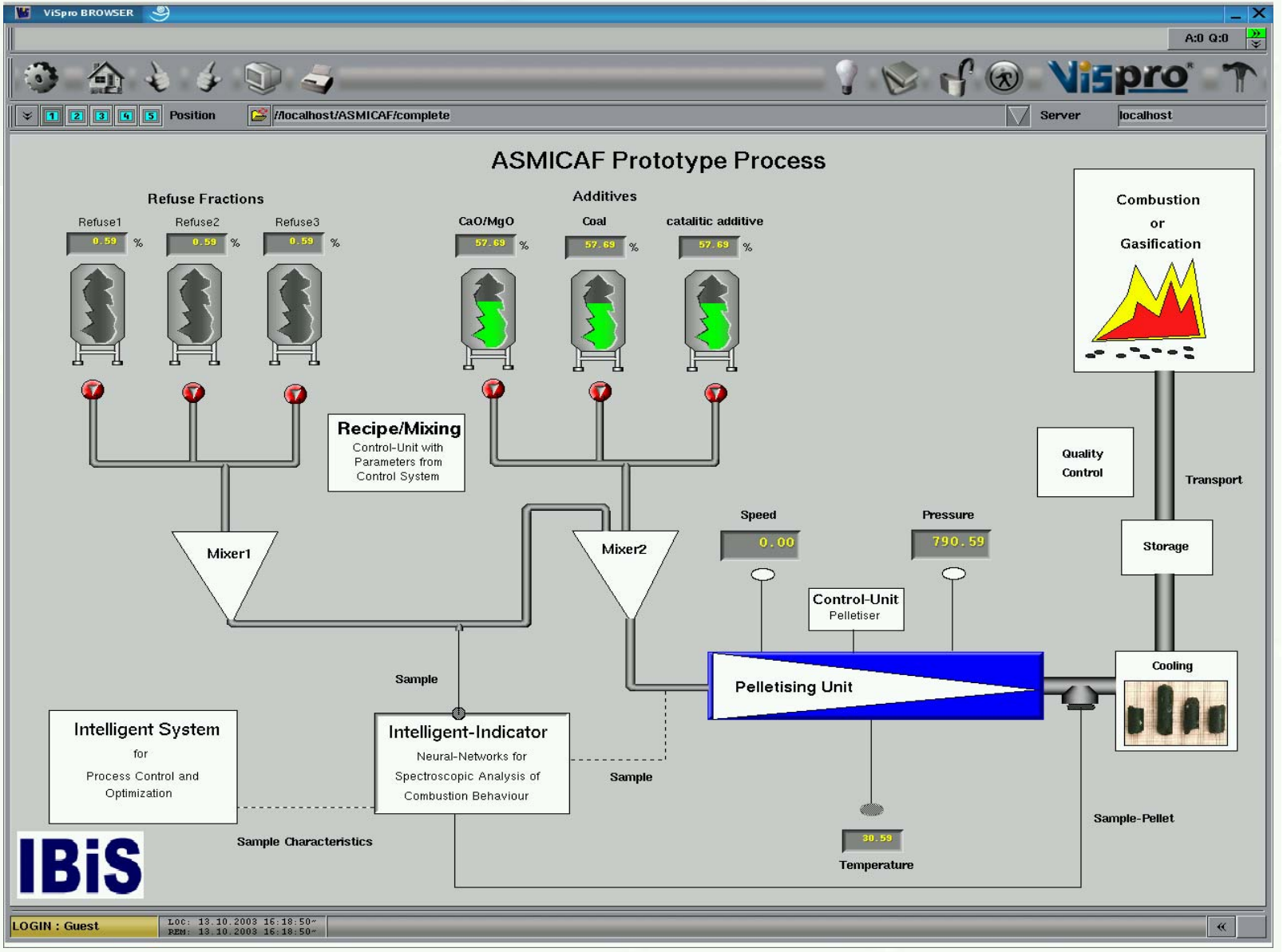
+

High Pressure Pelletising

=

Process steps

- Mixing of the composition based on a computer controlled adaptive recipe generation
- Pressing of a solid fuel (pellet) under special conditions
- Storing for settling of chemical reactions
- Combustion or High Temperature Pyrolysis
- Steam and electricity generation or Gas Motor with cogeneration of heat and power
- Almost no emissions in the flue gas and the residues can be used for construction works


ViSpro BROWSER
A:0 Q:0
Vispro
Position
//localhost/ASMICAF/complete
Server
localhost
ASMICAF Prototype Process
Refuse Fractions
Refuse1
Refuse2
Refuse3
0.59 %
0.59 %
0.59 %
Additives
CaO/MgO
Coal
catalitic additive
57.69 %
57.69 %
57.69 %
Combustion
or
Gasification
Recipe/Mixing
Control-Unit with
Parameters from
Control System
Quality
Control
Transport
Mixer1
Mixer2
Speed
0.00
Pressure
790.59
Storage
Control-Unit
Pelletiser
Sample
Pelletising Unit
Cooling
Intelligent System
for
Process Control and
Optimization
Intelligent-Indicator
Neural-Networks for
Spectroscopic Analysis of
Combustion Behaviour
Sample
Sample-Pellet
Sample Characteristics
30.59
Temperature
IBiS
LOGIN : Guest
LOC: 13.10.2003 16:18:50
REM: 13.10.2003 16:18:50

Adaptive Intelligent Process Control

- Adaptive recipe adjustment on changing refuse fractions
- Based on Spectroscopic information
- Quality assurance of the product
- Process Monitoring
- Use of available sensorics

Economics

- Only low cost additives are used
- Profitable even on small scale (22.400 t/a)
- Profit from Waste acceptance
- Profit from sale of electrical energy
- Profit from sale of heat energy
- Profit from possible generation of Hydrogen in the future
- Possible selling of the residues as construction material
- Low costs for Flue-Gas cleaning
- New governmental regulations that forbid EU-wide disposal of untreated wastes, will boost the European market

Conclusion

- ASMICAF provides Clean Energy out of solid fuel from organic wastes
- Is economical profitable even on smaller scales
- Conserves fossil fuels
- Can adjust its recipes to changing refuse fractions
- Has an Hydrogen option for the future