

OLIVE OIL PROCESSING COURSE

modern



olives



OLIVE OIL PROCESSING COURSE

**Solid - Liquid Phase
Separation**





Extraction efficiency

Very good efficiency: >90.0%

Benchmark efficiency: >85.0%

Unacceptable: <70.0%



Extraction efficiency

$$E.E. = 1 - (\text{Oil pomace} * (100 - \text{Oil fruit})) / (\text{Oil fruit} * (100 - \text{Oil pomace}))$$

Or

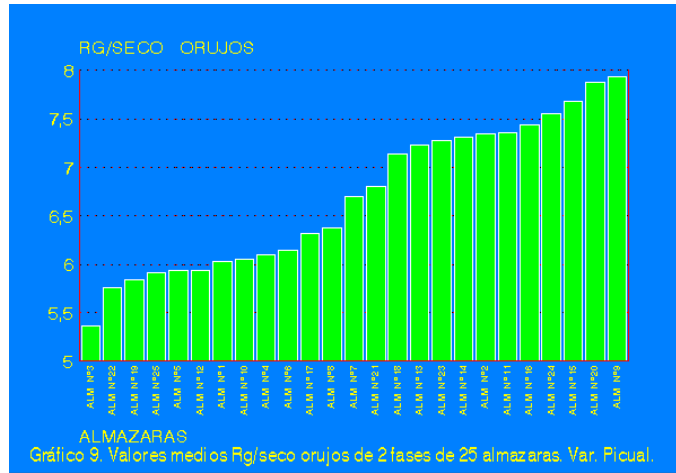
< 8.0% oil/dry matter in the pomace

With 50% moisture fruit = 3.0% oil/fresh in pomace

With 60% moisture fruit = 2.0% oil/fresh in pomace

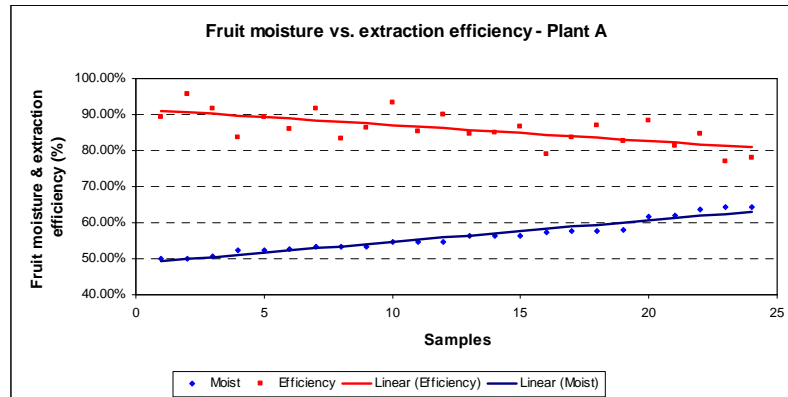


Extraction efficiency

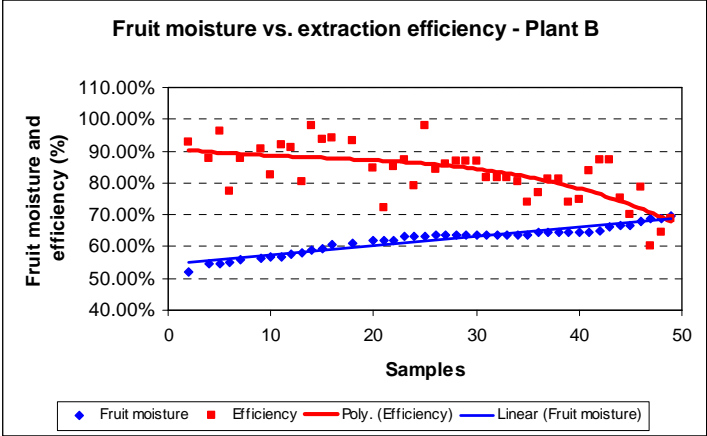


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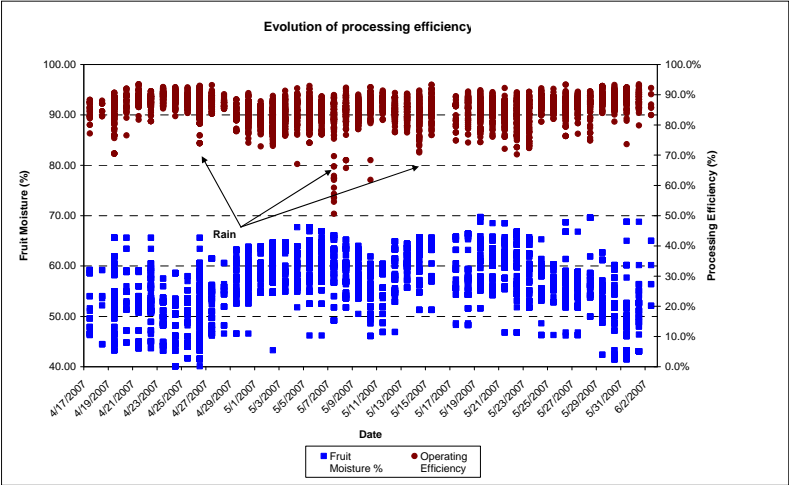
Fruit and moisture levels



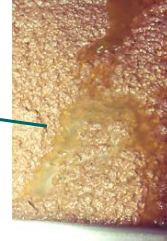
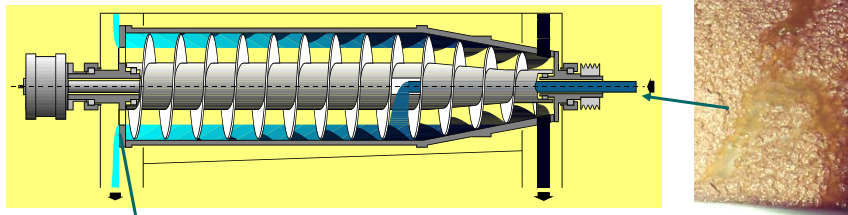
Fruit and soil moisture



Processing

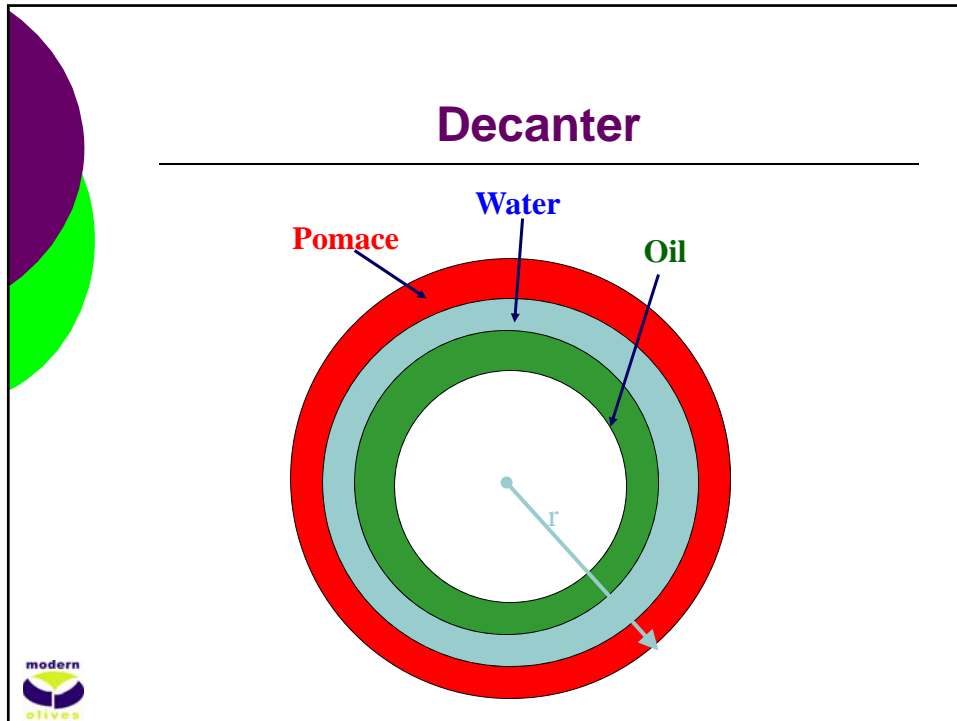


Decanter



Decanter





-
- Decanter**
- Capacity.
 - Efficiency.
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- The diagram illustrates the cross-section of a decanter. It consists of three concentric layers. The outermost layer is red and labeled 'Pomace'. The middle layer is light blue and labeled 'Water'. The innermost layer is green and labeled 'Oil'. A radius line, labeled 'r', extends from the center of the decanter to the inner boundary of the oil layer. The decanter is shown as a circular cross-section with a central white area.

Capacity of the Decanter

- Viscosity (Temperature).
- Length.
- Diameter.
- Differential between screw and bowl.
- Particle size (Crushing).



Capacity of the Decanter

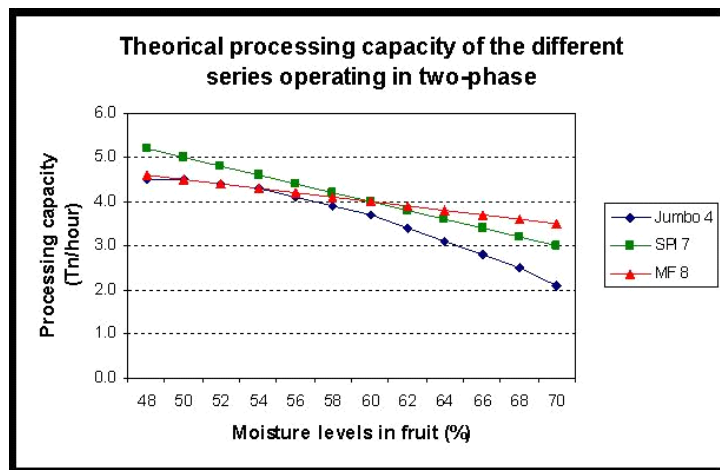


Efficiency of the Decanter

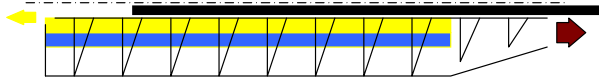
- Density difference between phases (Talc – Water - Crushing).
- Speed of rotation.
- Size of phases (Decanter plates).
- Separation time (Pumping speed).



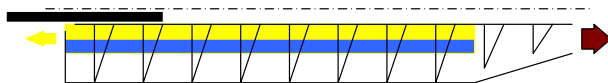
Capacity vs. Equipment



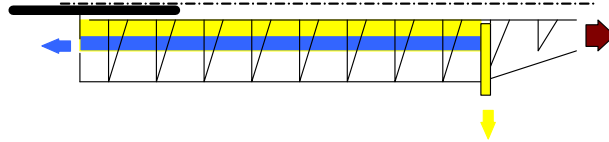
Capacity vs. Equipment



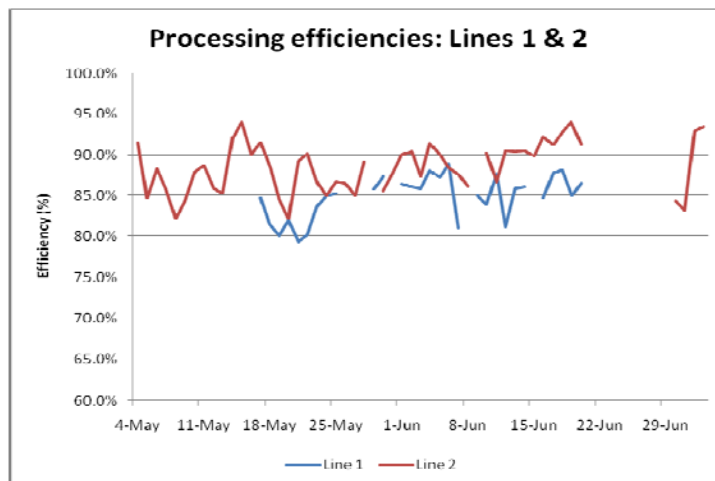
Capacity vs. Equipment

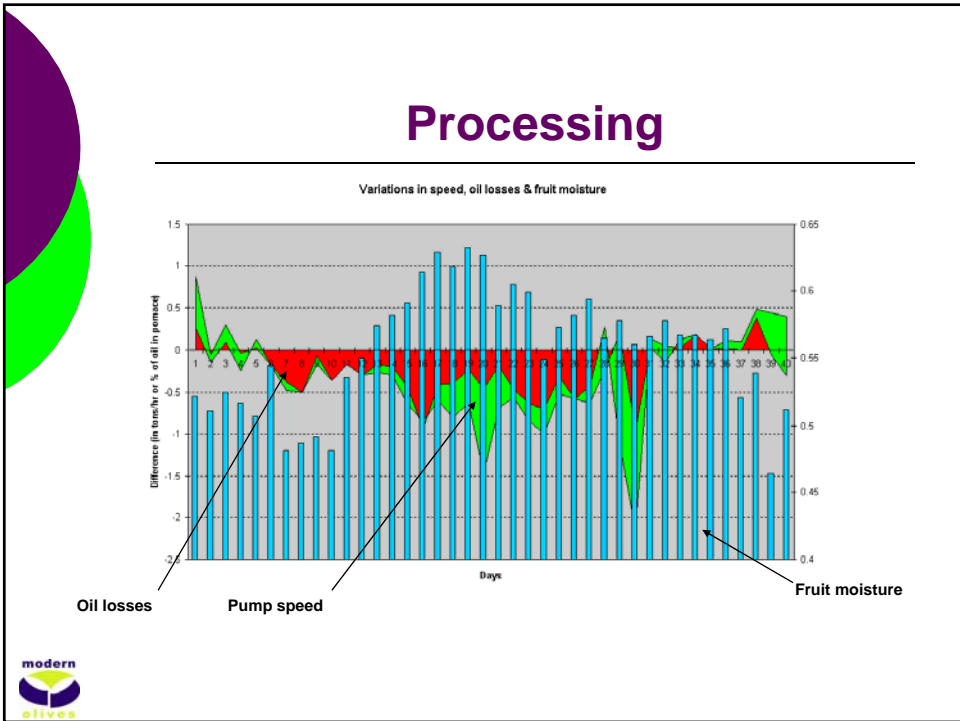
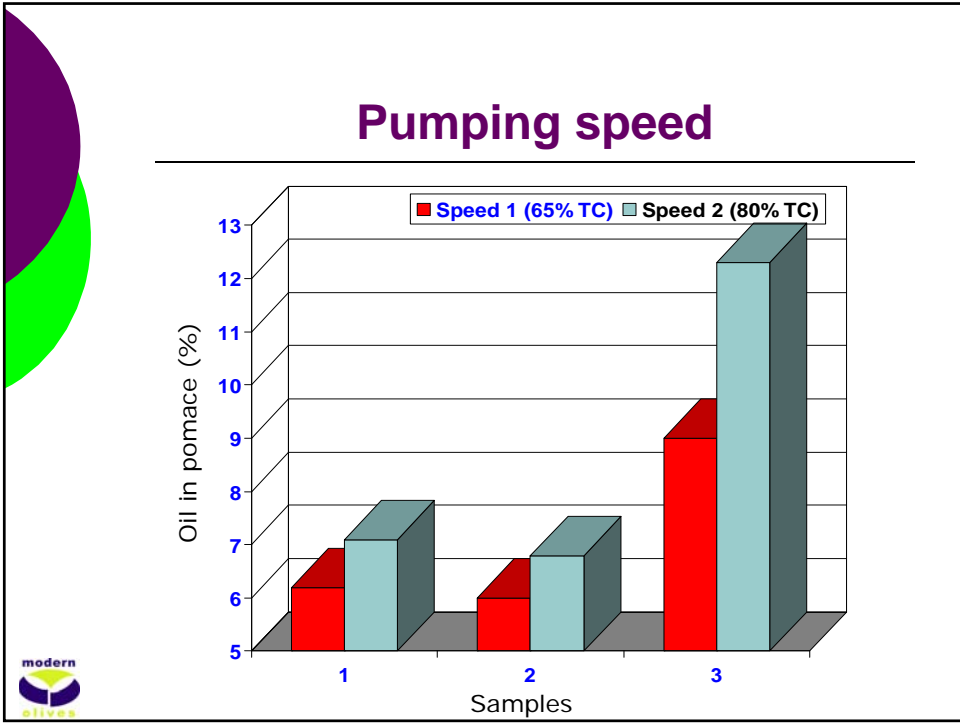


Capacity vs. Equipment



Capacity vs. Equipment



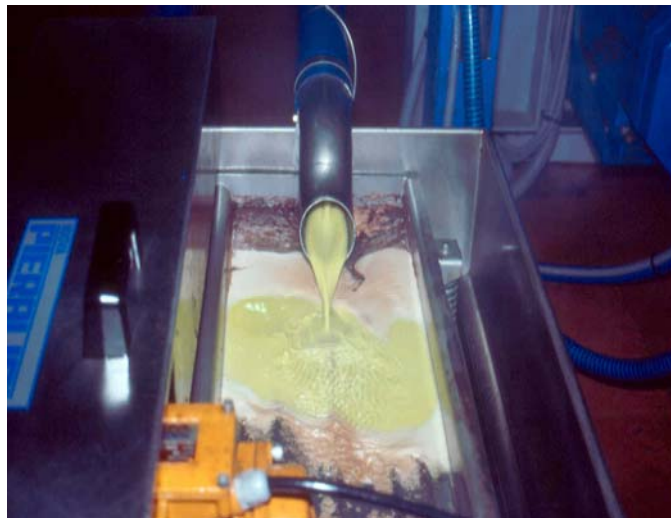


Pumping speed

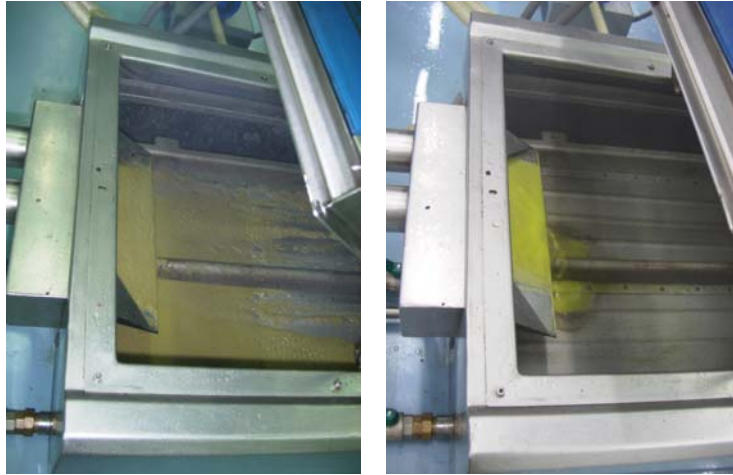
- How do I know if I am pumping too fast?
 - Oil losses above limit.
 - Oil comes out dirty (Not always).
- How do I know if I am pumping too slow?
 - No problems apart from increased costs.
 - Do not go under 40% NC of the Decanter.



Pumping speed



Pumping speed



Decanter plates



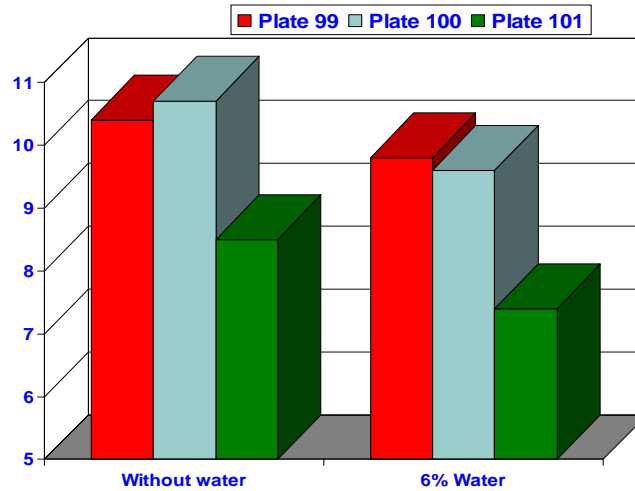
Decanter plates



Decanter plates



Decanter plates



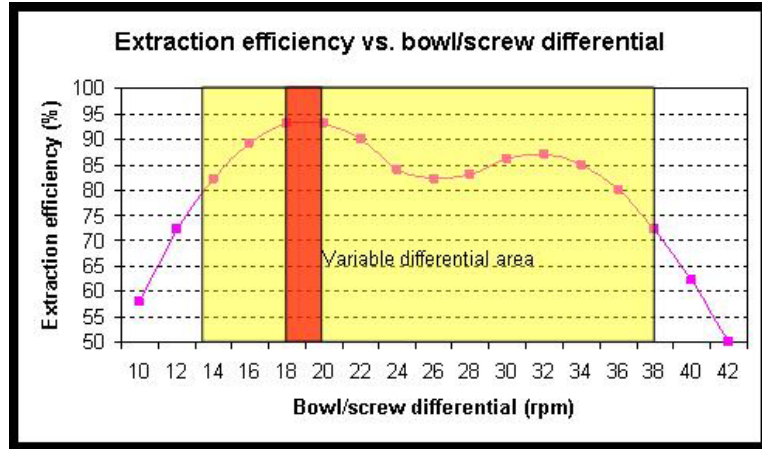
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Decanter plates

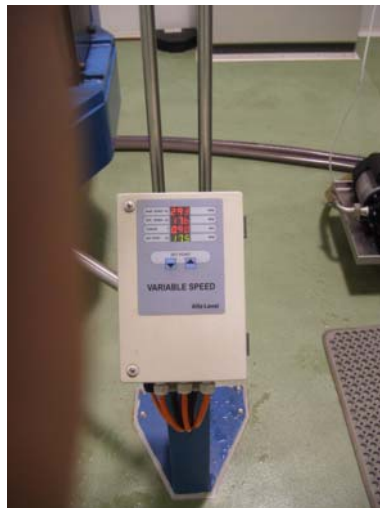
- How do I know when to change the plate?
 - Once you have tried everything else and the oil still comes out very dirty and with very low Decanter capacity. Put an smaller plate.
 - Or if there is too much oil in the decanter. Stop the feeding pump into decanter, flush it with water and the amount of oil that is obtained should not exceed 1.5 % of the TC of the decanter. E.g.: 5 tn/hr should not produce more than 50-75 litres. Put a larger plate.



Differential speed



Differential speed



Processing



Fruit Processing Chart

Grid size	Paste		Coadjuvants		Oil			Pomace		Final
	T°	Speed	Talc	Enzymes	T°	Flow	Acidity	Oil	Moisture	Tank



Processing

Especificaciones técnicas

6



Válvula motorizada y caudalímetro.



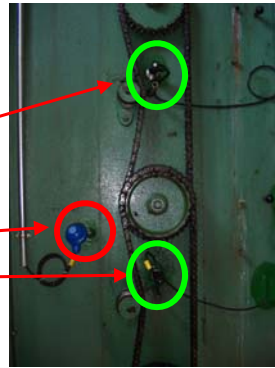
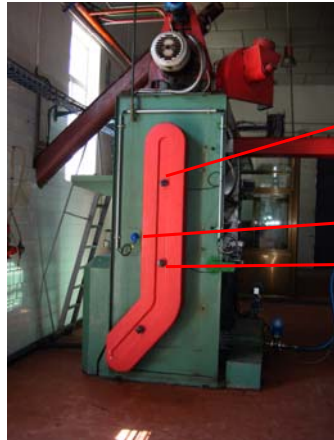
Equipo para pesado del aceite.



Módulo control humedad y riqueza grasa orujo.



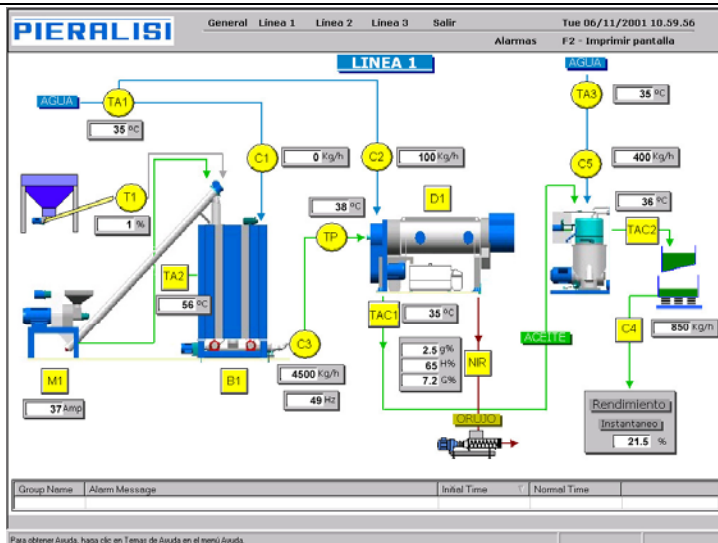
Processing



- Temperature sensor
- Level sensor



Processing



Extraction efficiencies per plant and operator

Operator	< 1 year	1-2 years	>2 years
Plant A	-	84.67%	90.10%
Plant B	75.93%	83.20%	-
Plant C	-	89.31%	92.15%