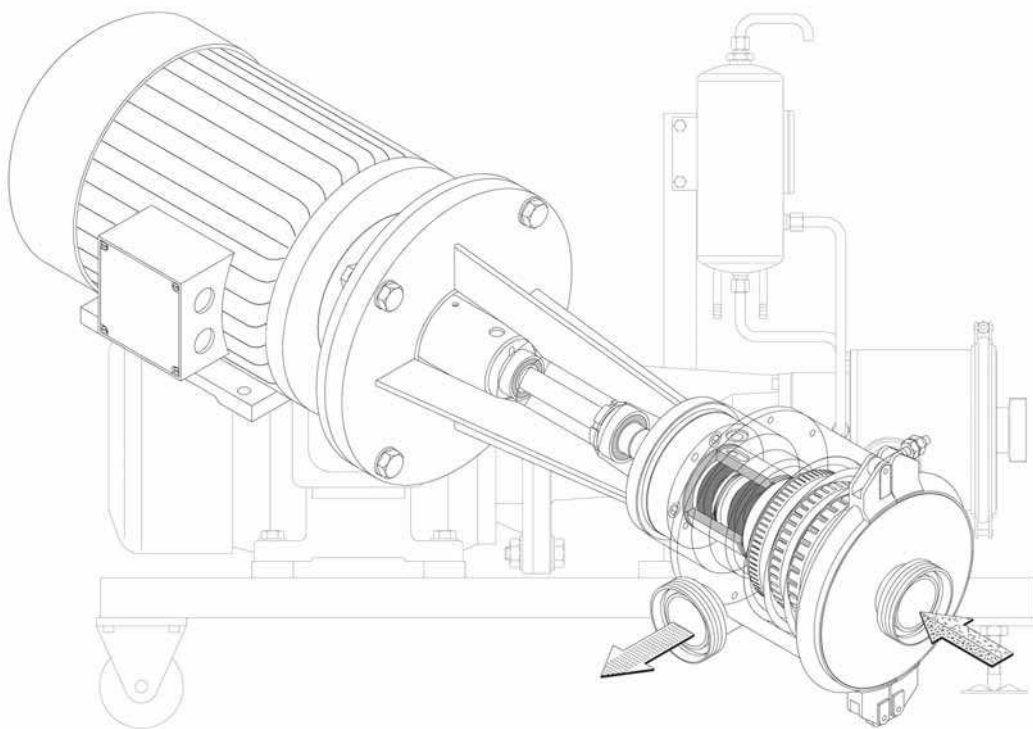


YTRON PROCESS REPORT

YTRONising of Fruit Juices using YTRON-Z



Price pressure requires
the use of economical solutions

YTRON PROCESS TECHNOLOGY

DISSOLVING
MIXING
EMULSIFYING
HOMOGENIZING
SUSPENDING
DISPERSING
GASSING

LÖSEN
MISCHEN
EMULGIEREN
HOMOGENISIEREN
SUSPENDIEREN
DISPERGIEREN
BEGASEN



Replacement of energy and capital investment intense High Pressure Homogenizers



The Challenge

In the conventional procedure, the Fruit Juice concentrate is processed on a High Pressure Homogeniser at around 100 bar. The goals are to optimise the sensory properties as well as to reduce the tendency to settle out in the final juice by applying a defined reduction of the particle size. Problematic aspects, besides a high capital investment cost and the excessive energy consumption, are the repetitive expenses for service and wear parts. Furthermore, there is a potential that a metallic taste can add to the flavour of the final juice.

To overcome the above mentioned disadvantages, **YTRON** has developed the alternative method to homogenise the Fruit Juice Concentrates using **YTRON-Z**.



YTRON-Z capacities from 800 l/h - 50.000 l/h

Size of **YTRON-Z** compared to equivalent capacity High Pressure Homogeniser



The solution: YTRONising with YTRON-Z

The reactor head of **YTRON-Z** houses up to three rotor/stator sets with extremely fine radial tolerances.

The InLine-principle effects a defined and reproducible application of shear forces in a single pass.

For all tested products, YTRONising using the **YTRON-Z** gives equivalent or improved results compared to conventional methods.

The desired quality for the particular Fruit Juice is achieved by adjusting the parameters of slot width, number and distance of the shear slots, number of rotor/stator sets used, rotational speed and flow rate.

Precondition:

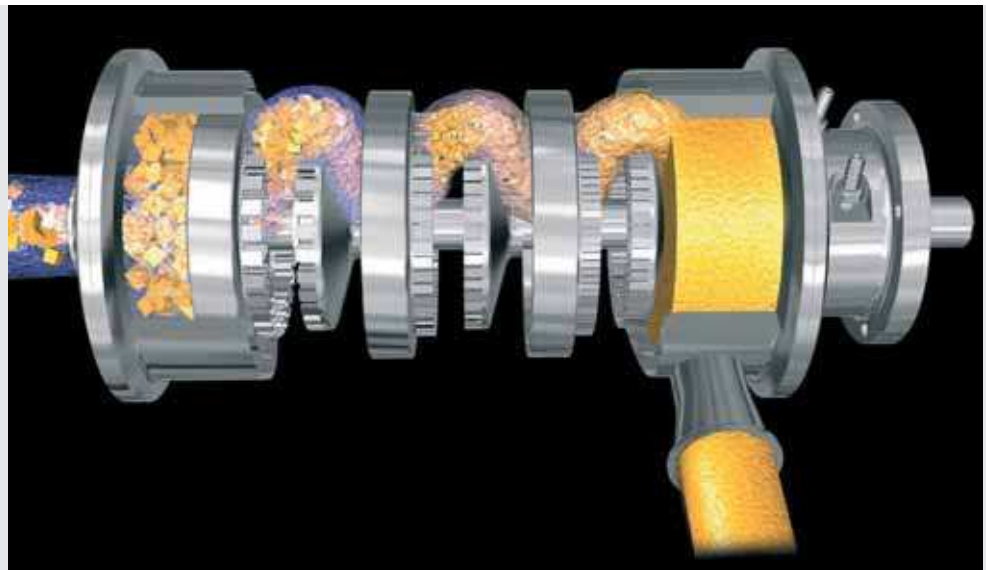
It is effective in YTRONising concentrates of up to 60YBx and more, but it is also possible to reach outstanding results when processing juices of only 12YBx.

The capacity of a **YTRON-Z** type 130 is up to approx. 10.000 l/h and the capacity of a **YTRON-Z** type 250 is up to approx. 25.000 l/h. The relevant pressure drop is expected to be in the range of 1-3 bar.



Which Fruit Juice Products can be YTRONised?

Apricot, Pear, Banana, Orange...
Every product has its own particular characteristics.



YTRONising with three slotted rows of teeth

Typical process example:

The product is transferred from a supply vessel to the inlet of the **YTRON-Z** via an adjustable pump.

The required flow rate is adjusted. The product is passed through **YTRON-Z** in a forced feed passage.

A defined backpressure is applied on the outlet of the machine, using a valve and a pressure gauge. The Frequency Converter is set to the required speed.

Advantages:

- No blocking of the filling valves / nozzles due to fibres, as the product is YTRONised.
- Minimum viscosity increase eliminating potential filling problems.
- Only a fraction of the energy consumption is needed when comparing the **YTRON-Z** system to a conventional high pressure homogeniser.
- Significant reduction of capital investment and fixed annual maintenance.

An example for a typical calculation:

Potential in saving operating costs - basis 20.000 l/h and 0,05 EUR / kWh

	YTRON-Z	Conv. homogeniser
Consumption	25 - 30 kWh	150 - 200 kWh
Hourly costs	1,50 EUR	8,75 EUR
Saving 7,25 EUR per hour		
Capital investment		
depending on version and type	ca. 30.000 - 40.000 EUR	ca. 150.000 EUR
Saving in capital investment of more than 70%		
Maintenance and repair costs per year	< 1.000 EUR*	ca. 10.000 EUR

* Assuming average wear and a low abrasiveness of the products

The development of a suitable process for new products is a rather complicated process in many cases.

YTRON offers support in development of your products and selection of the suitable technology.

YTRON can provide rental equipment to prove suitability of the equipment and to allow for detailed calculation of the return on investment.

YTRON provides optimum solutions for specific applications.




YTRON-Z in hygienic execution

Further application examples within the Beverage Industry with a high potential for optimisation due to using YTRON equipment:

- Dissolving of salts, e.g. mineral salts and vitamins
- Dissolving of CMC, Gum Acacia, Pectin, Xanthan Gum etc. without creating lumps or fish eyes in a single pass
- Diluting of concentrates in only a few minutes without the danger of sedimentation or floating of ingredients
- Homogeneous, air free mixing of concentrates with sugar syrup, dissolving of citric acid etc. in a batch production

For further information please contact:

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