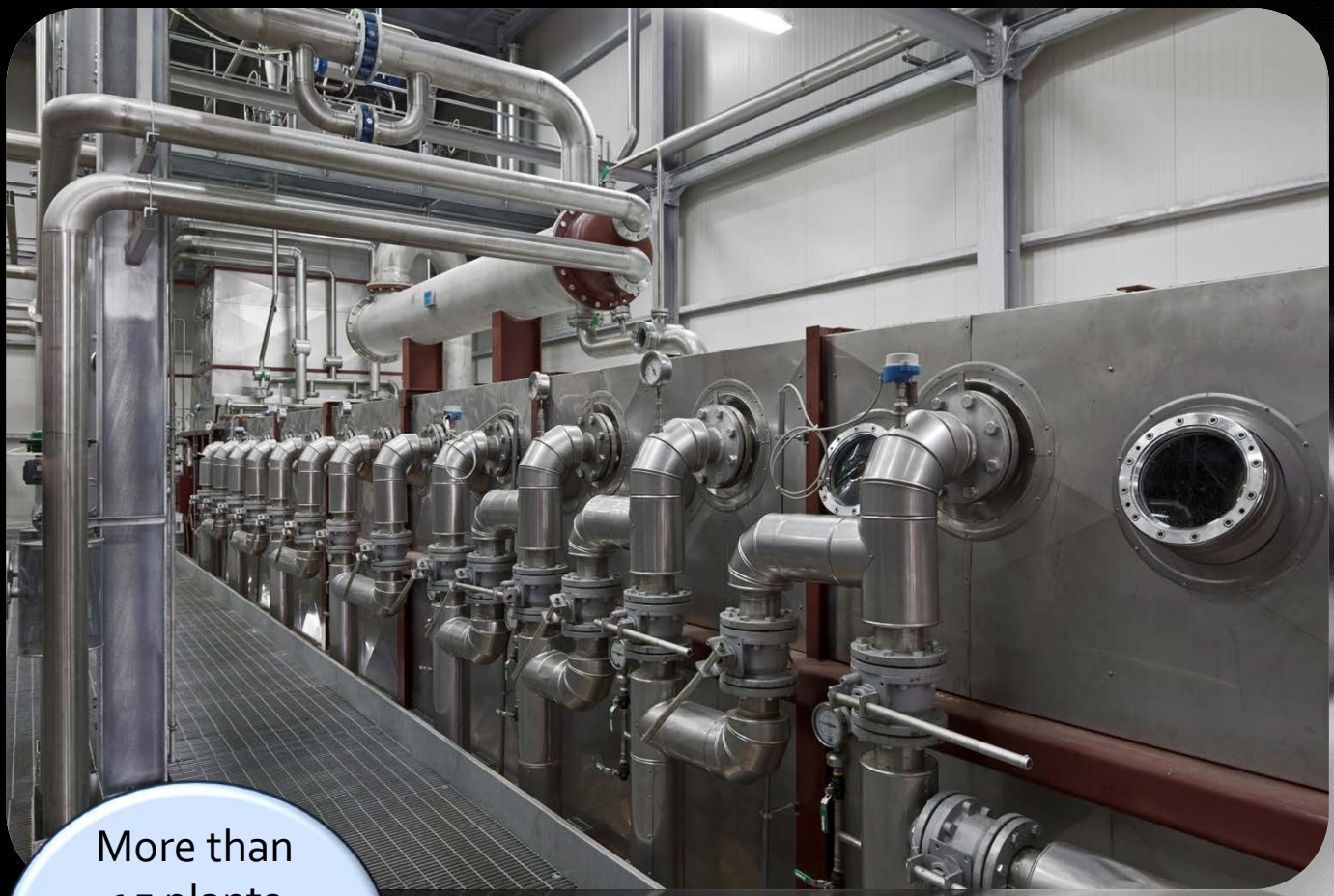


More than **15** plants installed over the last **2** years!

Extraction Plants

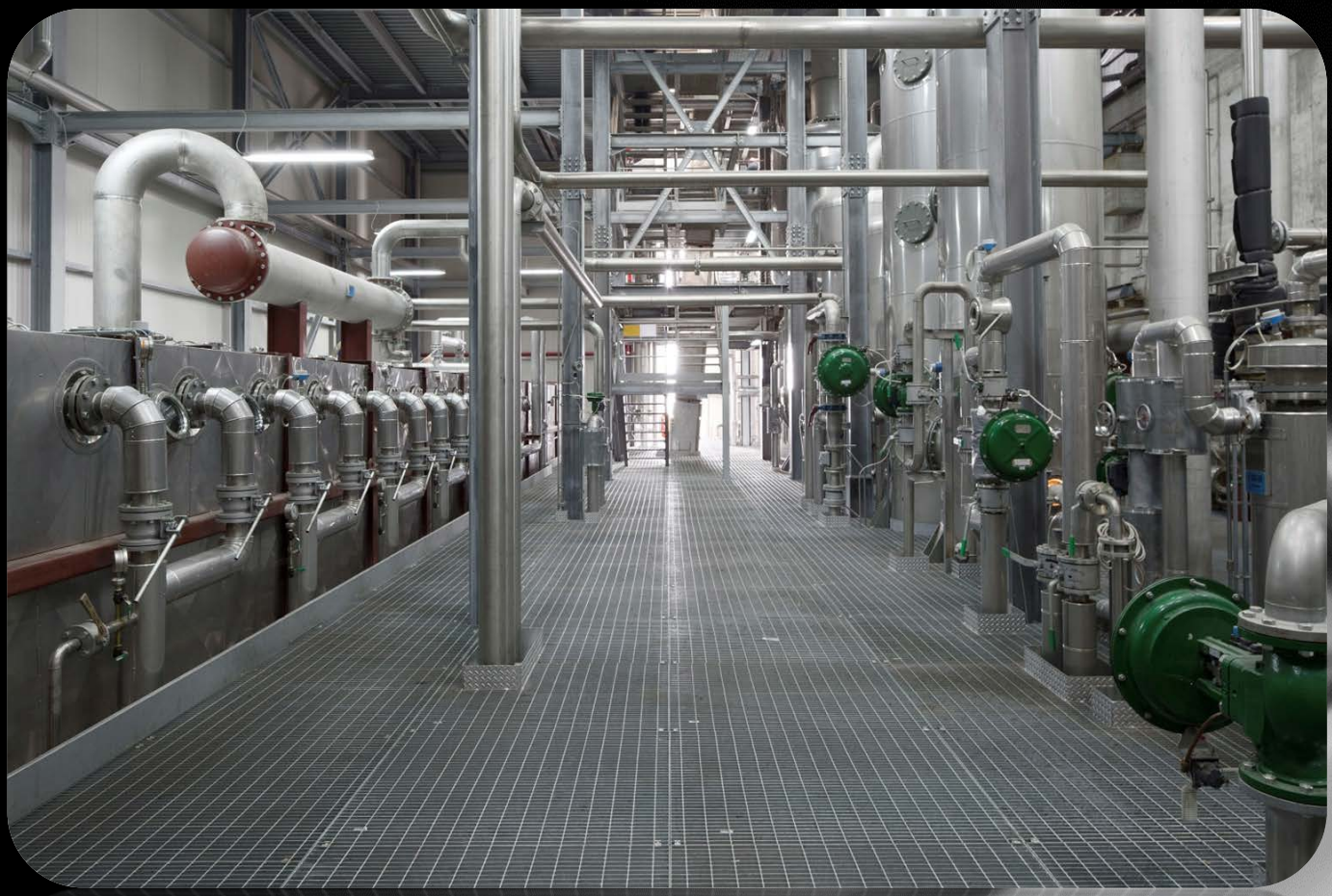
ANDREOTTI IMPIANTI
SHARING YOUR VALUES

Andreotti Impianti is an Italian Company active in the design, manufacture, erection and start-up of oilseeds and edible oils processing plants. Born in 1955 on the initiative of Mr. Argentino Andreotti, ANDREOTTI IMPIANTI S.p.A. has through the years remained a totally private family Company, consolidating its position as Italian Leader, reaching up a notable reputation also on the international markets, where its growth factor has been on a continuous remarkable uptrend over the last few years.

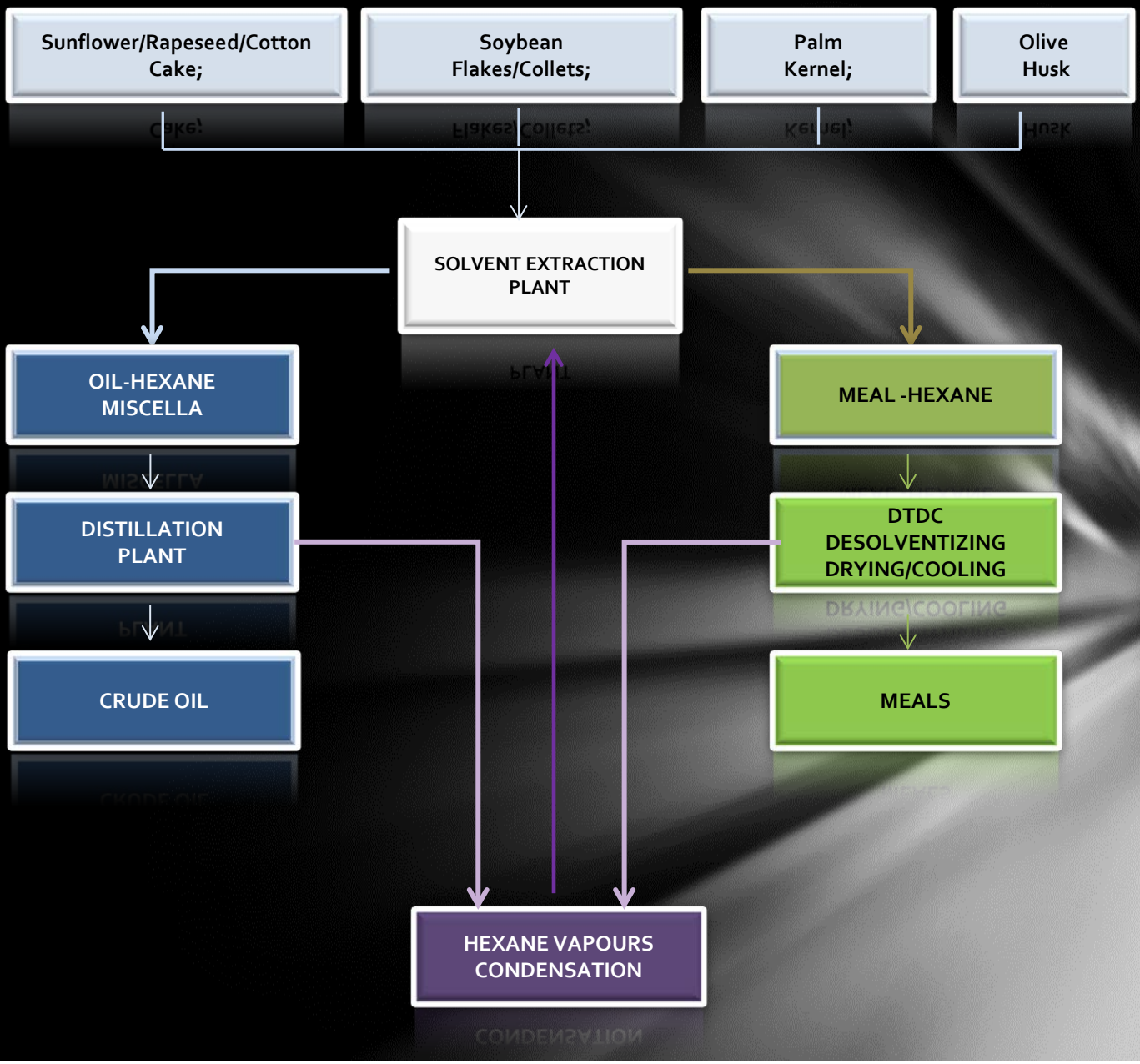
This year we'll celebrate our 60th anniversary. Many things have been changed over these first 60 years of activity, apart from considering each of our Client as our greatest asset.

ANDREOTTI IMPIANTI, WORLDWIDE SUCCESSFUL
FOR OVER 60 YEARS, NOW

ANDREOTTI IMPIANTI
SHARING YOUR VALUES



Andreotti Impianti technologies cover all the necessary equipment for oil extraction from oil seeds, from seed preparation and, when required , pre-pressing, to solvent extraction and desolventized meal treatment.
Apart from the type of extraction process used, that depends from the nature of raw material to be processed, each plant is designed for optimizing the process parameters and for reaching the best quality results with the lowest possible consumption and in conformity with the latest pollution prevention rules.



The typical extraction process is composed of 4 main steps:

- Extraction by solvent of the oil from the oilseed, which gives out two products: Miscella oil–solvent, meal wetted with solvent
- Separation of the oil –solvent miscella
- Recovery of the solvent from the meal
- Adsorption of carburated airs

ANDREOTTI IMPIANTI
SHARING YOUR VALUES

SOLVENT EXTRACTION SECTION

The seed after relevant preparation in the pre-treatment plant (cleaning, de-hulling, cracking, cooking and pressing) feeds the extractor where it is laid on a filtering belt with automatic level control devices. The filtering belt moving from one to the other side of the extractor charges the oil cake coming from the feeding hopper, submits the seed cake to solvent shower and discharges the de-oiled cake into the extractor discharging hopper from which the same by screw conveyor and chain elevator goes to the next step.

SOLVENT EXTRACTION SECTION

The solvent (Hexane) enters the extractor in the opposite side of the oilseed, it is sprayed on the seed belt, flows through the same and is recovered in the underneath hopper from where it is pumped into the next sprayer step; the number of sprayer steps changes from 7 to 9 depending on the capacity of the plant. The solvent with extracted oil is pumped to the next step. Solvent is enriched with oil, as it goes through the different steps.

DISTILLATION SECTION

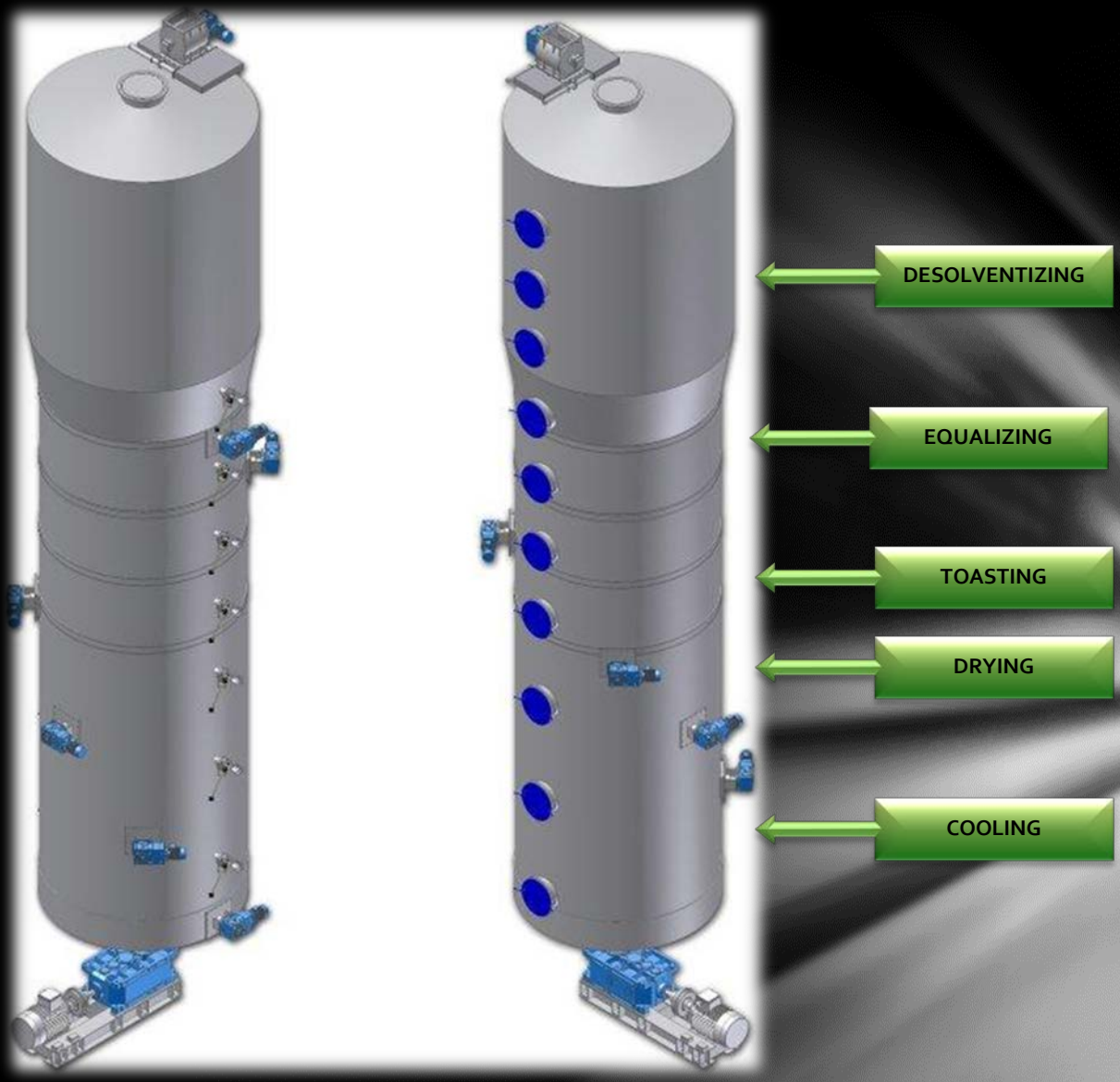
The oil–hexane miscella from relevant tank is pumped to the distillation section where the hexane is distilled under vacuum and subsequently stripped from the oil with live steam. Thanks to the use of specific process solutions, as for example particular distillation strippers, dedicated economizers and special designed air condensers , is possible to reach a very high process parameters optimization:

- residual hexane content in the oil :20 ppm
- reduction of steam consumption :35%
- reduction of water consumption : 70%

ANDREOTTI IMPIANTI
SHARING YOUR VALUES

D.T.D.C SECTION

The meal with solvent leaving the extractor feeds the upper layer of the toaster, where all the hexane is distilled from the meal by heating with indirect steam, by stripping by live steam and by mixing with a shaft. The meal is dried with hot air and cooled with cold air in the bottom layers of the machine.
The vapours together with the live steam are re-used ad heating fluid in the economizers and then are condensed for being sprayed again onto the meal in the top of desolventizer.



D.T.D.C SECTION

The level in D.T.D.C is maintained automatically with electronic level control and variable speed rotary valve in order to avoid any by pass of product / vapour. If required, between the lower desolventizer layer and the drying section is inserted a new layer that is maintained at the desired (de)pressure and the outgoing vapours are condensed and recycled to the system. Some advantages:

- Full water recycling
- Reduction of steam consumption
- Increasing of desolventizing efficiency
- Reduction of hexane losses

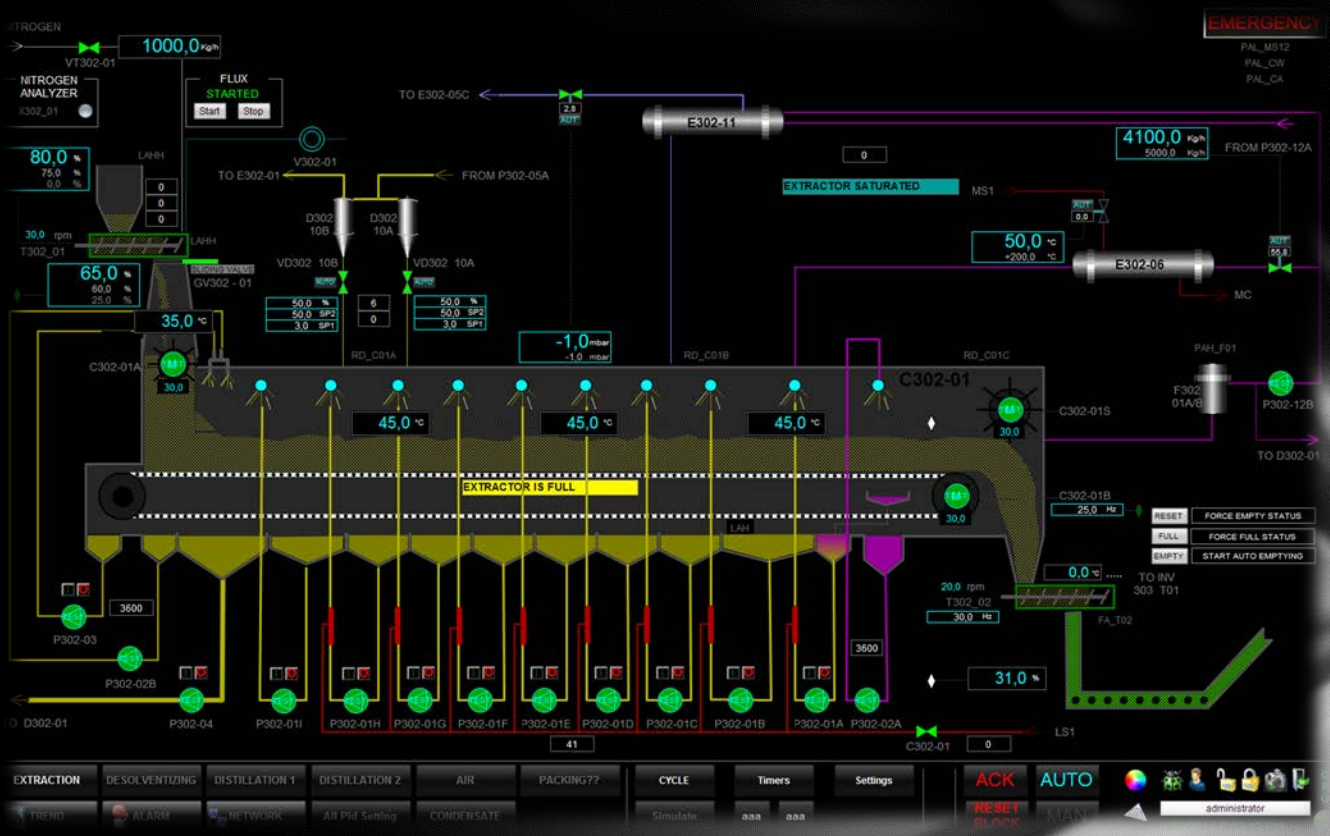
ANDREOTTI IMPIANTI
SHARING YOUR VALUES

ADSORPTION OF CARBURATED AIRS

Thanks to patented designing solutions, the Andreotti Impianti's **adsorption plant efficiency can be increased up to 99,6%** (value calculated from lab analysis on effluents). Among the others:

- The adsorption column works under pressure , instead of de-pressure, and it's regulated with safety valve with a consequent shifting of the gas/liquid equilibrium of Hexane by the effect of the pressure to liquid.
- A particular configuration of heat exchangers let possible to reach a heat recovery up to **65%** and to reduce proportionally steam and cooling consumptions

ANDREOTTI IMPIANTI
SHARING YOUR VALUES



Extractor Graphic Page

FULL AUTOMATION: CONTROL AND SUPERVISION SYSTEM

- Remote process management
- Fully automatic start & stop procedures
- High safety level
- Reduction of fire & explosion risk
- Just in time process overview
- Just in time main parameters analysis
- Just in time figure's contol
- Reduction of operator interaction

ANDREOTTI IMPIANTI
SHARING YOUR VALUES

NO LIQUID EFFLUENT

Andreotti Impianti's environmental friendly technology approach led to the development of a new system to eliminate liquid effluents, which transforms, trough an evaporation system, the slightly polluted water from solvent extraction into live steam which is used in DTDC for meal desolventizing

LOW EMISSION

On air disposal, the innovative Andreotti Impianti's system reduces the hexane content in the air emission to a minimum low level. The air is washed in counter current with mineral oil in a special pressure column, where the hexane is absorbed. The system works in a closed circuit and the hexane absorbed is evaporated and recycled.

ZERO EFFLUENT SYSTEM

- Water effluent = 0 kg/ton
- Waste water = 0 C.O.D

ANDREOTTI IMPIANTI
SHARING YOUR VALUES

Made In Italy

ANDREOTTI IMPIANTI S.p.A. manufactures the core pieces of equipment of all designed process plant in highly qualified workshops in Italy for assuring an unexceeded construction quality control.

ANDREOTTI IMPIANTI SPA
Via di le Prata 148, 50041
Calenzano-Florence
Italy
www.andreottiimpianti.com

ANDREOTTI IMPIANTI
SHARING YOUR VALUES