



Maximum YIELDS
Minimum OIL LOSSES



TECHNICAL SPECIFICATION:
HAUS-Decanter DDI 4743
for
PALM OIL MILL PROCESSING
45 – 60 TONS FFB/HOUR

Table of Contents

1. INTRODUCTION	3
Dual Drive Technology	4
Excellent Separation with Extended Clarification Area	4
Maximum Dewatering	4
Continuous & Easy Operation + Long Lasting	5
2. PROCESS PERFORMANCE	5
3. DESCRIPTION	6
1. DECANTER HAUS DDI 4743:	6
o Abrasion Protection:	7
o Abrasion Protection:	7
o Main Body Cases:	7
o Bowl Rotating Mechanism:	7
o Conveyor Rotating Mechanism:	7
o Warning Systems:	7
o Control Unit:	8

1. INTRODUCTION

HAUS Decanters is special designed for Palm Oil Mill process application operates to produce MAXIMUM OIL YIELDS with EXCELLENT OIL QUALITY.

HAUS, located in AYDIN City - Turkey with a production facility of 32.000 square meters and highly qualified 300 employees, HAUS is the experts in solid liquid separation for many years having manufacturing capacity more than 300 Decanter Centrifuges per year spread to the world.

Being certified with **ISO 9001:2008**, **ISO 14001:2004**, **ISO 22000:2005**, **OHSAS 18001:2007**, **HAUS** has focused on R&D studies with its computer integrated automation system and manufactured in accordance to **CE** directives.

HAUS is the leader in development and manufacture of high capacity industrial type decanters, manufactures vvery high quality machines to maintain full customer satisfaction.

HAUS Decanters provide:

- *Excellent separation to produce excellent oil quality*
- *Maximum dewatering to produce minimum oil losses*
- *Dual Drive*
- *High Value at the performance ratio*
- *Continuous and problem free operation*
- *Compact design*
- *Mobile solutions*
- *Continuous service and spare parts service*
- *Wide range capacities from 3 m3/h up to 250 m3/h*

“**HAUS** Decanter is manufactured to produced Maximum Oil Yields and operates at the Minimum Oil Losses”

- *Ferhat MUTLU*



Dual Drive Technology

One of the critical points for the decanter is the difference between bowl and spiral cycles, namely differential speed. This speed nominates the humidity left in the separated solid as well as designating the clarity of the separated liquid. Therefore, this speed is set automatically via PLC according to the required product quality and required product properties are achieved.



Dual drive motor enables the differential speed to be adjusted in a wide range. Second drive activates the inlet shaft of the transmission and introduces the differential speed as the function of the bowl speed and the transmission cycle ratio.

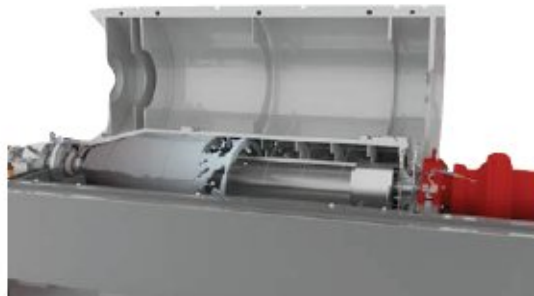
The cycle is adjusted without requiring manpower in cases when the solid volume fluctuates significantly, the solid is conveyed difficultly and the low humidity left in the solid is crucial. The differential speed is adjusted as the function of spiral torque automatically and precisely. The system is supported by the software developed by **HAUS**.

Excellent Separation with Extended Clarification Area

The bowl has high separation efficiency with its optimized conical design and wide clarification area. Efficient separation is ensured regardless of the sludge quality, thanks to the high centrifuge force achieved by high and adjustable bowl speed.

Wide pool depth is provided by operating at negative, neutral and positive levels (pond).

Provides increased separation capacity with its spiral geometry enabling simultaneous axial and radial flow



The best clarification results are provided as stabile due to its continuous high torque capability.

Maximum Dewatering

HAUS Decanter is specially designed conical part compresses the solid better by combining the impact of the pressure applied on the solid and centrifugal force ensures high dewatering.

Thanks to the high centrifuge force achieved by high and adjustable bowl speed, efficient separation is ensured regardless of the sludge quality.

Dewatered sludge cake has noticeably less humidity compared to conventional decanters and the polymer consumption is also lower than the conventional decanters.

Thanks to the adjustment of differential speed automatically by **PLC** without any manpower need, **stable dryness of the sludge cake** and **required clarity in liquid outlet are continually provided with same quality**; even at fluctuations in product inlet flow.

Continuous & Easy Operation + Long Lasting

In opposition to the traditional methods, continuous and operator-free 24 hours operation is enabled.

Simple and user friendly **PLC** based operator panel makes the control of the system easy and comfortable.

Speed is adjusted automatically without requiring manpower. Thanks to the Dual Drive technology enabling differential speed control by torque.

Bowl and scroll groups which are manufactured by corrosive resistant and highly durable duplex stainless steel have a longer life-time.

Long life-time and safety of the decanters are ensured with special selection of bearings rotating at high speed.

Maximum protection is ensured by on-site replaceable and anti-wear parts keeping production downtimes at minimum

2. PROCESS PERFORMANCE

For the Palm Oil Mill with the capacity of 45/ 60 Ton FFB/hour:

Feed Conditions:

- Oil Content: 6% - 12% on sample
- N.O.S. Content: 4%-7% on sample

Decanter Type and Capacity:

- Type of Decanter: Three (3) Phase Decanter - **HAUS DDI 4743**
- Capacity: 25 - 30 m³/hour

Oil Loss and Cake Guarantee:

- Total Oil Loss to FFB: 0.25% - 0.40% to FFB



3. DESCRIPTION

1. DECANTER:

MACHINE MODEL	HAUS DDI 4743
HEAVY DUTY DESIGN, SOLID BOWL DECANTER CENTRIFUGE (BOWL MADE OF DUPLEX STAINLESS STEEL BY CENTRIFUGAL SPUN CASTING TECHNOLOGY) FEATURING THE DUAL DRIVE CONCEPT INCLUDING 2 (TWO) ELECTRICAL MOTORS CONTROLLED BY SEPARATE FREQUENCY INVERTERS	
Model:	DDI 4743
Quantity:	1 (One) Unit
*Through put capacity to Decanter	25 – 30 m3/h
Max Speed:	3,400 RPM
Bowl Operating Speed:	3,200 RPM
G-Force (G):	3,018 G
Bowl Diameter:	470 mm
Bowl L/D Ratio:	4.25
Vibration Control:	Included
Temperture Sensor:	PT 100
Main Motor Protection Class:	IP55
Manually Hydraulic Opening:	Hydraulic Piston
Casing Material:	AISI 304
Solid Outlet Bushings Wear Protection:	Hard Casting Steel
Bowl Material:	1.4462 DUPLEX
Scroll Product Outlet:	Tungsten Carbide Coated Plate
Scroll Flights Wear Protection:	Complete Tungsten Carbide Powder Coated Scroll
Scroll Body Material:	AISI 304
Scroll Flight Material:	AISI 304
Feeding Pipe Material:	AISI 316
Main Motor Power:	45 kW
Main Motor Efficiency Class:	IE2 (EFF1)
Second (Scroll) Motor Power:	11 kW
Main Motor Efficiency Class:	IE2 (EFF1)
Motors Brand:	WAT
Standard MCC + PLC Panel and Software:	Standard Software
Lubrication:	Manual
Product Temperature:	max 100oc
Standard Tools:	Included
Terms of Warranty:	1 (one) Year

○ **Abrasion Protection:**

Conveyor	Feeding Chamber	Replacable tungsten carbide coated parts
	Flight Tips	Sintered tungsten carbide plates from feed zone to solid discharge end, rest in flame sprayed TC powder coated
Bowl	Inner walls	Thin bar of stainless steel
	Cake discharge	Replacable sintered tungsten carbide plates



○ **Abrasion Protection:**

Rotating bowl elements are mounted to the beds from front and end with main bearings. Beds are attached to the main body, flexible vibration absorbers made of rubber are mounted to the main body.

○ **Main Body Cases:**

Main body has a rigid structure. Chassis is made of AISI 304 stainless steel and the solids outlet is made of wear resistant stainless steel.

There is a one-piece lid that can be opened completely so that it permits necessary cleaning and dismounting of the bowl by a crane. It is especially useful if any solids particle is stuck on the bowl.

○ **Bowl Rotating Mechanism:**

Bowl is rotated and its rpm is adjusted with an electric motor combined with frequency converter and belt – pulley mechanism.

○ **Conveyor Rotating Mechanism:**

The PLC system controls a differential speed between bowl and conveyor depending on the sludge concentration and filtrate.

○ **Warning Systems:**

Machine is manufactured in accordance with European Committee technical and safety directions as a requirement of Turkish Law #4703. Because of this there is a lid sensor and vibration sensor on the machine.

Decanter Control Panel

○ Control Unit:

Indoor Control Panel equipped with two frequency inverter, PLC and a color touch screen.

PLC panel is in accordance with IP 55 class and has ventilation spaces and lighting.

Touch screen control provides easy usage. Bowl rpm, differential speed and torque values are easily monitored and controlled.

System shows the malfunctions of the machines on the screen. It also shows, on which machine is the malfunction and its reason. All malfunctioning are reported

In case of emergency all of the machinery can be stopped by pressing on the emergency stop button

Control panel type:	Standard panel:
Control panel software:	Standard software
Main motor size:	45 kW
Scroll motor size:	11 kW
PLC configuration:	S7-1200 CPU 1214c
Panel monitor type:	Siemens KTP700 Basic
Ambient Temperature:	5 °C - 40 °C
Relative Humidity	Max 85%
Degree of Protection:	IP 55/44
Voltage:	380 V
Harmonic Distortion :	max THD % 5
Grounding Value:	TSE 62305-1-2-3-4, EN 50164-1-2

*** NOTE:** Control Panel should be placed in the separate Control Room which is free of gas and steam. Oil and Industrial wastewater, steam may damages the electrical system.