

**Customer: ZF Friedrichshafen AG**



**General machine data:**

Machine type:	DAK - 2 BL
Manufactured size:	250/250/4.800
Machine no.:	1862
Medium:	H <sub>2</sub> O + 2% neutral cleaning agent
Medium temperature:	60 °C
Treated parts:	Planet carriers
Tanks:	2
Tank volume cleaning:	1.100 l
Tank volume rinsing:	750 l
Loading capacity:	50 kg/m
Cycle speed:	0.2 – 1.5 m/min.
Cleaning principle:	Spraying in throughfeed method

**Cleaning:**

Spraying pressure:	3 bar
Circulating capacity:	400 l/min
Driving capacity:	4.0 kW
Heating capacity:	60 kW, electrical

**Rinsing:**

Spraying pressure:	3.0 bar
Circulating capacity:	250 l/min
Driving capacity:	2.2 kW
Heating capacity:	36 kW, electrical

**Request of result:**

The planet carriers have to be 100 % dry and free of grease (48-56 mN/m surface tension) because of the following laser welding.

**Equipment:**

- Conveyour machine with chain conveyer
- Tank rinsing for the cleaning of the tank bottom from deposit
- Double-switch filter as bag filter 50 µm in the pressure line of the rinsing pump
- Plate-phase separator for separation of oil
- Air-cooled steam condensor
- Communication with the external conveyer technique
- Cascade guide of bathes
- Blowing-off from all sides by intermediate pressure fan

**Using dimensions:**

Width:	250 mm
Height:	250 mm
Length:	250 mm

**Process description:**

The planet carriers are fed into the cleaning machine by a conveyor belt after the mechanical processing with oil. Continuous the workpieces are conveyed through the cleaning zone into an intermediate zone and then into the rinsing zone. In the following blowing zone the parts are blown-off powerful from all sides. Then the workpieces are conveyed into a conveyor belt buffer and taken from there for the laser welding.



Pic. 2:  
View of the unit from the side  
with filter technology, Blowing  
device, maintenance loops,  
condensor etc.

Pic. 3:  
Discharge buffer behind the  
cleaning machine before  
laser welding



Pic. 4: Planet carrier in the blowing zone  
after cleaning



Pic. 5: Conveyor belt with turning station  
behind the cleaning machine