

“BRIO), 70% economic savings and half the time in cylinder head cleaning”



# BRIO) VS CONVENTIONAL CLEANING

COMPARATIVE: CLEANING OF A **CYLINDER HEAD** WITH THE CONVENTIONAL SYSTEM VS THE EXCLUSIVE BRIO ULTRASONICS CLEANING SYSTEM



AUTOMOTIVE  
INDUSTRY



NAVAL  
INDUSTRY



RAILWAY  
INDUSTRY



AERONAUTICAL  
INDUSTRY



INJECTION  
MOULDS



MACHINING AND  
BAR CUTTING



FOOD  
INDUSTRY



ENERGY  
INDUSTRY



GRAPHIC ARTS  
INDUSTRY



SURFACE  
TREATMENTS

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**BRIO)**  
ULTRASONICS

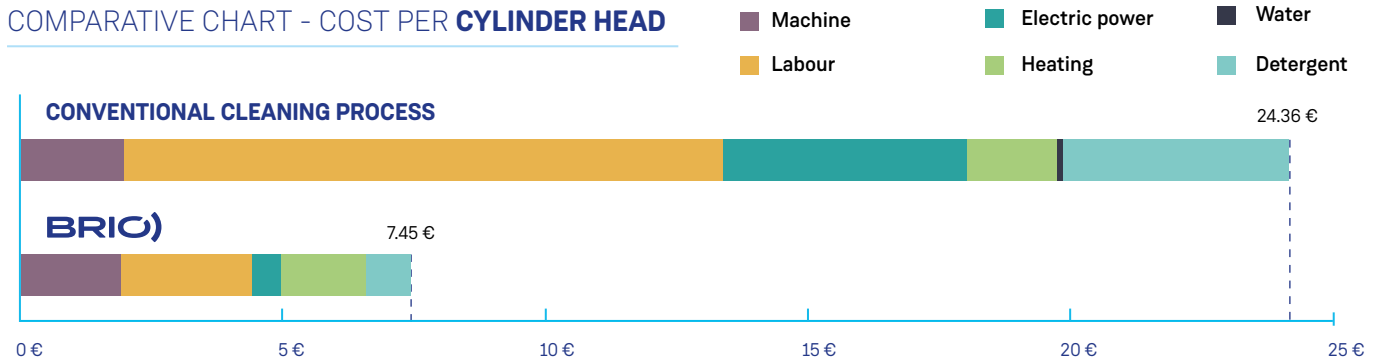
# COMPARATIVE

## STUDY OF THE CLEANING OF A CYLINDER HEAD

The conventional cleaning process of a car cylinder head consists of three steps: First, the spray washer with a rotating basket; second, manual washing with high pressure lance; and third, the cleaning with blasting machine by means of baking soda, sand or other substances.

In this comparison, we demonstrate how our exclusive **BRIO Ultrasonics system with our recommended BR-300 PRO machine results in economic and labor savings of more than 70%. Also a reduction of the total washing time of 50% compared to the conventional method. All this results in an annual saving of more than € 23,000.**

### COMPARATIVE CHART - COST PER CYLINDER HEAD



### COMPARATIVE TABLE OF COST AND WASHING TIME BY CYLINDER HEAD

	CONVENTIONAL CYLINDER HEAD CLEANING PROCESS				BRIO
	1. SPRAY WASHER WITH ROTATING BASKET	2. MANUAL WASHING WITH HIGH PRESSURE LANCE	3. BAKING SODA BLASTING MACHINE	TOTAL (CONVENTIONAL SYSTEMS)	BR-300 PRO
<b>TOTAL CLEANING TIME</b>	60 min	10 min	20 min	90 min	45 min
<b>MACHINE COST</b>					
Total cost	€ 7,000	€ 4,000	€ 6,000	€ 17,000	€ 16,000 *
Per head in 5 years (7000 heads)	€ 1.00	€ 0.57	€ 0.86	€ 2.43	€ 2.28
* Recommended machine cost, BR-300 PRO, with 350 L capacity and maximum performance with only 2 generators of 1,200 W.					
<b>LABOUR COST</b>					
Operator time	5 min	10 min	20 min	35 min	10 min
Operator cost (16€/h)	€ 1.33	€ 2.67	€ 5.33	€ 9.33	€ 2.67
<b>ENERGY EXPENDITURE</b>					
Energy consumption per cylinder	5 kW (5 kWh)	0,83 kW (5 kWh)	3,6 kW (11 kWh)	9,43 kW	1,8 kW (2,4 kWh)
Electrical cost (0,4 €/kWh)	€ 2.00	€ 0.33	€ 1.47	€ 3.80	€ 0.48
Heating consumption	9.6 kWh	0.83 L (Diesel)	-		3.3 kWh *
Heating cost (0.4 €/kWh)	€ 3.84	€ 1.41 (1.7 €/L diesel)	-	€ 5.26	€ 1.32
* Average cleaning of 30 cylinder heads per week with an approximate heating consumption of 100 kWh per week.					
<b>WATER COST</b>					
Consumption in liters	2 L	50 L	-	52 L	1.67 L *
Cost(1.9 €/m3)	€ 0.003	€ 0.097	-	€ 0.10	€ 0.003
* With 350 L of water, the BR-300 PRO cleans a total of 240 cylinder heads before changing the contents of the tank (approximate figures).					
<b>DETERGENT · CONSUMABLES</b>					
Consumption in Kg	0.28 Kg	-	1.43 Kg		0.1 L *
Cost (7 €/Kg of detergent aprox.)	€ 1.94	-	€ 1.50	€ 3.44	€ 0.70
* With 25 L of detergent, the BR-300 PRO cleans a total of 240 cylinder heads before changing the contents of the tank (approximate figures).					
<b>TOTAL EXPENSE PER HEAD</b>				€ 24.36	€ 7.45
<b>TOTAL ANNUAL SAVINGS</b>	With savings per cylinder head of <b>€ 16.91</b> and a cleaning of 1400 cylinder heads per year, the total annual saving is <b>€ 23,674</b>				