News Release

New patented high-intensity impeller wheel from Strahltechnik Illingen

Because existing wheel shot-blasting units require frequent wheel changes due to internal wear, waste a good part of the abrasive working material and lack precise abrasive stream control, Strahltechnik Illingen (SI), a German steel processor, has developed and is producing a new, high intensity shot-blasting unit based on a novel, patented, dual-rotor centrifugal wheel.

The new "SI-Wheel" has been designed to reduce rotor vane wear to a minimum because the abrasive shot material no longer impinges strongly on the impeller blades as in conventional units. This feature also raises shot-blast energy, eliminates abrasive material degradation and allows more precise blasting stream direction and working area control.

Secret of the innovation is an auxiliary, second rotor inside the hub of the outer impeller turbine wheel. This rotor improves feed and direction of the abrasive particles by giving them a tangential impulse speed prior to their discharge into the main impeller turbine. This feature eliminates direct, hard impact on the main impeller blades which in conventional units causes partial slowdown (energy loss) and some break-up of the abrasive pellets (abrasive material waste). Result: A forceful, unimpeded shotblast flow without stray particle dust and increased stream direction control. It also permits an increase in the number of vanes on the main impeller, further increasing efficiency.

To illustrate this, take the case of a Swiss customer who fitted the new SI-Wheel shot blasting units into his 80 meter long, steel finishing plant producing up to 100 tons sheet steel/day. Steel shot of 0.5-0.9 mm dia. is employed. Maximum production speed in the two, 30 year old parallel lines in the old plant increased to 3 m/min, sheet width to 2.1 m. That means that output has more than doubled!

In another example, a Czech subsidiary of a well-known German steel casting company cut shot-blasting times in half. Special advantage: With the new SI-Wheel, all corners of the parts could be treated in the shortest possible time WITHOUT touching and affecting the already precision finished edges.

Because of the more precise directional and area control, only 2 SI-Wheel units are needed where 3 conventional shot-blasting wheels were previously installed. This, of course, reduces required investment and also power consumption.

In addition to the new SI-Wheel abrasive shot-blasting units, SI custom designs and supplies complete, integrated metal finishing plants which can incorporate everything from metal degreasing, shot-peening, derusting and finishing equipment.

Because direct export from Germany is sometimes not practical or possible, SI will consider licensing its SI-Wheel units and technology to qualified overseas manufacturers under license-, joint-venture or other cooperation agreements.

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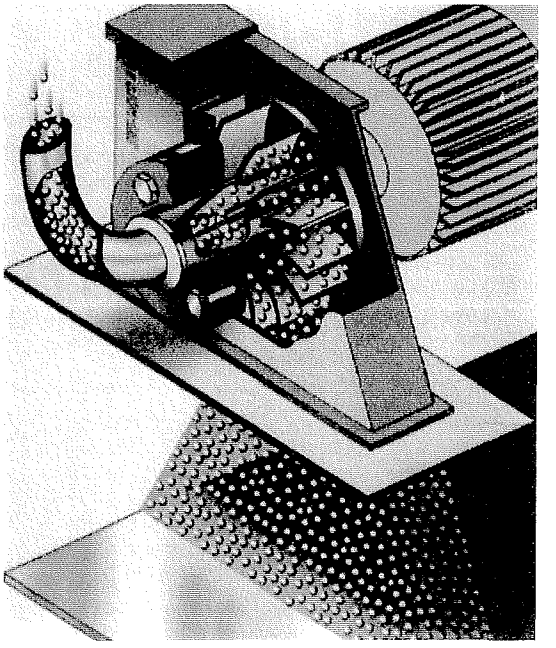
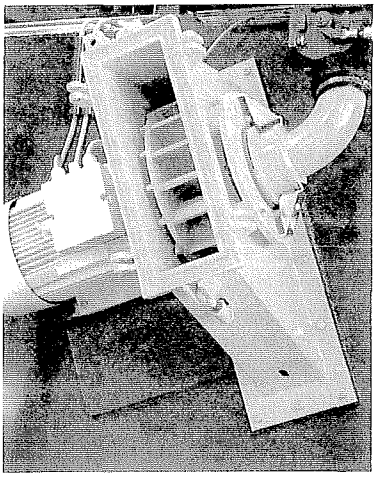
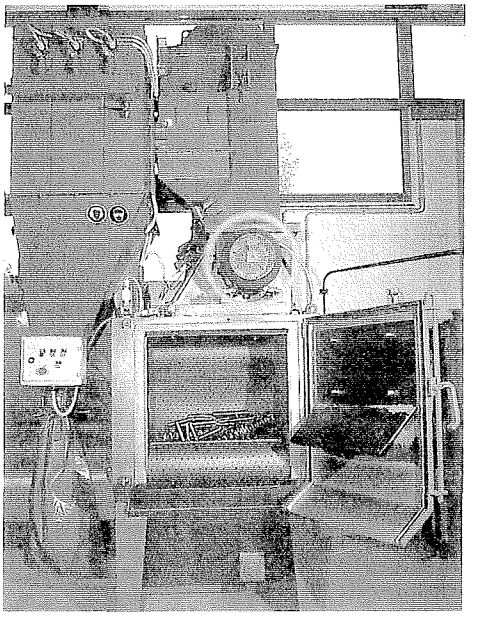


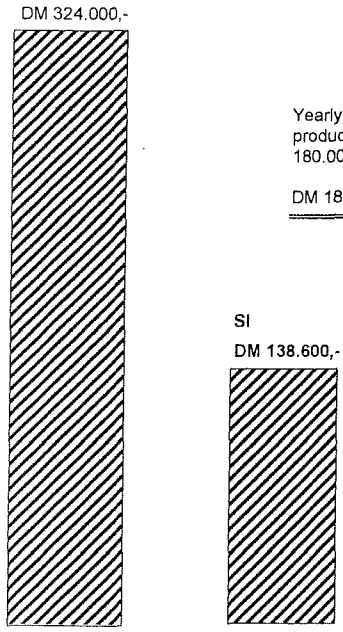
The patented SI-WHEEL is a new centrifugal shot-blasting wheel with a completely different and novel abrasive media guidance principle. A major component of the extremely fast and economical SI shot-blasting machines, it is also suitable for retrofitting existing plants.



The new SI-centrifugal shot-blasting wheel is especially easy to maintain. It can be exchanged in just 15 minutes.



Troughed belt conveyor for shot-peening of technical springs (Knoerzer Co., Germany)



Operating Cost Comparison SI Shot-Blasting Plant versus Conventional Plant

Basis				
Costs/Mach.hr	181.45	DM	169.72	DM
Output/hr	100.8	m^2	220	m^2
Speed	1.6	m/min.	3.5	m/min
Costs/m^2	1.80	DM	0.77	DM

Note: The above results are based on the following detailed accounting figures.
Operating costs: Comparison of an SI shot-blasting plant with a conventional plant. The comparison material is sheet metal 1.500 mm wide. The comparison plant is a shot-blasting plant with 1.500 mm capacity width, 4 turbines of 11 kW each including pre-dryer and roller conveyor. Operation hours are 1700 per year with an efficiency of 70%. Personnel costs are DM 50,-/hr; the electricity price DM 0,25/kwh. The abrasive price DM 1,20/kg and the gas price DM 0,40/Nm^3. The gas burner has a 60% effective operation time. Total plant costs DM 500.000,- with a depreciation period of 10 years. Capital costs are calculated at 6,5% of mean value. These figures are bases on calculations from April 1997.

Operating Cost Comparison SI Shot-Blasting Plant versus Conventional Plant

	Conventional Plant Data per machine hour	SI-Shot-Blasting Plant with SI-WHEEL
Personnel costs 2 Persons x DM 50,-/hr	DM 100,--	DM 100,--
Electricity consumption at DM 0,25/kwh	DM 18,50 80 kwh x 80% 50 kwh x 20%	DM 12,25 55 kwh x 80% 25 kwh x 20%
Abrasive for 4 T x DM 1,20(kg x 70%	DM 6,72 2 kg/turbine	DM 3,36 1 kg/turbine
Gas consumption 160,00 kcal: 7,600 kcal/Nm^3 gas x 0,6 burner time x DM 0,40/Nm^3 gas x 70%	DM 3,54	DM 3,54
Spare parts costs incl. DM 1,16 oven + DM 1 transport	DM 8,50 DM 6,34 plant	DM 7,60 DM 5,44 plant
Maintenance costs plus DM 0,70 oven + DM 0,30 Transport	DM 5,22 DM 4,22 plant	DM 4,00 DM 4,- plant
Depreciation DM 500.000 for 10 years at 1.700 hrs/year	DM 29,41	DM 29,41
Interest DM 500.000 : 2 : 1.700,-/hrs/year x 6,5%	DM 9,56	DM 9,56

Note: This cost comparison does not include building rent and overhead since these costs vary widely from company to company