

Cost effectiveness and air conditioning in a printing works.

### A Breath of Fresh Air

The brand-new Bastian off set printing works, located in Trier's industrial area, is not only architecturally impressive but incorporates the most up-to-the-minute printing techniques and innovative concepts of air conditioning and energy conservation.



Bastian's new printing works incorporating good commercial and environmental concepts.

In planning their new works, the company tried to integrate a number of interrelated concepts; besides aiming for minimal operating costs the intention was to provide a comfortable working climate, to properly manage energy consumption and to choose an architectural design which would blend well with the surroundings. The result is a light, airy building with good thermal insulation, surrounded by uncultivated, natural grounds.

### Central compressed air energy source

Air is essential to the modern printing works in the form of compressed air or vacuum for film and plate production, ventilation and temperature control of paper, and for transporting, folding and shearing paper, collating, binding and packing.



The compressed air center equipped with four KAESER screw compressors, booster and air treatment plant (upper and center).

'Graphic Air Pumps' on a folding machine (lower).

### Innovative air generation

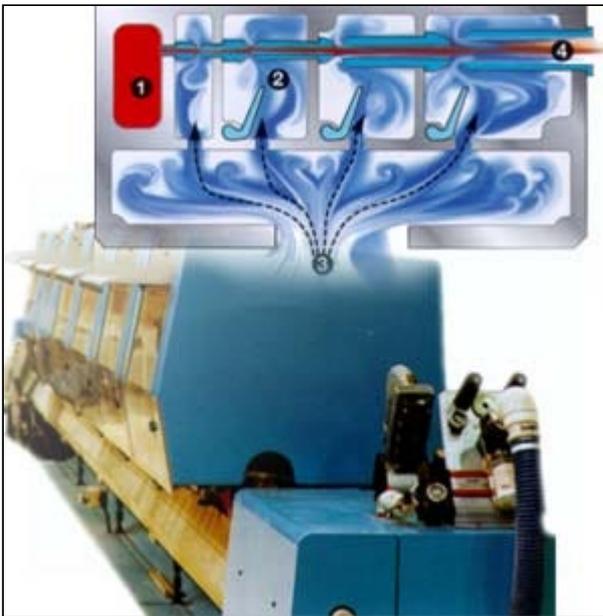
As a means of generating blown air and suction air for the printing hall, sliding vane vacuum pumps and side channel blowers were rejected as being too hot and noisy. Instead, a much more efficient and environmentally friendly solution was found in compressed air driven vacuum pumps made by the Piab company, and KAESER compressors.

Air warmed by heat from the compressors is ducted to the print shop.



### Better print quality - less machine wear

The Piab 'Graphic Air Pump' works on the multistage ejection principle as illustrated in the diagram below. Compressed air (1) passing through nozzles creates a vacuum in the chambers (2) which causes air to be drawn in through the inlet(3). This indrawn air mixes with the cold, expanding compressed air so that its temperature on discharge (4) is below ambient. With this pump, suction and blown air can be provided to match the process demands without the problems of a heat-generating electric drive. The improvement made to the quality of cooled, blown air from the Piab pumps significantly reduces wear in the machines which it serves.



Operating principle of the 'Graphic Air Pumps':

- (1) compressed air inlet
- (2) vacuum chamber
- (3) vacuum inlet
- (4) blown air outlet

'Graphic Air Pumps' on a gangstitcher.

### Efficient energy and air conditioning concept

The air center, equipped with four KAESER screw compressors, is an integral part of the print shop air conditioning. In cold seasons, heating is provided solely by air which has been used for cooling the compressors, which means that 94 percent of the electrical power used in generating the compressed air is recovered as heating. In summer, the compressor cooling air is directed to atmosphere and the print shop kept at a comfortable temperature by the Graphic Air Pumps' discharge. With the aid of experts from KAESER and Piab a concept has been developed which provides Bastian printers with an economic production facility, increased product quality, better working conditions and reduced energy consumption. Furthermore, the costs of conventional heating and air conditioning have been saved.