RICKLI MICROMECANIQUE SA

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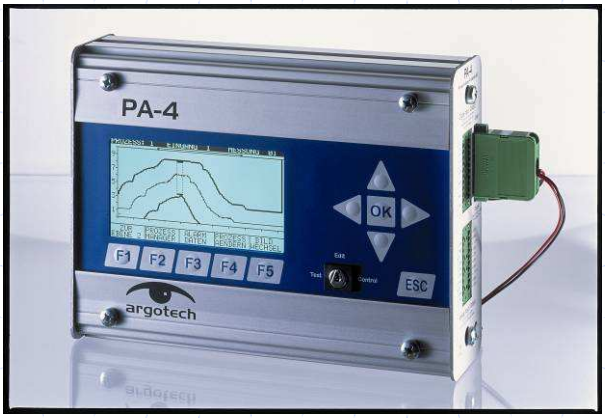
A Business Case for PA-4

Drill break detection

High precision bar-turning and milling with natural diamond turning tools

Rickli Micromecanique SA is a high precision turning and milling operation in Switzerland, specializing in the manufacturing of precision parts for companies active in the field of medical and dental implantology.

These very small and delicate parts are machined with extremely small tools, and require several machining steps, the first of which is drilling a hole, which then subsequently is tapped, threaded, and /or deburred with natural diamond cutting tools. The expensive parts, which require extreme precision and accuracy are manufactured on 12 advanced technology CNC automatic lathes. Rickli prides itself on their commitment towards continuous improvement of their production techniques in order to meet and exceed customer requirements

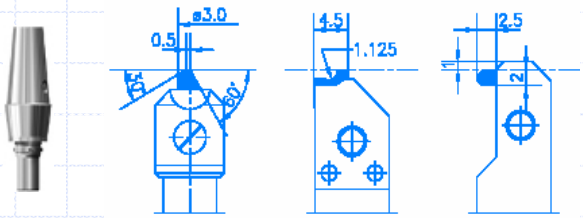


Problem description

At Rickli they were faced with unpredictable life span of the drill. Drill breakage was causing substantial add-on costs:

1. Without the hole drilled, the expensive natural diamond cutting tools used for subsequent operations were being destroyed.
2. Because production is only checked periodically, significant waste would occur of no good parts that had been produced

Annually Rickli was spending well over € 5,000 on cutting tools, damage to machines and production write-off.



Part and diamond cutting tools.

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PA-4 detects drilling

To solve Rickli's problem, a PA-4 was installed with a LW-1 power consumption sensor. At highest sensitivity, it was possible to distinguish between the power demand of the machine when drilling actually was taking place and the power consumption when drilling was not taking place and thus the drill had broken.

Limit values were set at the places in the production cycle when drilling took place, which had to be breached by the sensor signal. If they were not breached, it meant that the power consumption was too low and that drilling had not taken place. If such a condition occurred the machine would be shut down.

LW-1 Power consumption sensor

Not only did this solve Rickli's problem and eliminate their ongoing tool and production waste costs, it allowed them to extend productivity in other areas by the freed up human resources, normally spent on production checking.

PA-4 screen with limit values

Rickli team is trained on the PA-4's opera-

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