



New double-disk flat finishing grinding machine Supfina Planet V4 commissioned into service

- Processing two parallel plane surfaces by grinding -

Following a cost analysis, the two Diskus grinding machines DDS 300 and DDS 400 used by the parts production were put out to tender for renewal due to the aging of the machines.

At the same time the opportunity was used to analyze the capacity of alternative technologies on the market taking different solution approaches into consideration.

The purpose was to replace the two old machines by a new one and thereby to reduce the required space, also having to take into consideration that each machine was used to process plates of different sizes.

Two alternative technologies were offered which were analyzed by taking into account the planning documents, e.g. workload and required floor space:

**1. Through-feed grinding,
as previously employed**

2. Satellite grinding

After several tests and sample processings the through-feed grinding method was chosen as the most suitable machine concept.

This concept is presented below.

**The machine concept of
through-feed grinding:**

The work-pieces are fed into the machine by means of a work-piece related transportation disk, and are guided through the grinding machine directly one after the other with the aid of a tilting navigation.



Through-feed grinding

This procedure offers a maximum of flexibility and productivity.

**1. Reduction of floor
space requirements**

The installation of the new Planet V4 machine considerably reduces the floor space needed, as only one machine is now required.

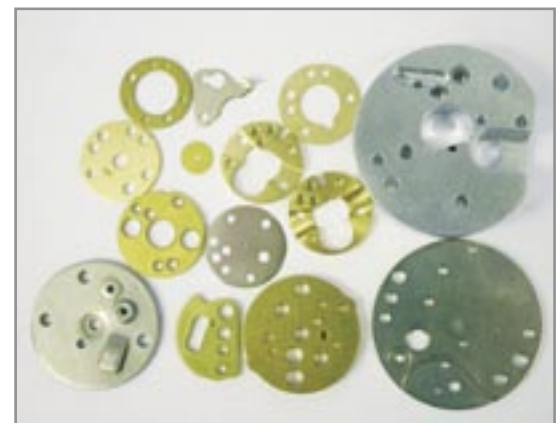
The new machine requires 30 sq m floor space including processing radius, has a height of 3,400 mm and weighs 14,700 kg.



Machine in parts production

**2. Cost reduction and
quality improvement**

The new grinding machine is used to grind a punched circular sheet, plate and lever as well as other plane parts from 0.75 mm to 10.0 mm. The large transport disks and the more modern technology enable the reduction of processing times for circular parts. The operator convenience (storage of the programme and control data in the machine control) also helps to reduce the set-up times. The parts can also be automatically measured and controlled and therefore the maintenance costs are lower.



Various levers & plates

**3. Access to the stock
and supply for assembly**

The new grinding machine enables faster and more efficient delivery of component parts to the assembly process and avoids the complicated and lengthy refit which has previously been required and which created an obstruction in supplying parts of the required quality at short notice. The new machine offers the benefits of processing parts with improved quality in a significantly shorter time.



4. Economic efficiency

The design and construction of the grinding machine together with the continuous process control enables an efficient and constant processing of thinner and flatter work-pieces.



Manual insertion of the parts into the transport disk

The machine operation is carried out by a Sinumeric machine control, for example, after a successful processing of the parts the process parameters can be stored, reused or adapted at any time.

In case of a frequent change of loads and parts a considerable time and cost economy can be achieved as the exact repetition of the processes is guaranteed.

5. Reliability

The double-disk flat finishing grinding machine allows simultaneous processing of two parallel plane surfaces.

The machine is fitted with a work-piece transport device, an upstream work-piece height control, a stone wear measurement (in-process measurement), a post-process measuring device and a dressing device.

The very long machine life-cycle, in combination with an interference-free operation by using high-quality materials and components, results in a high level of reliability.



Meitec measuring control

6. Operator convenience

All the functions and data are collected from, and entered into, the Siemens Sinumeric control which is operated via the control panel by the tool setter and the operating staff.



Operating panel of the machine

The various operating modes are selected by a key switch. All the necessary parameters, such as the rotational speed of the grinding disk, the parameters of the parts and the transport disk are controlled and monitored via SPS for each part.

In the automatic mode the machine is able to complete processing cycles and programmes with different processing procedures fully automated and is able to handle many different work-piece loads.

Only the mounting of the work-piece magazine is carried out manually by the operator.



Measurement control
(1) Measuring display in-process measuring
(2) Diagram : In-process measuring

7. Quality of the parts

The new machine fulfils the following quality requirements:

- Parts made of steel, brass and aluminium to the depth of 0.7 mm up to 10.0 mm can be ground.
- Achievement of a tolerance within the range of 0.005 mm to 0.01 mm.
- Achievement of plane and evenness of within +/-0.005 mm.
- High process conformance is achieved by the ability to measure, and correct if necessary, each ground part by the utilisation of a measuring paddle and the Meitec measuring control system.

