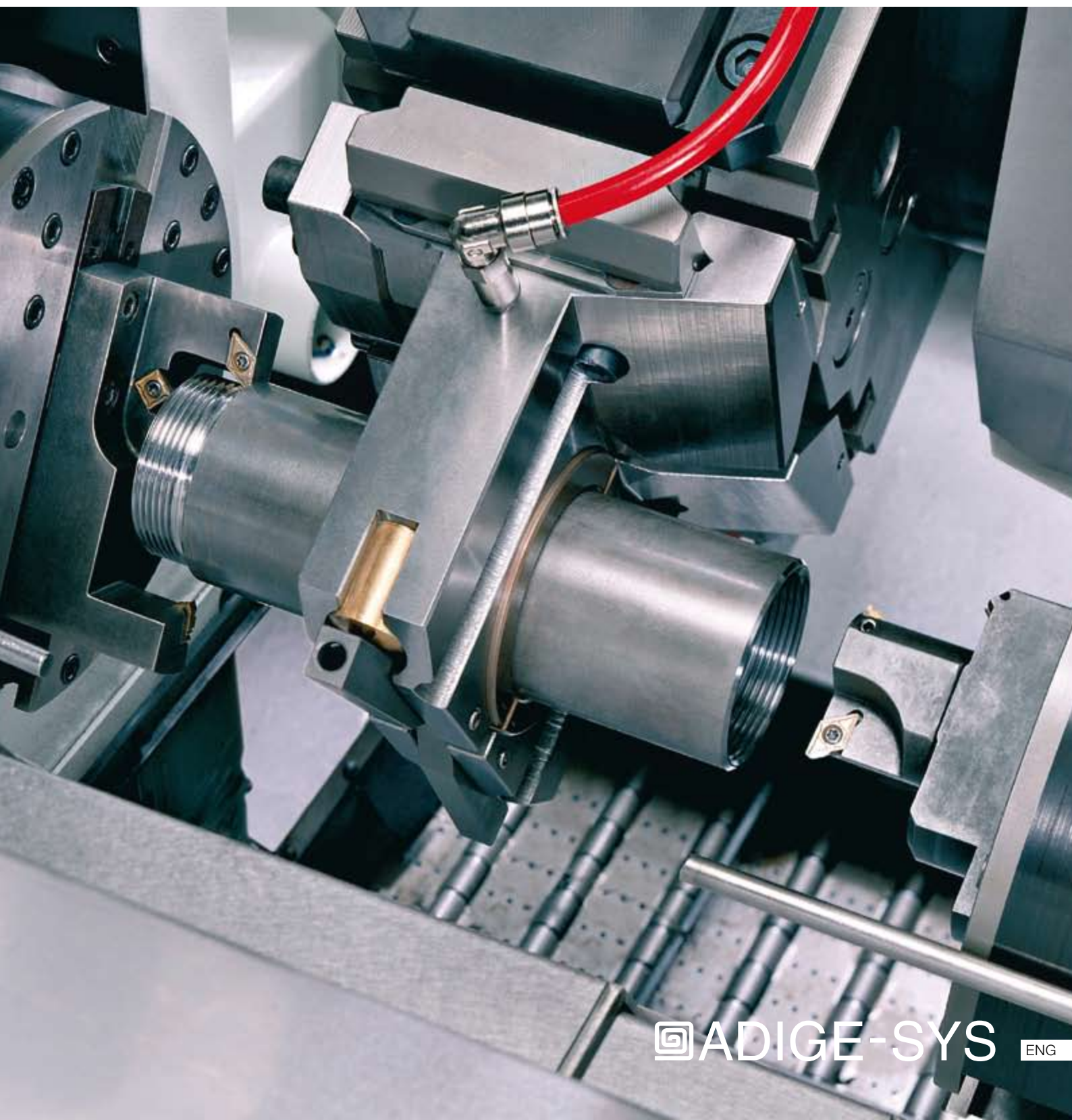


Tubes or bars sawing and ends machining centre

EM80





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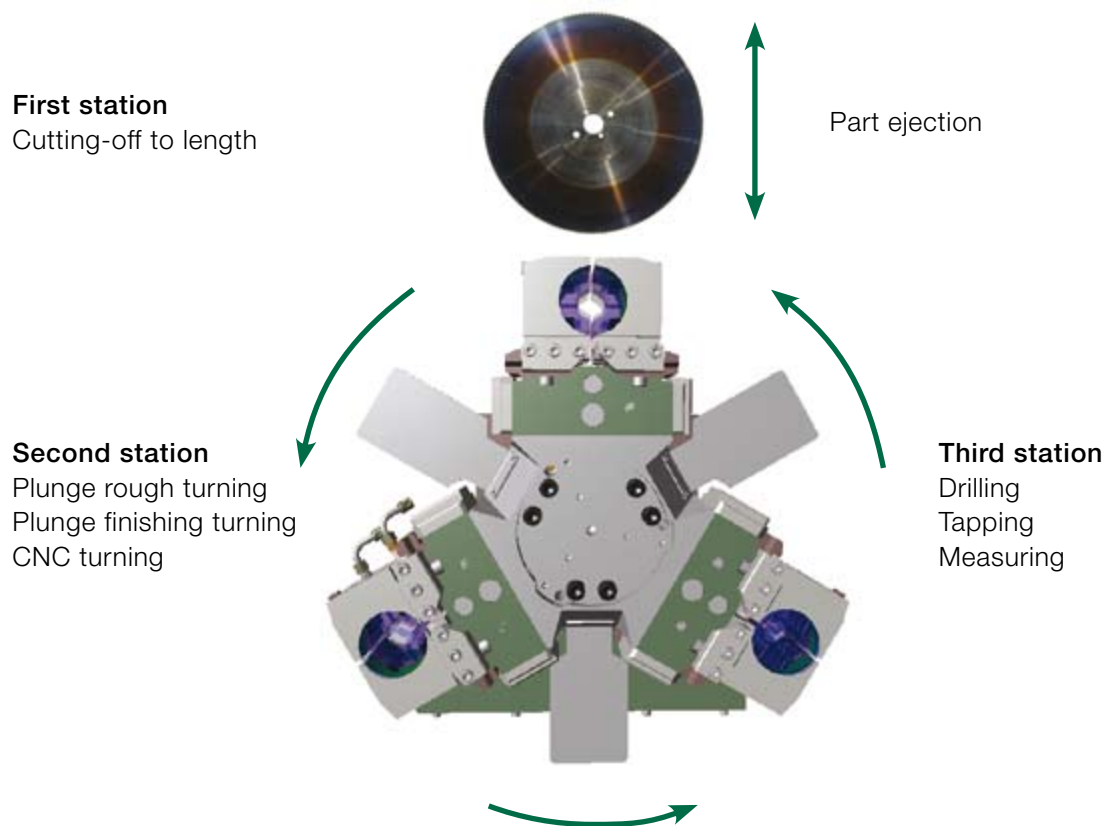
EM80 is an integrated CNC machining center suitable to obtain parts from tubes or bars, which extends the typical flexibility characteristic of a lathe, to the best productivity and robustness of a transfer machine.

By means of a specific cutting-off unit, and two or four operating units, in one only grip are possible a set of machining operations like:

- cutting-off to length;
- inside/outside chamfering, facing;
- threading, tapping, rolling, knurling;
- longitudinal drilling, and deep drilling (in the case of solid bars) with coolant through spindle, reaming and boring;
- complex profiles CNC turning.



The productivity EM80



MACHINING STAGES

The parts are indexed by a 3 positions rotary transfer, each position provided of self-centering clamping jaws. After the cut-off to length performed on the first station, further 120° rotations are bringing the parts to the corresponding machining stations. On each station are simultaneously performed the various operations which are progressively required to both ends of the parts. The final rotary transfer indexing brings the finished part to the corresponding cut-off station, where it is ejected over the part conveyor by the next feed of the bar.

The contemporaneous machining of the three stations over three different parts split the cycle time and determine a very high productivity level in one grip only.

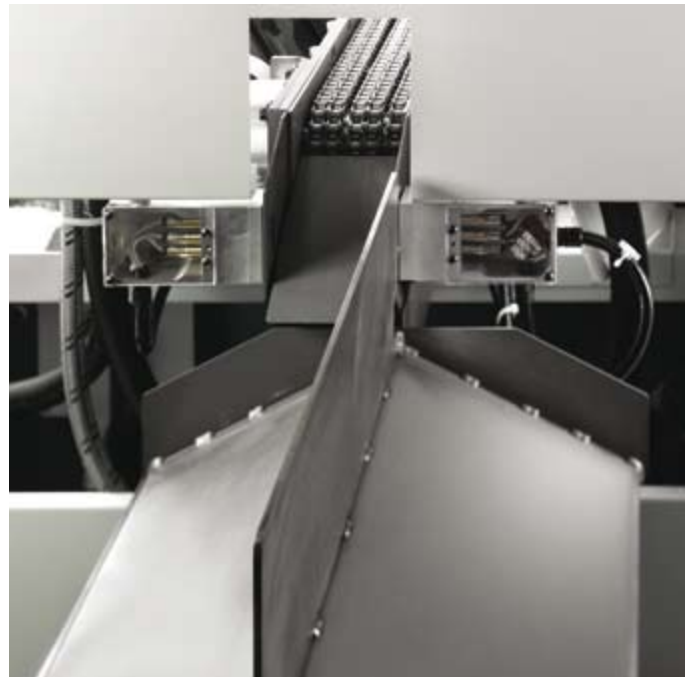


BUNDLE LOADER

The bundle loader has a lifting capacity of 4,000 kg and can be loaded at any time, allowing the production to continue without interruptions. The single bar of length up to 6.5 m (optionally 8.5 m or 12 m) is automatically loaded and fed to the trim cut position on the first station. A further bar feed performed by the bar feeder carriage, moves the bar to the position corresponding to the desired blank length, where the cut-off take place.

SCRAP MANAGEMENT

The initial bar trim cuts, and the tube leading ends are moved to the related bin by mean of a suitable motorized conveyor; the collecting bin can be safely moved out of the protected area, easily emptied and set again in position, without having to stop the production.



FINISHED PARTS UNLOADING

A conveyor brings the finished parts toward a two position deviator-chute. When the front bin is full (the number of parts can be specified in the user-program), the deviator-chute automatically switches its position to allow the parts to drop into the rear bin (and vice-versa). The operator has the time to empty the filled-up bin, without losing any production time.

SWARF AND CHIPS CONVEYOR

The swarf and chips conveyor performs working-pause cycles in order to drain the maximum quantity of coolant dropping from the wet swarf. It is also completed of an electrical and mechanical system to detect the belt dragging motor overload and implements the motor inversion in case of swarf jamming.

Quality of the part



CUT-OFF UNIT

The cut-off unit can be equipped of a blade uide device and of a turbo-refrigerating plant. These devices, combined to a rigid zero backlash transmission and CNC controlled feeding movement, grant high performances cut-offs and very long blade life. A variety of saw blades selection can be adopted and mounted based on the material to be cut-off, from the HSS uncoated, to the HSS single or multiple layer coated, and Hard Metal blades as well. In order to prevent any damage to the part external surface, the main vice and the rotary transfer jaws are provided of a forced through jaws washing system to prevent chips to interpose during the clamping operations.



ENDS MACHINING

Complex profiles turning operations are made possible by the adoption of three axis self-balancing CNC controlled Radial Movement Heads.

These patented devices are able to move along three rigidly interpolated axes and can be installed at both sides of a machining station, to operate at one or both ends of the parts. As alternative, the machining stations can be configured with spindle-motor units to operate with two rigidly interpolated axes in order to perform threading or tapping operations, or inverter-motor units for plunge turning operations with CNC controlled longitudinal movement.



UNIVERSAL MEASURING PROBES

Any production can be length measured and certified. The parts which are requested to be length inspected, are measurable by mounting on top of the normal operating units two measuring heads holding two adjustable probes which can cover the entire range of part diameters.

The measuring system provides continuous indications over the wearing level of the tool tips, and allows the automatic compensation by driving the offsets of the machining units.

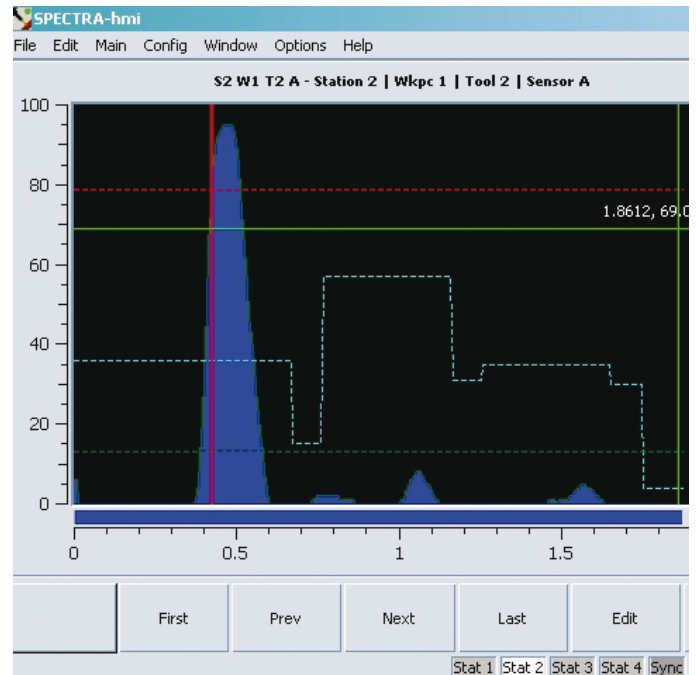
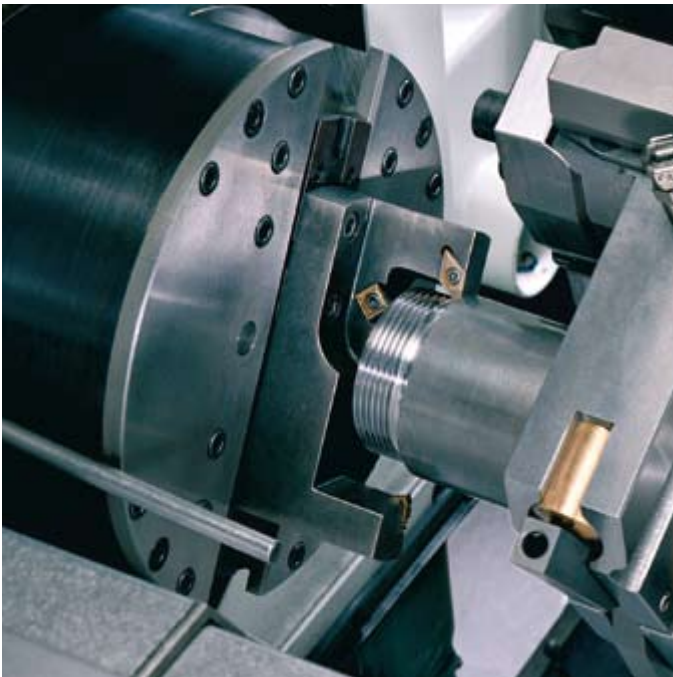


PARTS HANDLING

The three rotary transfer jaws are self-centering and calibrated by means of tools mounted on the machining stations of the machine itself. This procedure grants working higher precisions. Every jaws assembly is provided of a high pressure through jaws forced washing system to prevent swarf or chips to compromise the external surface quality of the parts.

The finished parts are then collected by a new design short part collector performing a two movement path, and allows the unload of extremely short parts.

Process reliability



TOOL MONITORING

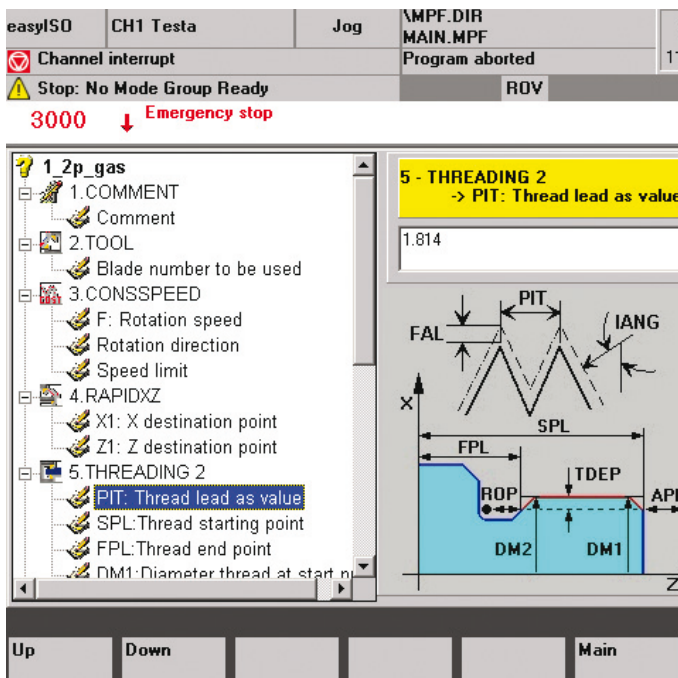
The complexity of the tool design and performances combined to units synchronization to complete the machining operations are more and more developing the need of the machine capability to continuously monitor the tools efficiency and integrity.

As no visual inspection system is able to assure the perfect integrity and efficiency of the tools, especially when considering that this verification must be performed without taking time to the machine cycle, the best way to constantly validate the machining process it is to monitor the instant electrical power required to the tools dragging motors of the operating units.

By instantly checking the absorbed electrical power it is possible to verify the tool wearing level, take therefore advantage of the entire tool life, and early warn the operator for his intervention needed.

The tool monitoring system is therefore even capable of detecting the most critical tool breakage event and promptly interrupt the machine cycle and recall the operator attention.

The possibility to produce bad parts for an undefined period is in this way avoided, and the efficiency and the integrity of the machine it is assured. This solution also allows production batches to be launched foreseeing the absence of the operator, and eventually send messages to the remote operator in case of anomalies.



PROGRAMMING

Thanks to the easy-ISO interface, no specific ISO programming knowledge is required to use and manage the machine. Setting of the entire machining cycle can also be performed through step by step guided sequences described by means of intuitive graphic icons.

TECHNOLOGICAL PARAMETERS DATABASE

A technological database helps the operator to choose the best machining parameters. For the cut-off blade to be adopted, a variety of data can be suggested like blade type, teeth type, shape and pitch, and blade coating as well. All these data are aimed to obtain the best compromise among blade life and cut-off time.

NUMERIC CONTROL

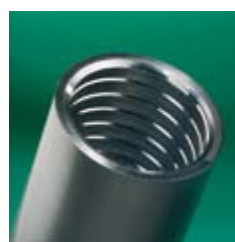
The adoption of the new generation Sinamics Series Siemens CNC 840D to manage and control all the axes of the machine, means reliability and top speed of execution. This type of CNC control brings the EM80 productivity levels to values never reached in the past.

REMOTE DIAGNOSIS

By the adoption of devices which allows the machine to be connected to analogic or DSL phone lines, or GSM mobile phones network, it is possible to perform remote diagnosis interventions, to update the software or the configurations of various devices.

Technical Data

Tube diameter	min 10 mm - max 80 mm
Tube wall thickness	min 0.8 mm - max 12 mm
Solid bar	min 10 mm - max 60 mm
Finished part length	min 10 mm - max 600 mm (customizable)
Bar stock lengths	min 2,500 mm - std. 6,500 mm - max 12,000 mm
Saw blade diameter	min 275 mm - max 360 mm
Blade cutting speed (with blade dia. 360 mm)	min 20 m/min - max 450 m/min





BLM GROUP



CUTTING & END MACHINING

tube bending

endforming

lasertube cutting system

sawing, deburring and washing

combined sheet and tube laser cutting

handling

3d measuring

manufacturing cell

non touch measuring systems

process control software

ADIGE-SYS

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