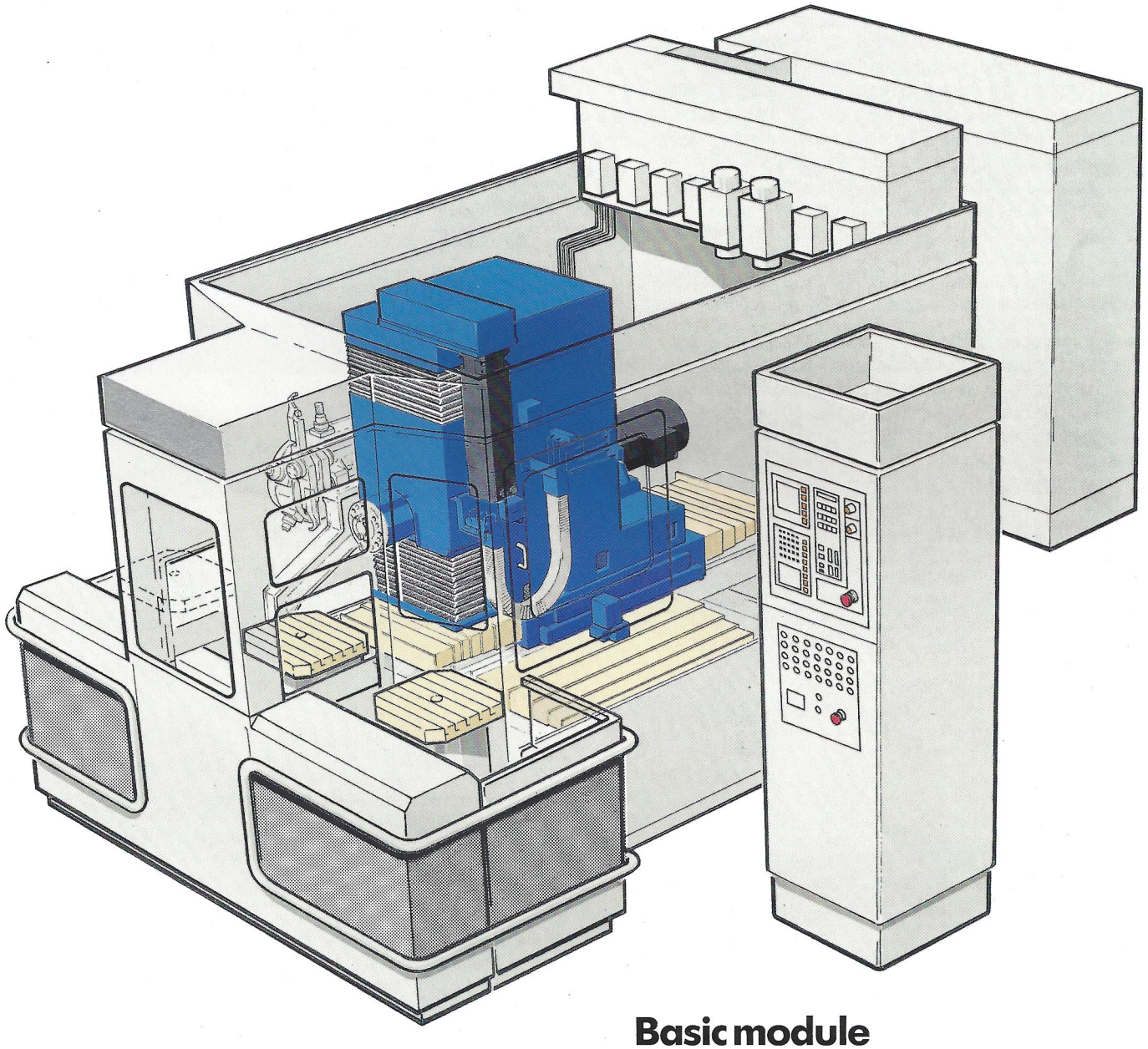
Ecoflex 400-4

High-performance Machining Centre



Basic module

3-axial CNC machining unit

– specially designed for use in
- special purpose machines
- transfer lines
- versatile production lines

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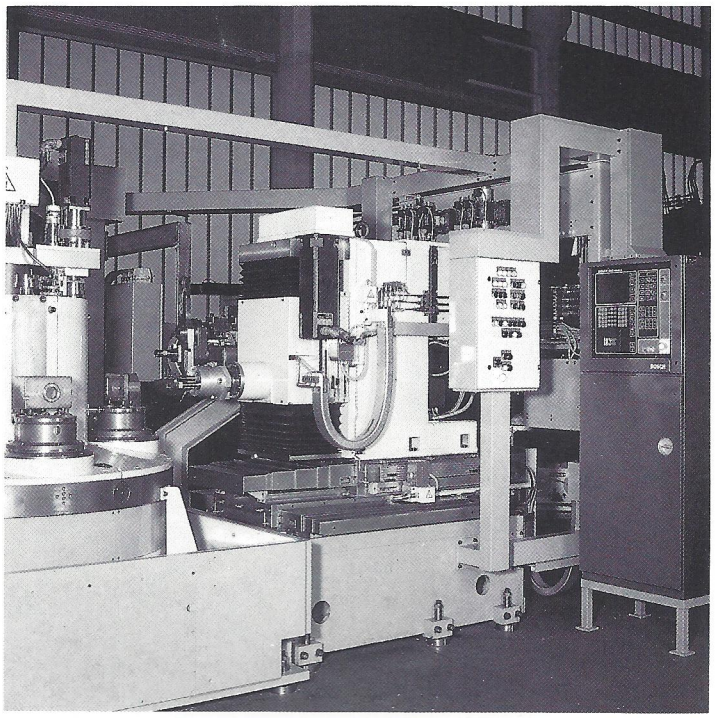
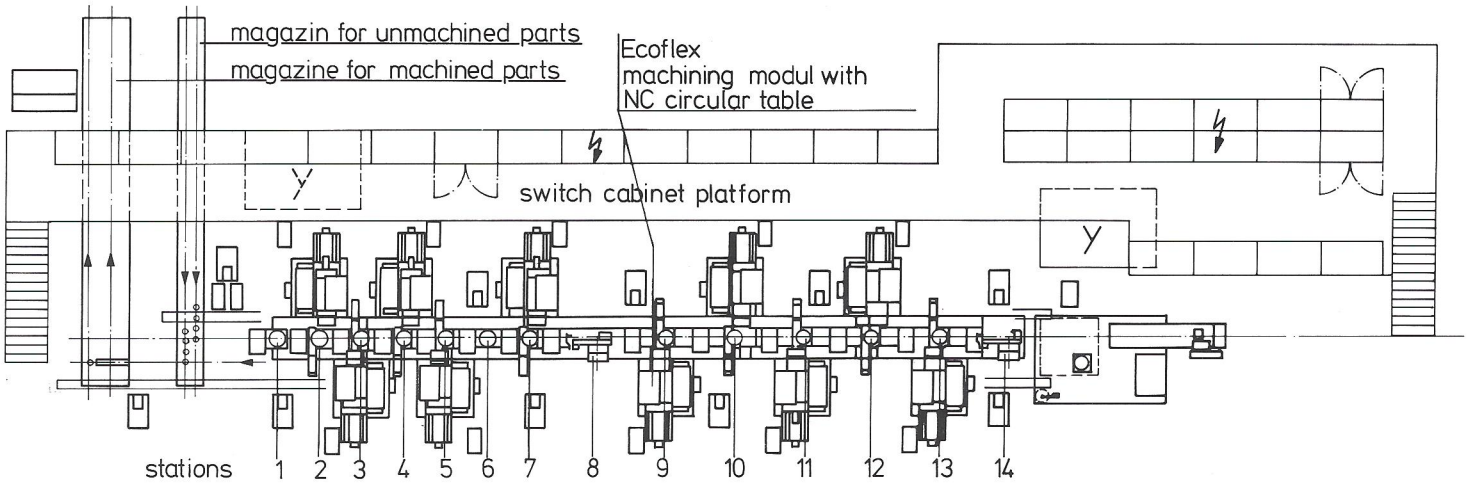
The 3-axial CNC machining unit is one of the main components from the Ecoflex line for use in versatile special machines and transfer lines.
By mounting the most varied tool and workpiece handling variants, the module can be extended to, e.g.:
– high-performance machining centres
– master-computer controlled production lines
– machinery systems.

The basic module is equipped with 3-phase AC servomotors on all 3 axes. The vertical axis is protected by a hydraulic counterweight. The use of high-performance ball screws, a direct measuring system and a control system on three guideways ensures an optimum accuracy of positioning and iterative work.
Various tool magazine systems, such as:
– travelling star magazines with 4 locations
– stationary or travelling chain magazines with up to 40 locations,
provide a high versatility for machining. The basic module is completed by an extendable CNC control system and a supply system of hydraulic fluid incorporated into the machine.

The configuration of the "Ecoflex 400-4", using a stationary tool magazine with 17 locations and a linear pallet transport system permitting to change pallets within 6 s with a high accuracy of positioning and iteration, is a versatile high-performance machining centre.



Flexible production line for a steering and valve housing of different versions, with 42 NC axes, 10 3-axial Ecoflex machining modules and circular tables. Overtransfer of workpieces via portal.



Ecoflex 400-4

comprising:

Machining module Ecoflex 400

Working range

x-axis	mm	400-630-800-1 250-1 600
y-axis	mm	400
z-axis	mm	500
Drive units		threephase a-c servo motors

Drive unit

Feed power at 100% duty cycle	N	21,000
Feed range	mm/min	1 – 10,000
Rapid traverse	m/min	15

Working Spindle

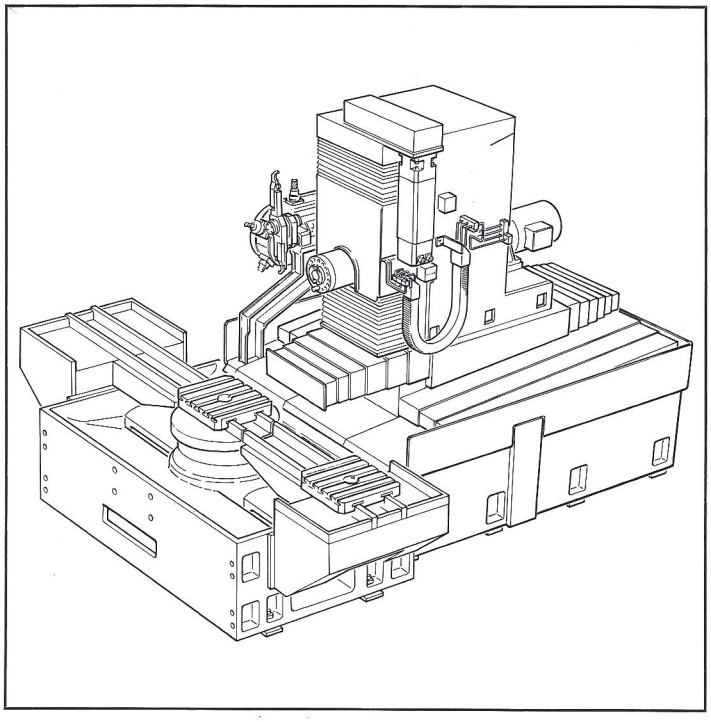
Tool holding fixture to DIN 69871		Sk 30	Sk 40
Main drive d-c motor with positioning of spindle	kW	6	12
Front bearing dia.	mm	55	80
Speeds	min^{-1}	250–8000	100–6300
Max. torque at 100% duty cycle	Nm	57	115
Gear transmission		2 steps	

Measuring System

3 axes, direct		scales
Resolution	mm	0.001
Position tolerance to VDI DCQ 3441 TP	mm	0.015
A axis, B axis		rotary shaft encoder
Resolution	degrees	0.001
Position tolerance	angular sec	± 3

Tools

Number of magazine locations		17 (or at choice)
Type of magazine		chain, stationary
Tool diameter	mm	100 (180)
Tool length from spindle nose	mm	300
Tool weight	kp	15
Tool encoding		variable location encoding
Tool changing time	sec	4
Chip to chip time	sec	8



Indexing Table – NC Circular Table

Dimensions	mm	400×400
Division	degrees	360×1/360 000×0.001°
Indexing accuracy	angular sec	± 3
Adm. workpiece weight	kp	300
Max. tangential torque	Nm	10,000
Max. Tilting torque	Nm	6,000
Indexing time for 45°	sec	3
for 180°	sec	5

Pallet Changing Equipment

Pallet mounting surface	mm	400×400
Accuracy of pallet changing	mm	± 0.01
Pallet changing time	sec	6 for linear changer
	sec	12 for rotary change from store

Complete machine Ecoflex 400-4

Space required	mm	3500×5000×2500
Weight	kp	7000
Power required	kW	25

Electric Control

CNC-system, preferably from SIEMENS and BOSCH with comprehensive standard accessories, integrated machine controls to VDE 0113/160, operating voltage 3×380 V 50 Hz. Main spindle drive porters: GS-shunt generators with 4-Q Thyristor control units.
Feed drives: 3-faces-ac servo motor with transistorized speed control.
Machine control with adapted FIRMWARE-components.

Subject to technical modifications

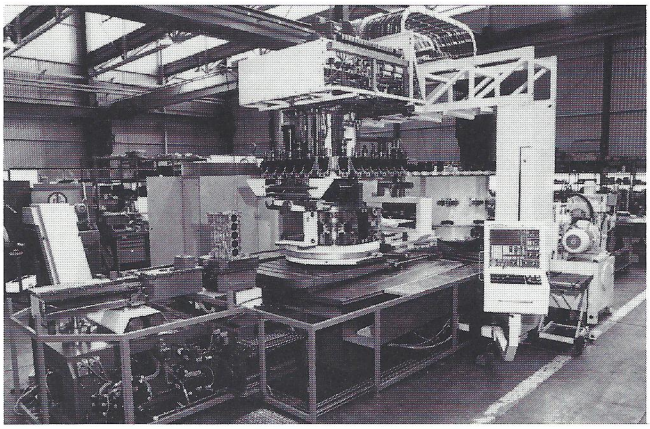
Other versatile, CNC controlled machines from our production program

Quattrex 500,
a highly versatile production system for complete machining of workpieces of the most varied versions.

Extendable, due to a comprehensive periphery

Economical,
due to a rapid change of tools and spindle heads

Demand oriented,
due to an adaptable cutting technology



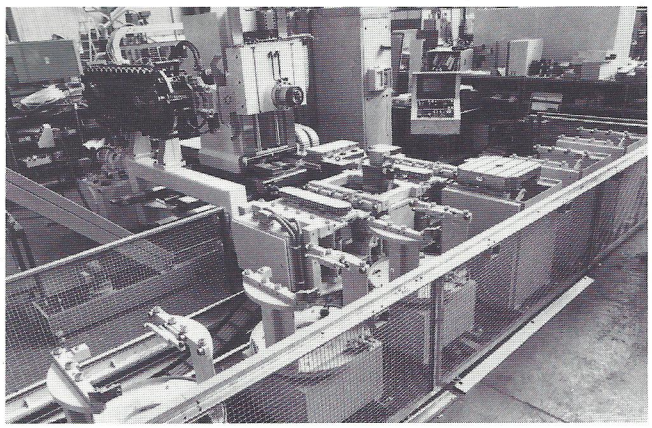
Quattrex 500 with NC indexing table, pallet changer, changing unit and storage unit for individual tools and spindle heads
... with and without casing

MMS
– a modular machinery system – from the 3-axial movable-base machine for horizontal/vertical machining up to the master-computer control production line.

Task oriented,
the basic unit has three ranges of traverse of free choice on all axes

Versatile,
thanks to a fast tool change from the most varied magazine systems

Adaptable,
to changing machining tasks by means of replaceable spindle heads or multiple, attachable components



MMS 500 with tool changing magazine, circular table, pallet transport trolley and pallet storage locations
... with and without casing.

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