VÚTS, Czech Republic

Company Prezentation

www.vuts.cz

History of VÚTS Liberec, a.s.

- 1951 – foundation of the company
  (owned by state)
- 1991 - transformation into Plc.
  (main owners - privatization funds)
- 1994 – foundation of joint-venture VUSIT Ltd.
  (founders VUTS Plc. and SITEC Germany Ltd.)
- 1996 - majority-owned by VUTEX, Ltd.
  (company owned by the management)

VÚTS Liberec, a.s. – key data

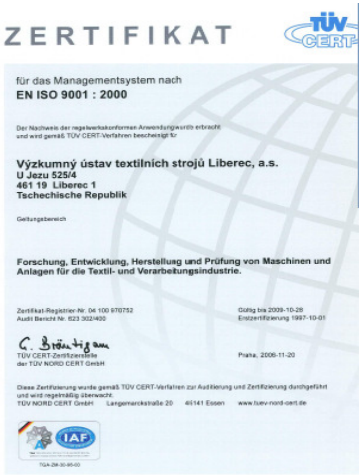
► 160 employees

- 80 designers + special technical / R&D staff
- 30 workers in production area (1-2 shifts)

► 9 special departments
(design, automatization, measuring, mechatronic, …)

►More than 750 patents

► ISO 9001 quality certificate


ZERTIFIKAT

für das Managementsystem nach
EN ISO 9001 : 2000

Výzkumný ústav textilních strojů Liberec, a.s.
U Jezu 525/4
461 19 Liberec 1
Tschechische Republik

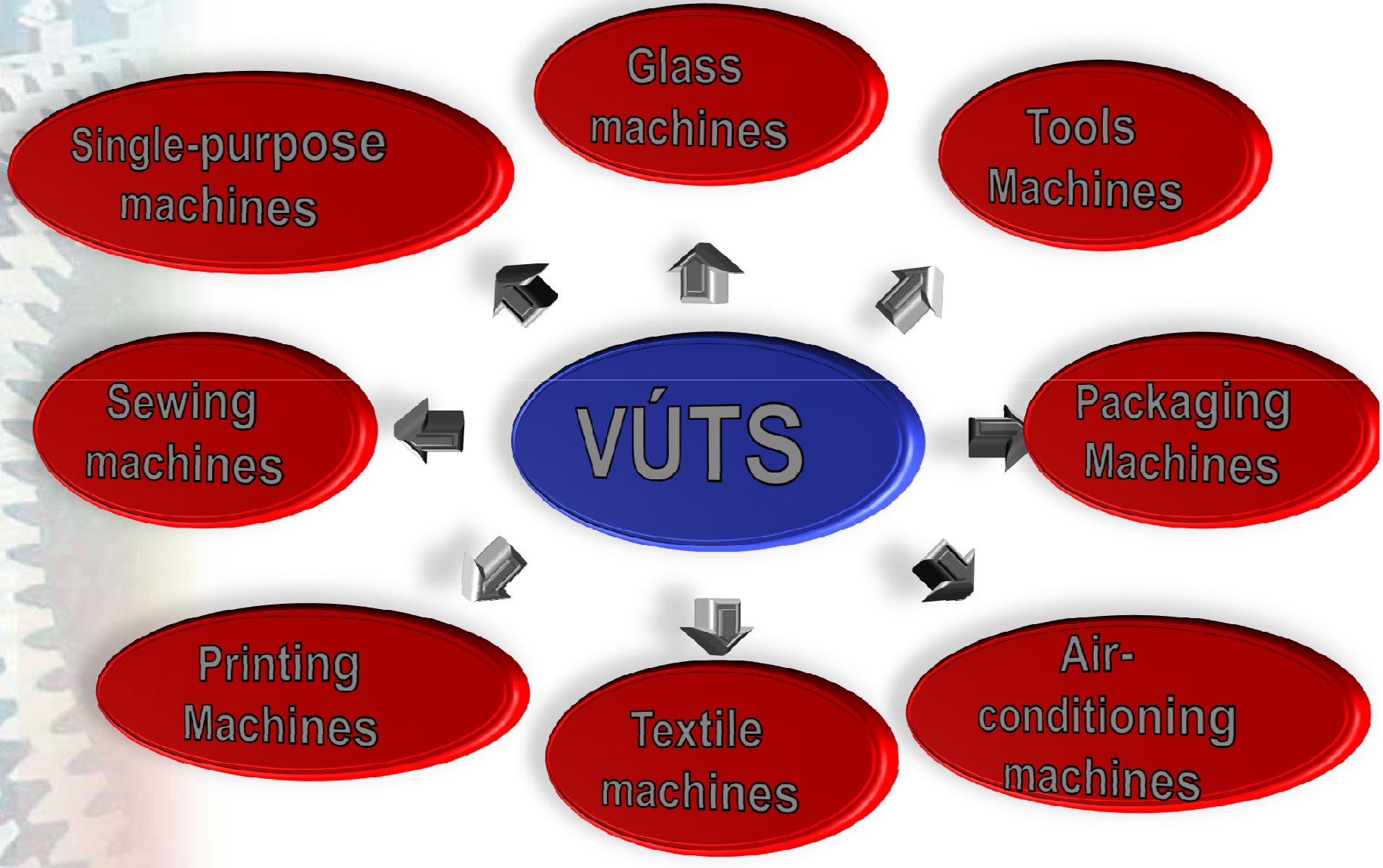
Forschung, Entwicklung, Herstelluag und Prüfung von Maschinen und Anlagen für die Textil- und Verarbeitungsindustrie.

► 2010 Turnover : 221 Mio CZK

www.vuts.cz

VÚTS, a.s. – key markets

(R & D, design, production)



VÚTS LIBEREC

FEM Analysis
+
Numerical Flow Simulation

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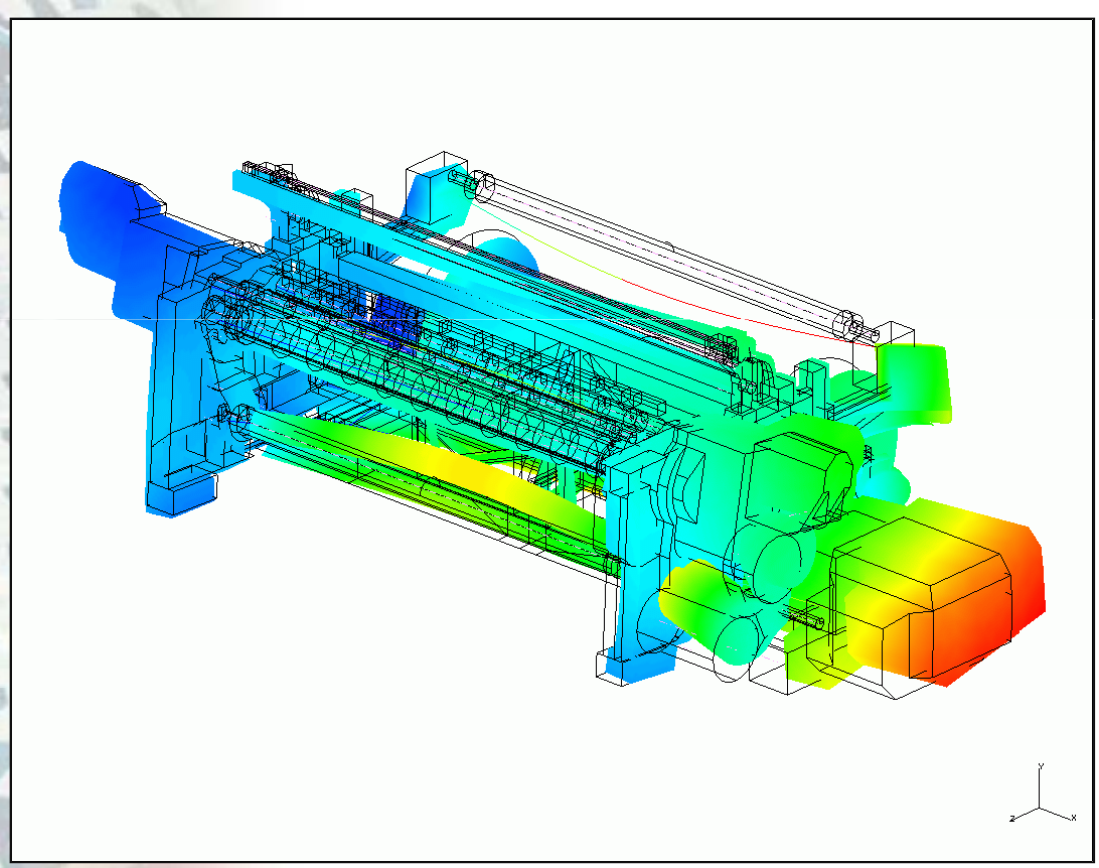
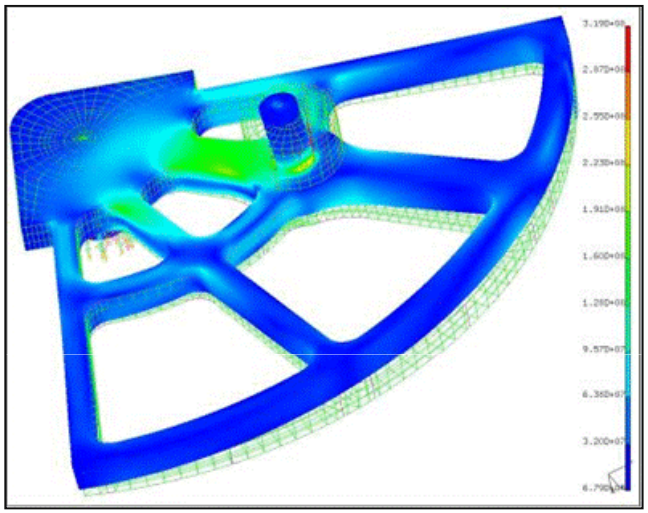
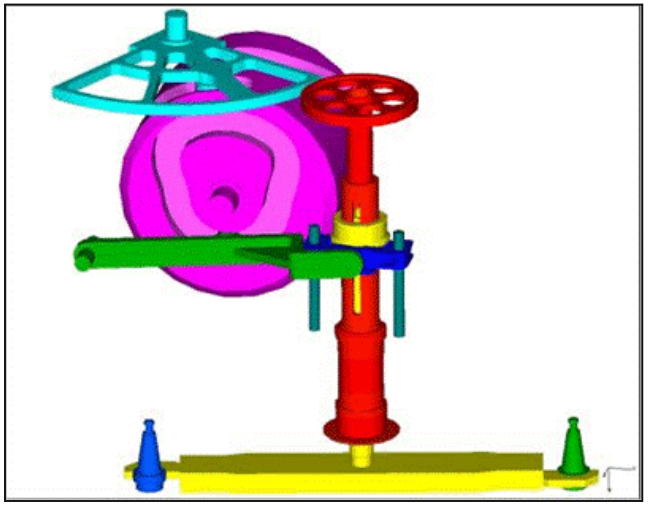
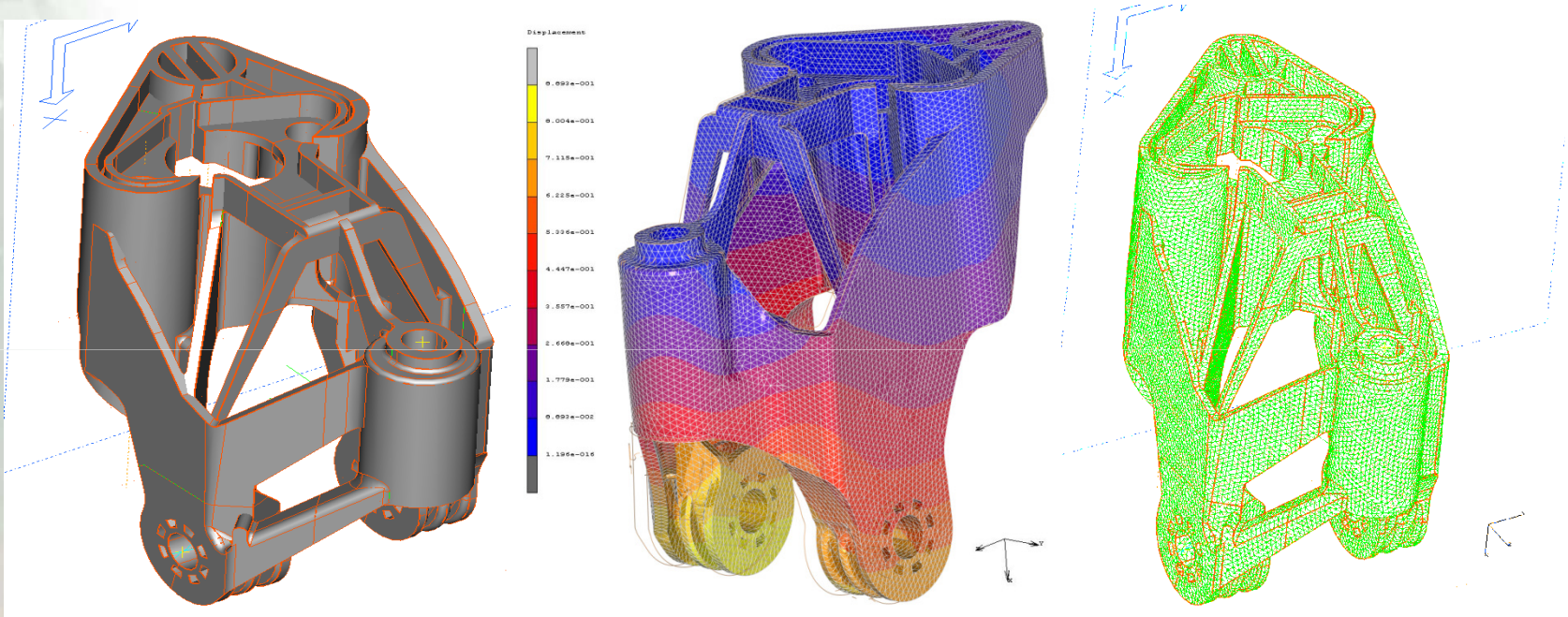
FEM analysis
(static and dynamic analysis of weaving machine)

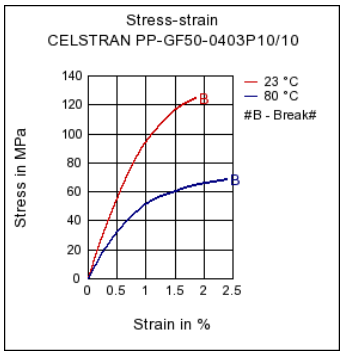


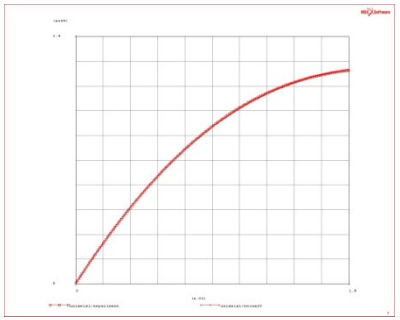




FEM analysis (deformation and stress analysis of plastic parts - automotive)

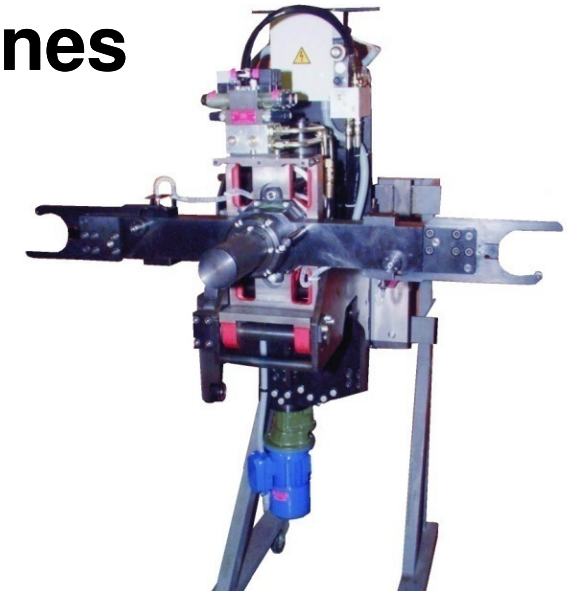




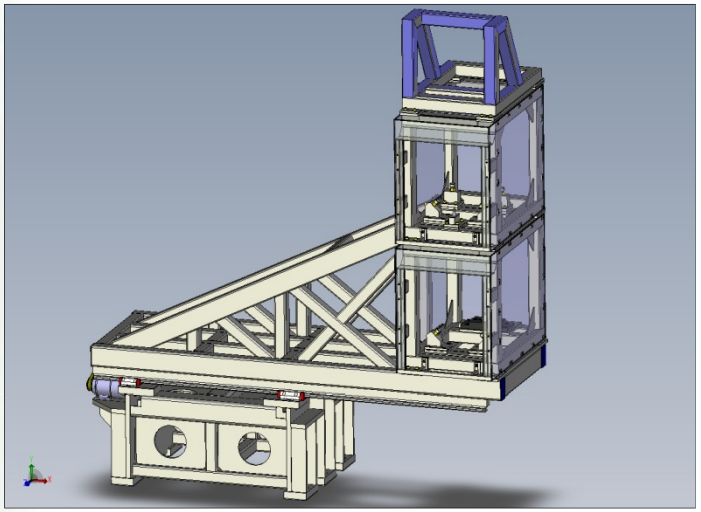


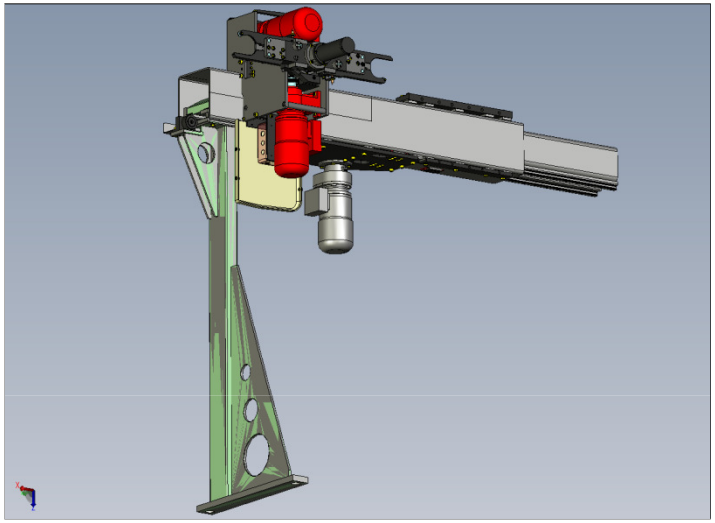
ATC
Automatic Tool Change Systems

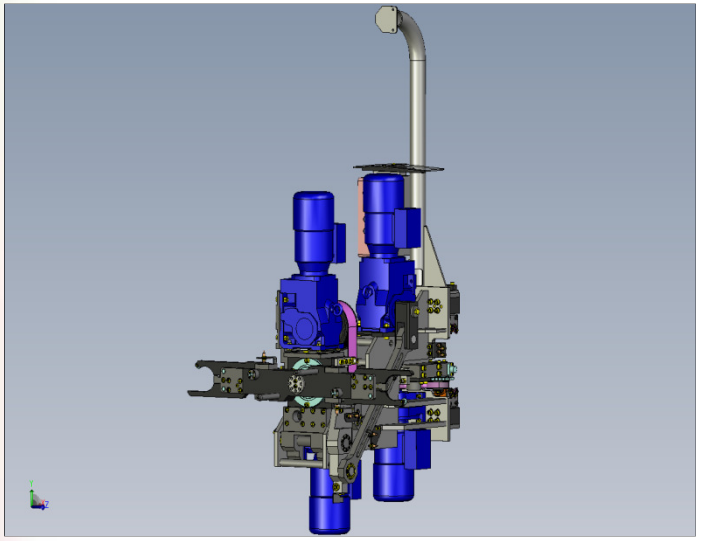
Handling Machines for Horizontal Drilling Machines

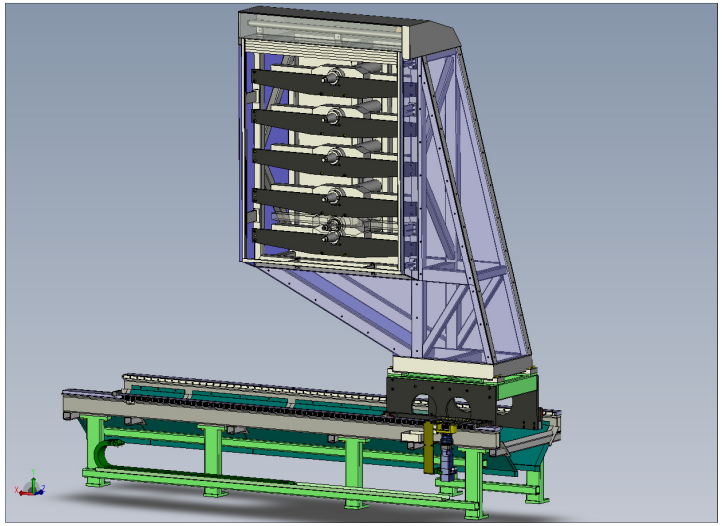


Handling Machines for Horizontal Drilling Machines

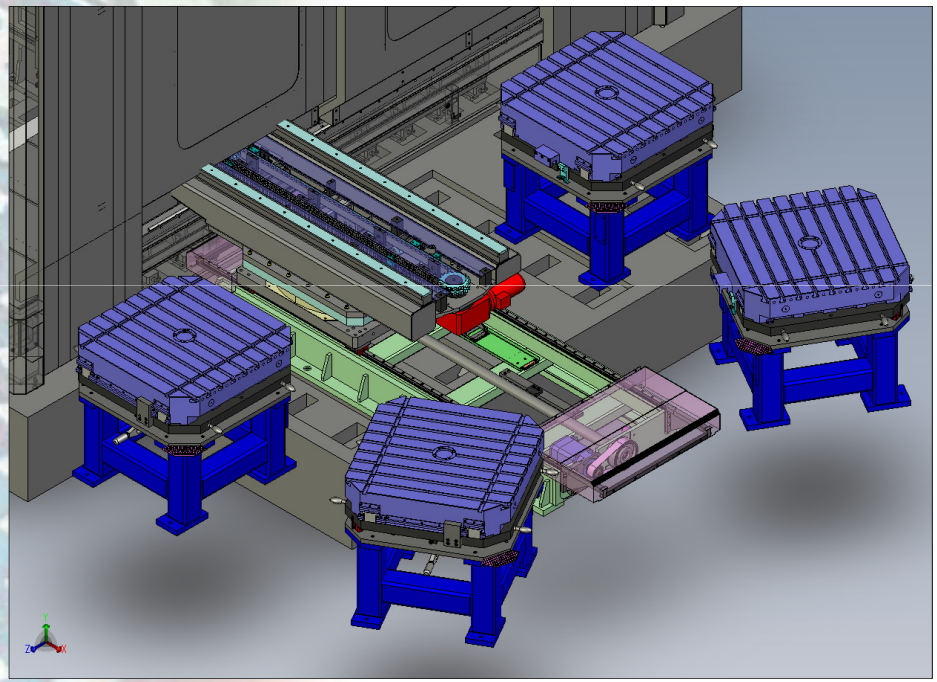






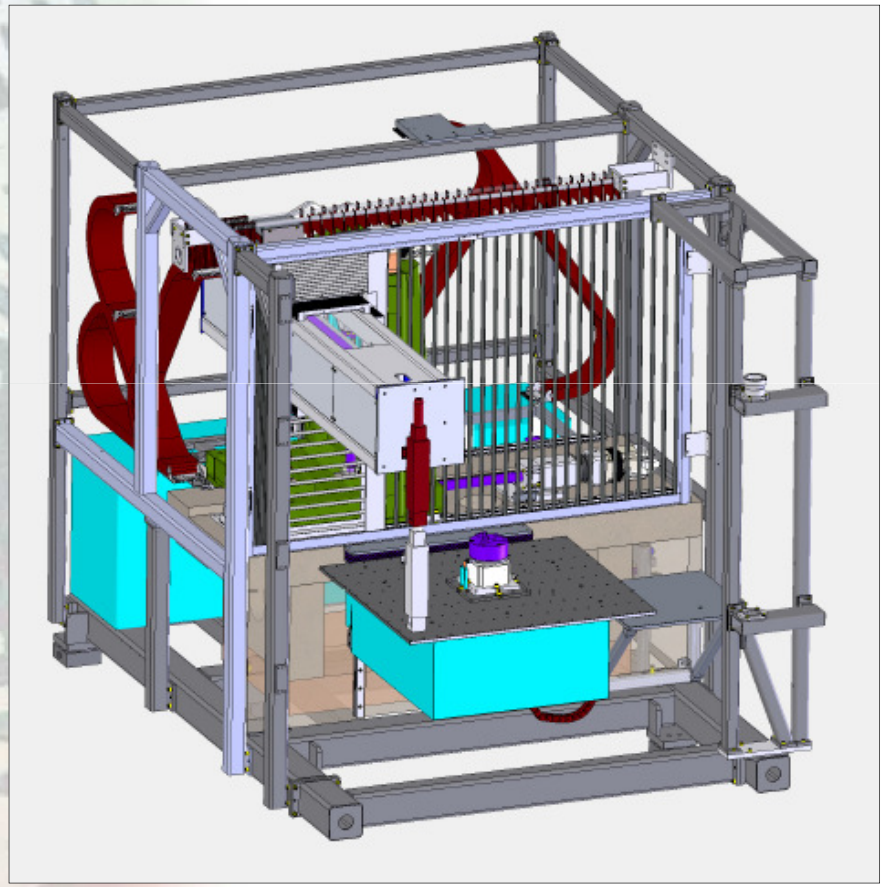


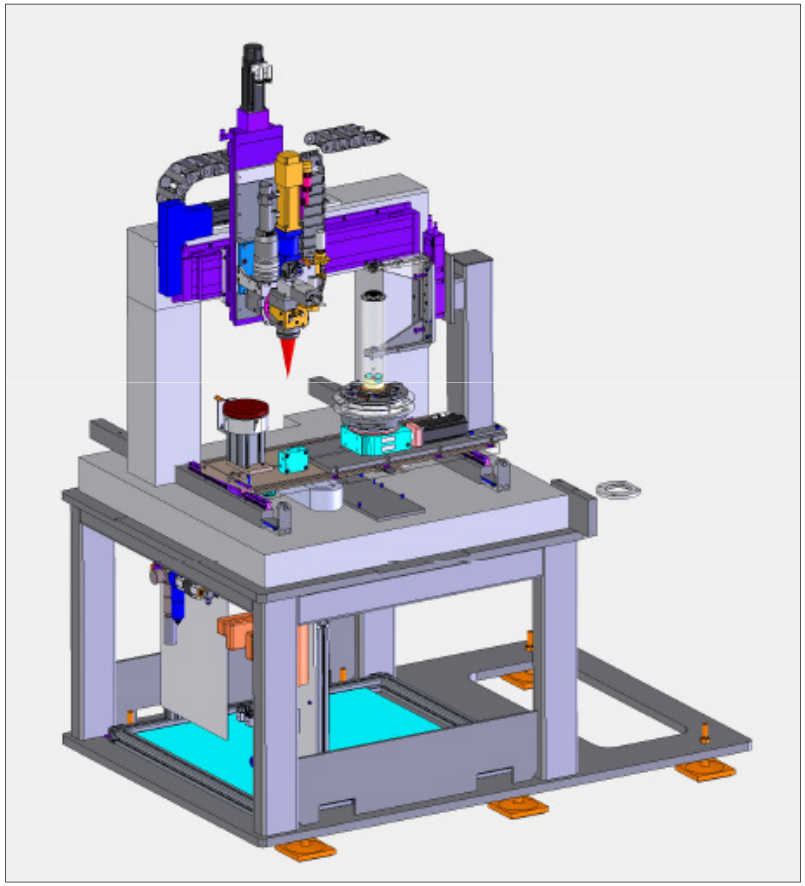
Pallet Handling for Horizontal Drilling Machines



Laser Machining Centres

Laser machining centre

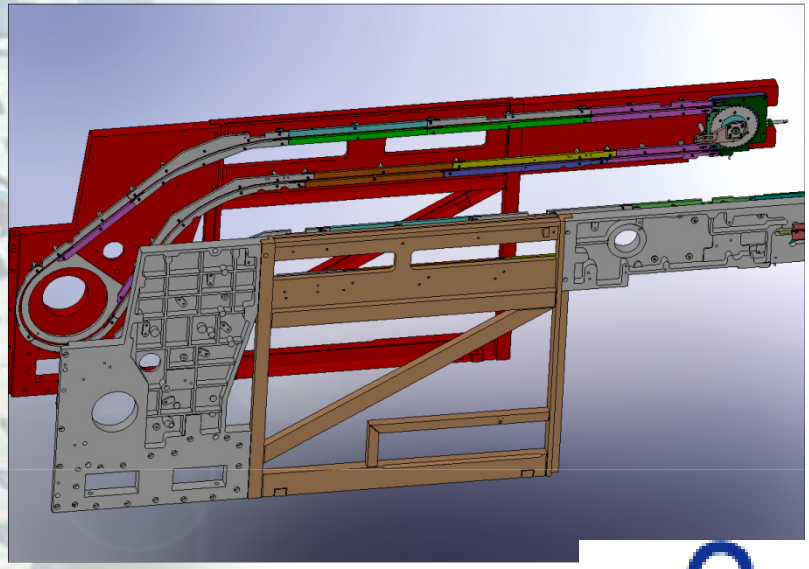


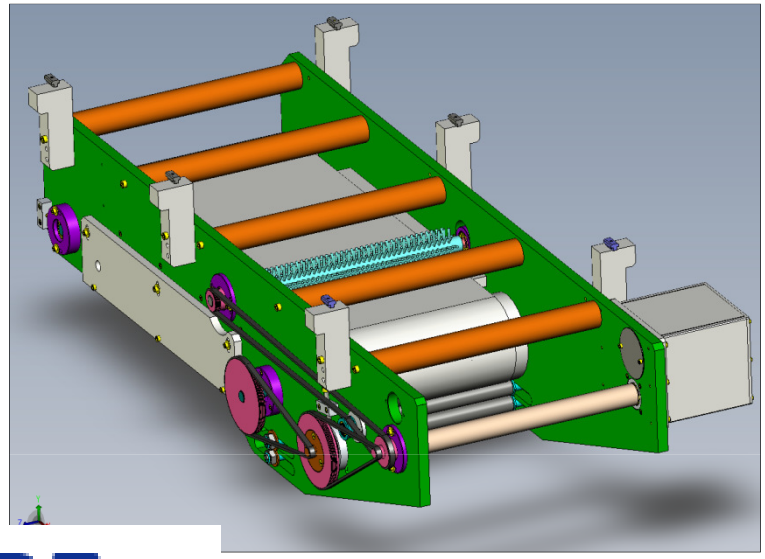


- **Modernisation**
- **Optimalization**
- **Innovation**

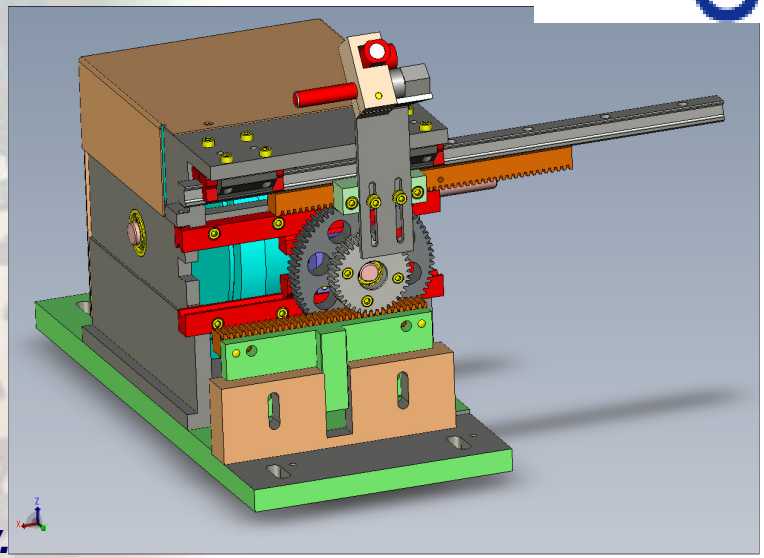
of older machines

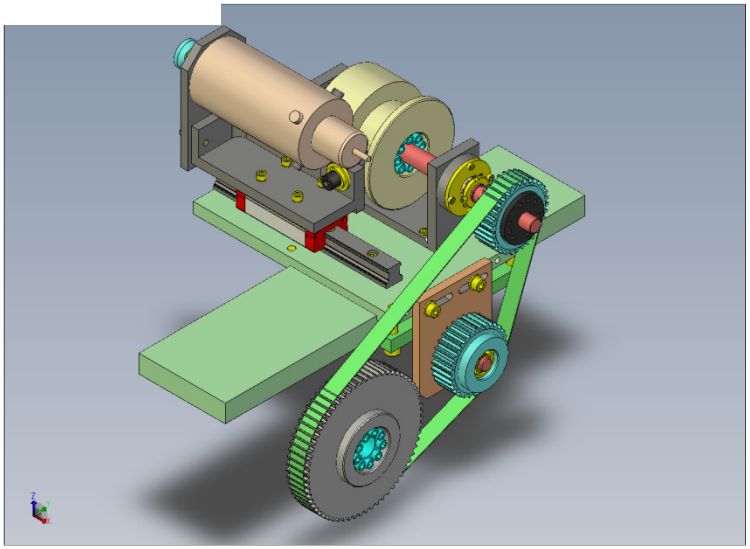
Single Purpose Machines – Printing Industry



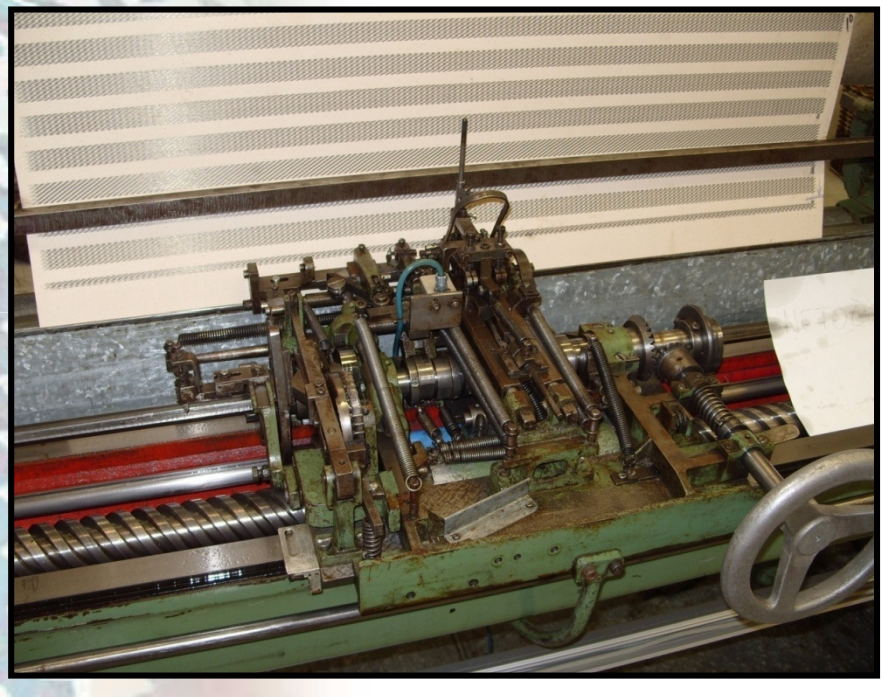


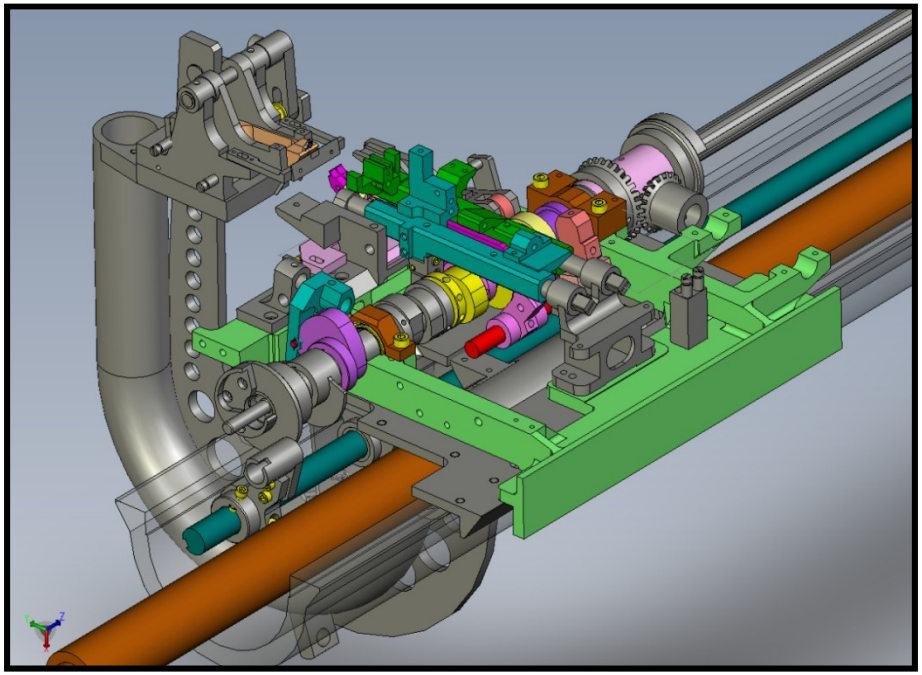
KBA



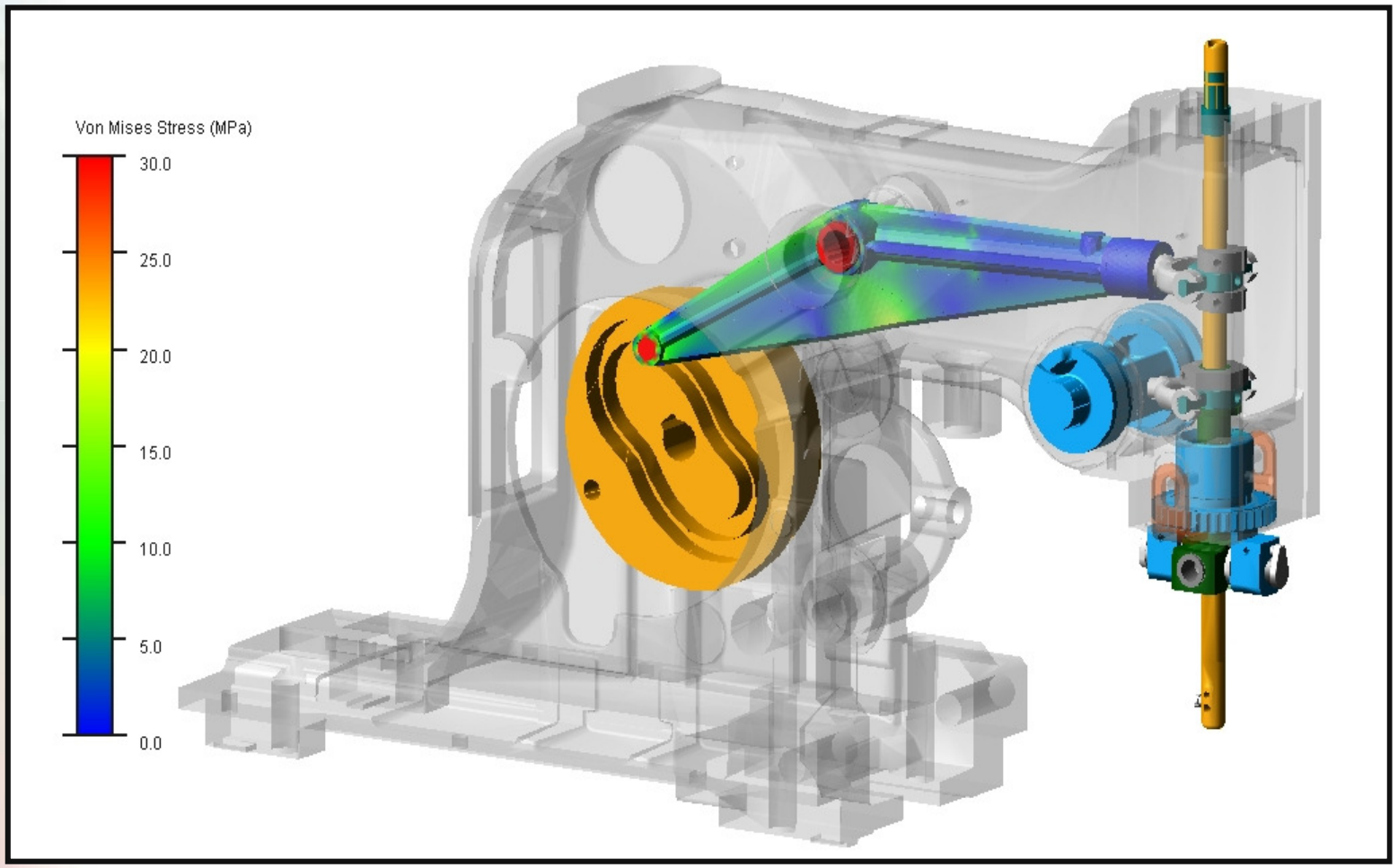


Innovation / Modernisation
Textile Machines - carding





Innovation / Modernisation
Seawing Machine

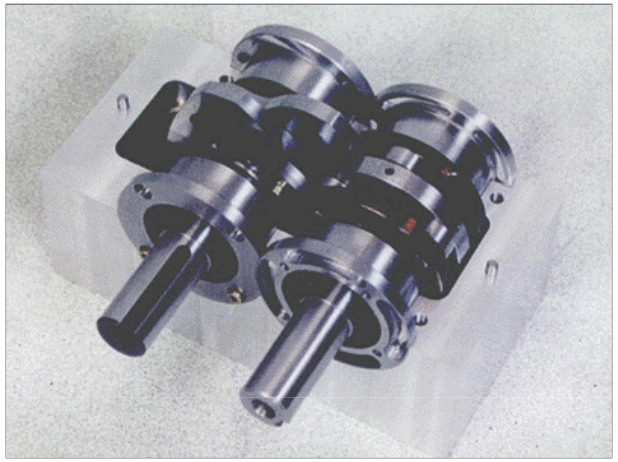


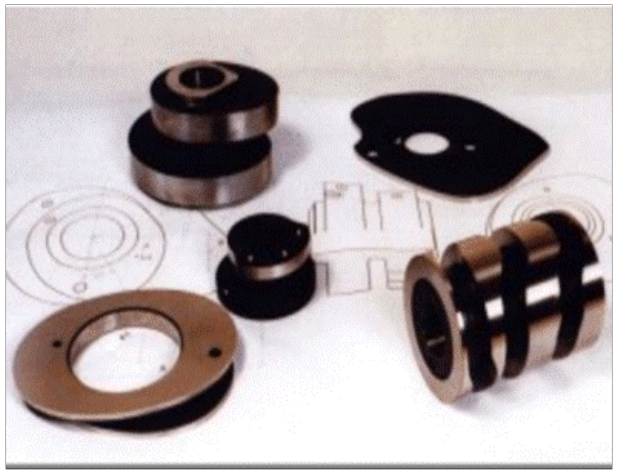
CAD CAM‘s inhouse Production

Mechatronics

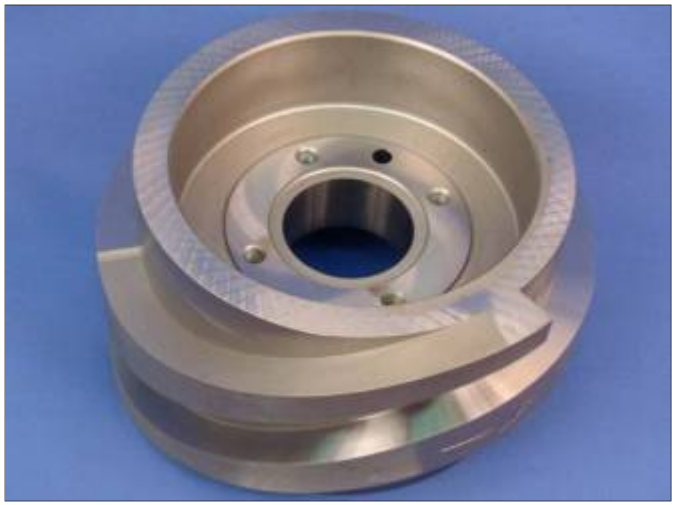
www.vuts.cz

CAD / CAMs and gear-boxes - inhouse serial production

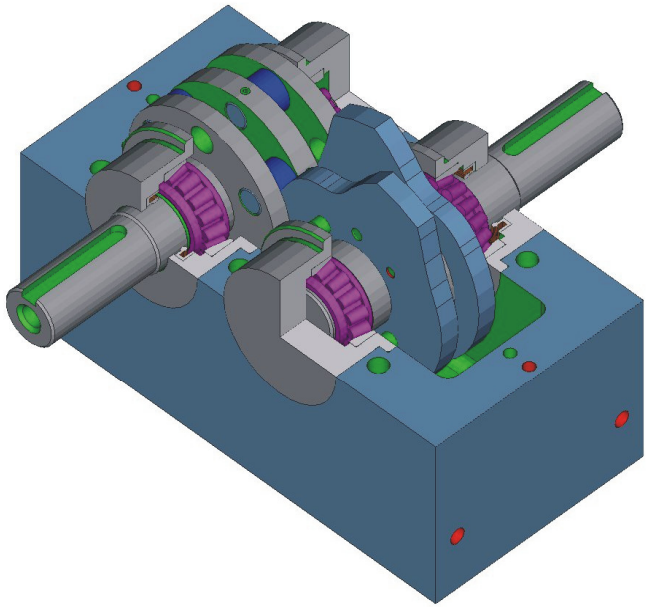




Cam mechanisms – calculation and inhouse serial production



Cam mechanisms – calculation and inhouse serial production



KP-01 indexing gearbox

Introduction - Mechatronics

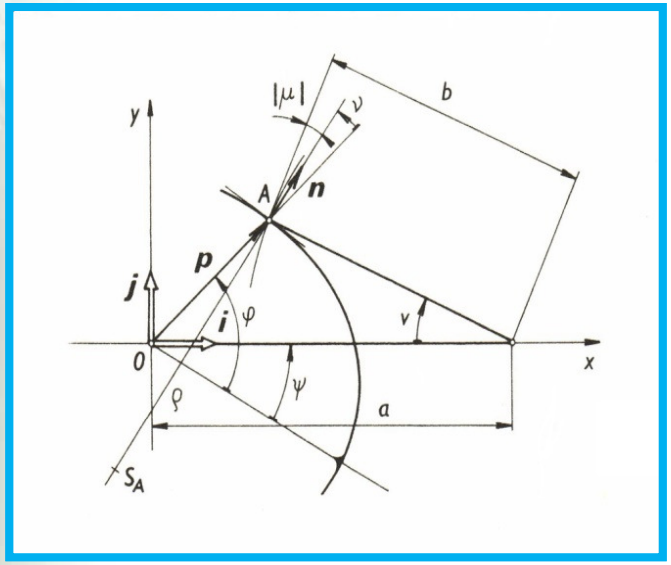
As an electronic cam is implemented by an end force link, which is a servomotor, it is necessary to describe the basic fields of using controlled servomotors.

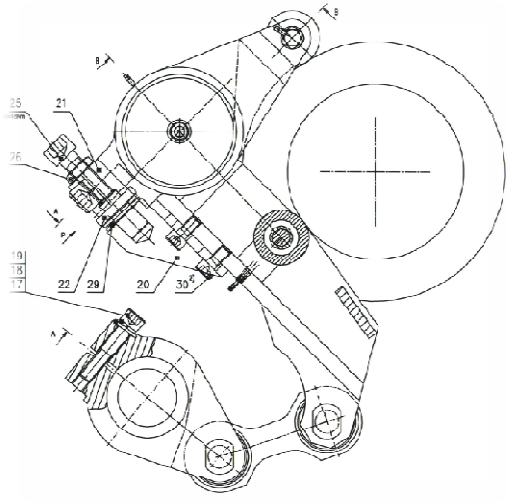
There are those main fields:

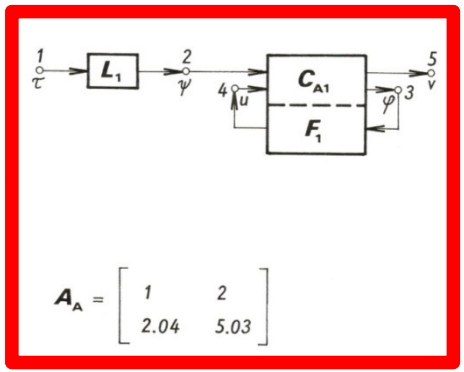
- ***Machine tools***
- ***Robotics***
- ***Manipulators***
- ***Other applications of servomotors*** **(Uni-axial systems inclusive electronic cams)**

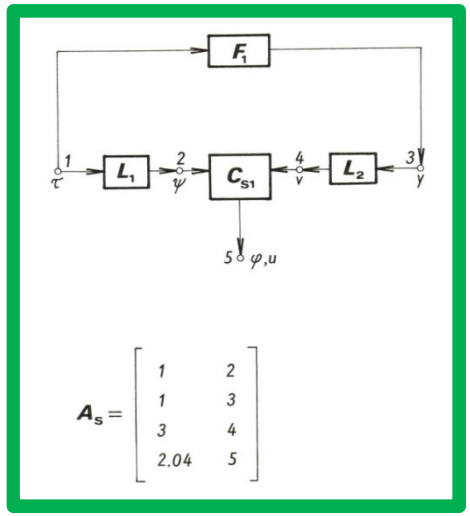
Thus, an *electronic cam* is a drive (a *synchronous servomotor* supplied by a frequency inverter – *servo inverter and controlled by a controller*) which realizes a forcing motion function on the output shaft (servomotor rotor).

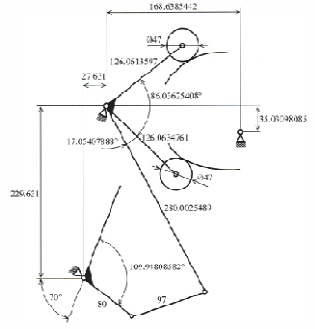
Kinematic analysis and synthesis of cam mechanisms











Electronic cams

Those are generally:
Controller, servo inverter and servo motor

Basic Module

Model Name : MP2300
Model : JEPMC-MP2300
Approx. Mass : 500 g

Items	Specifications
Power Supply	Input power voltage: 24 VDC±20% Current consumption: 1A Inrush current: 40A or less
Motion Network	One circuit for MECHATROLINK-Ⅱ: Twenty-one stations, including servo dr connected. (16 axes for servo drives) Transmission speed: 10Mbps (MECHA Maximum segment length: 50m
I/O Signals	*Direct input:* 8 points (One point can be 24VDC, 4mA, and source mode or sink mode input : 4 points, 24VDC, 100mA, open collector, and sink mode output

GDH)

ir machines can perform at high speeds and feed smoothly. By mounting an
onnect a SERVOPACK to various networks such as MECHATROLINK-Ⅱ or De

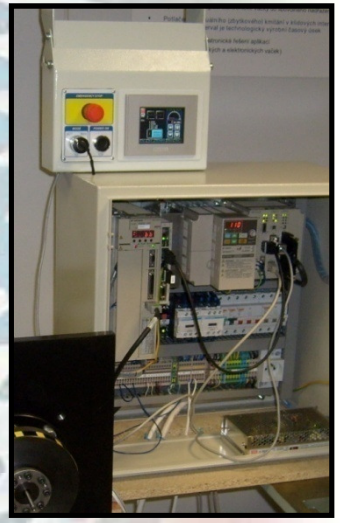
r SERVOPACKs

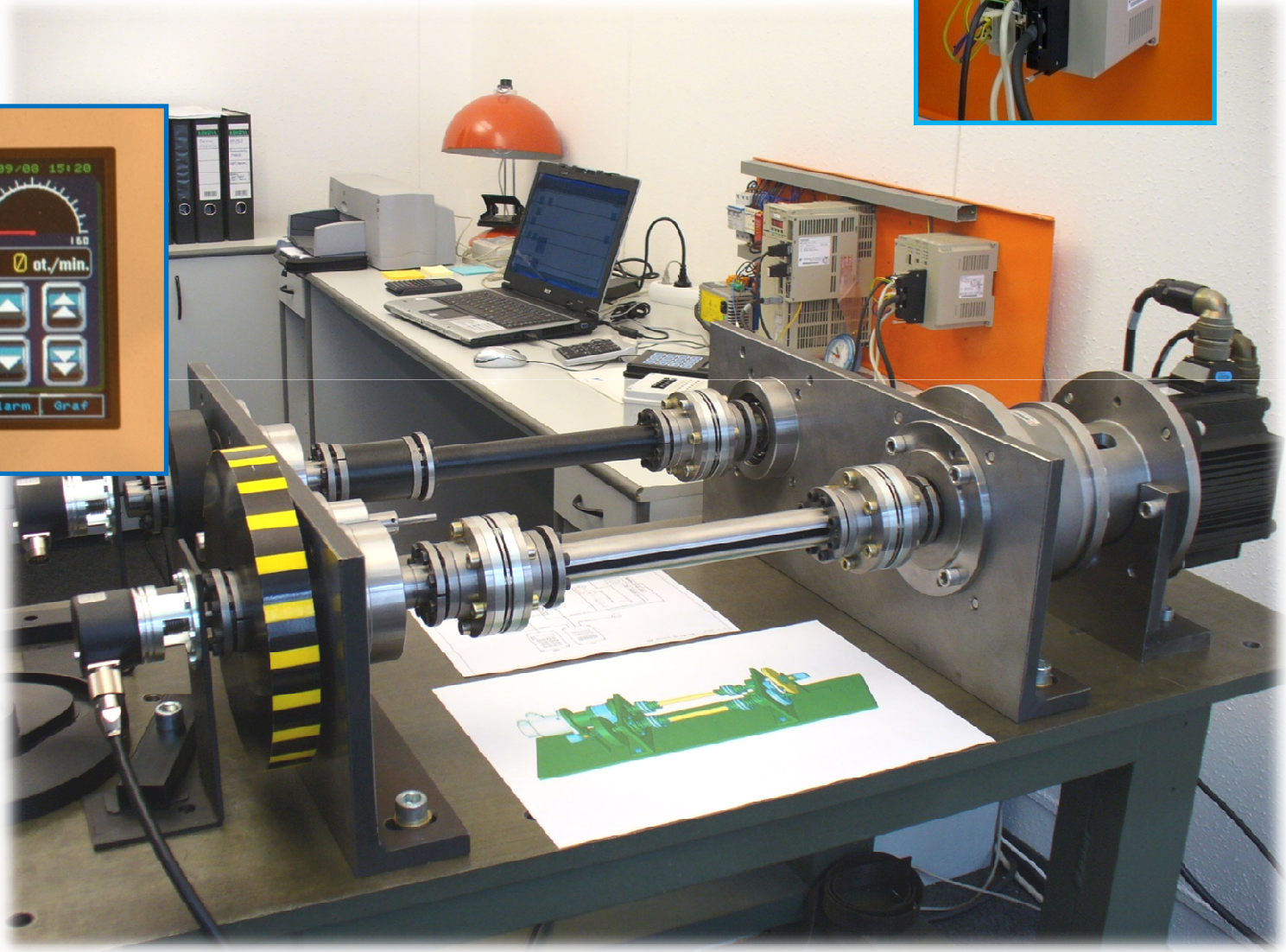
▲ Application

SGMGH-44□	4.4 kW	–	–	50AE	50DE
SGMGH-55□	5.5 kW	–	–	60AE	60DE
SGMGH-75□	7.5 kW	–	–	75AE	754DE
SGMGH-1A□	11 kW	–	–	IAAE	IADE
SGMGH-1E□	15 kW	–	–	IEAE	IEDE

Yaskawa electronic cam

A stand with output compliance (flexibility)





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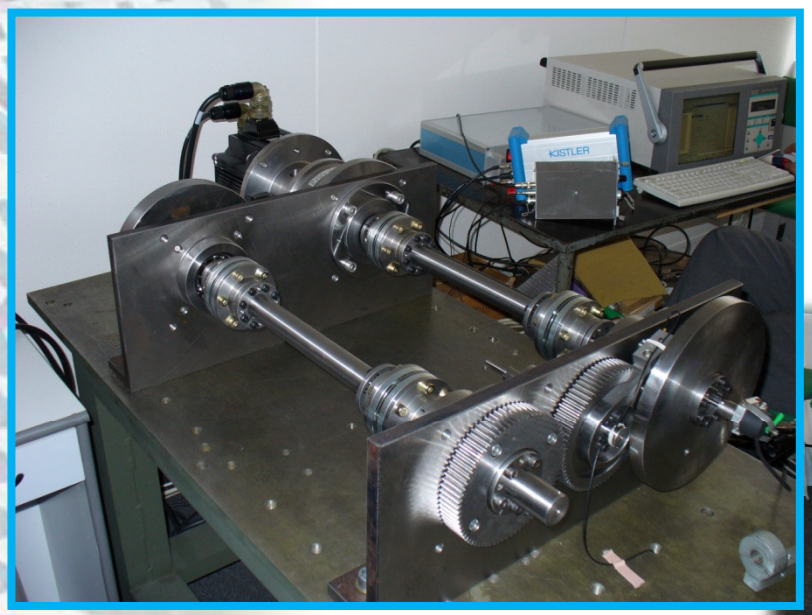
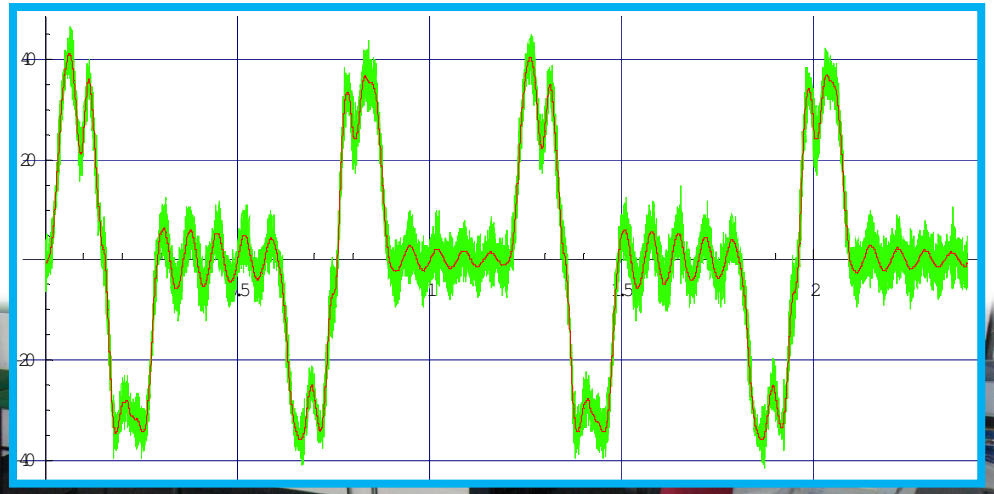
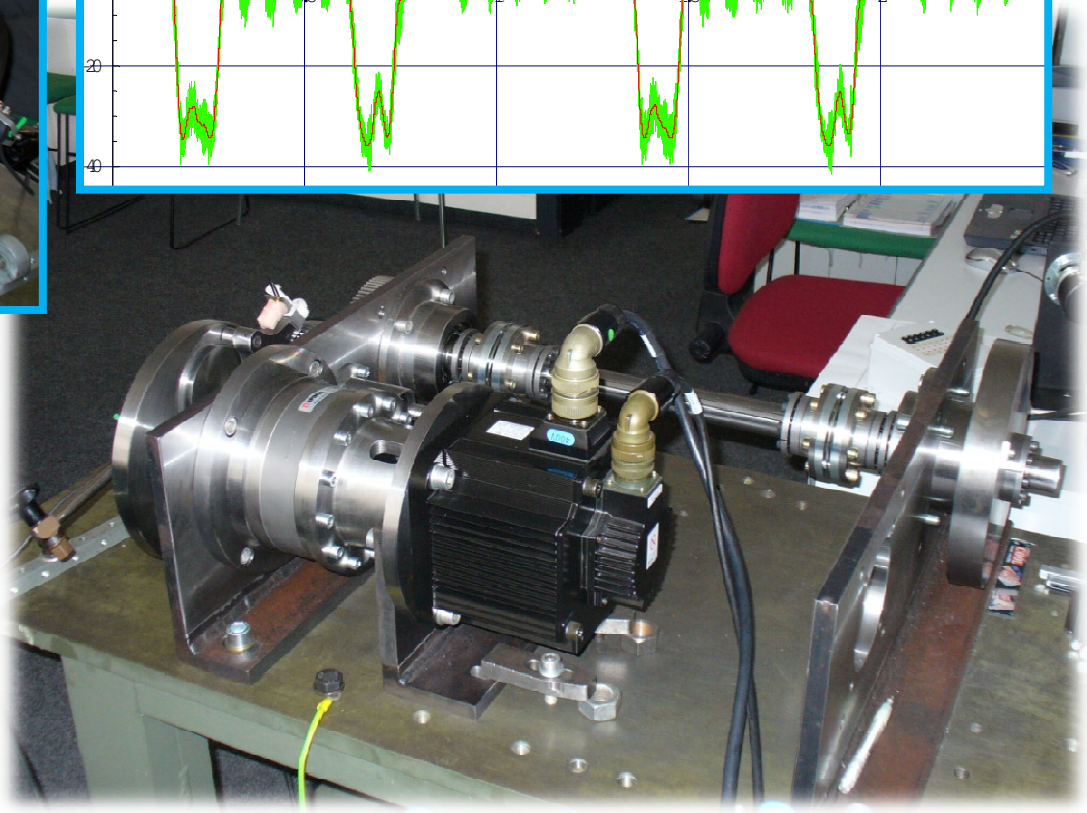
Dynamics of conventional cam mechanisms

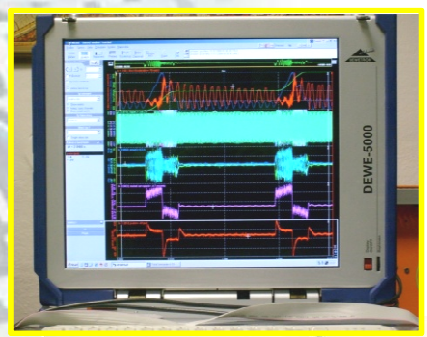
The influence of backlashes in kinematic pairs, flexible input (cam shaft) and output

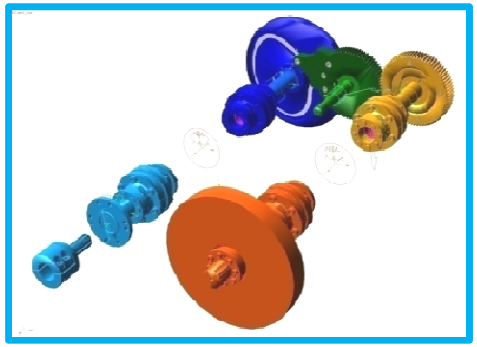


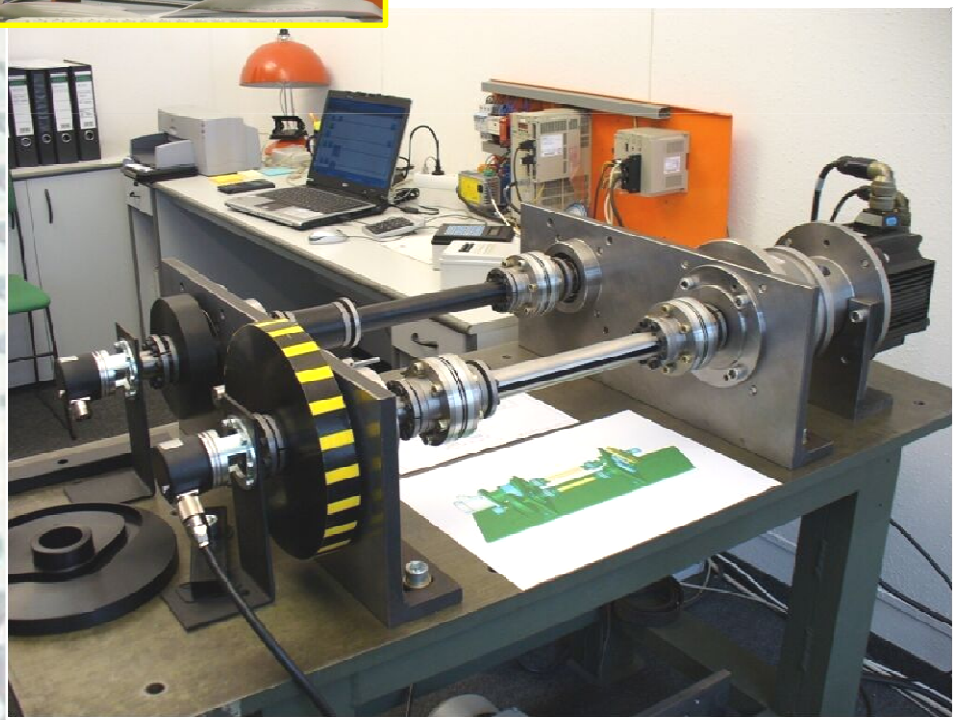




Dynamic stands

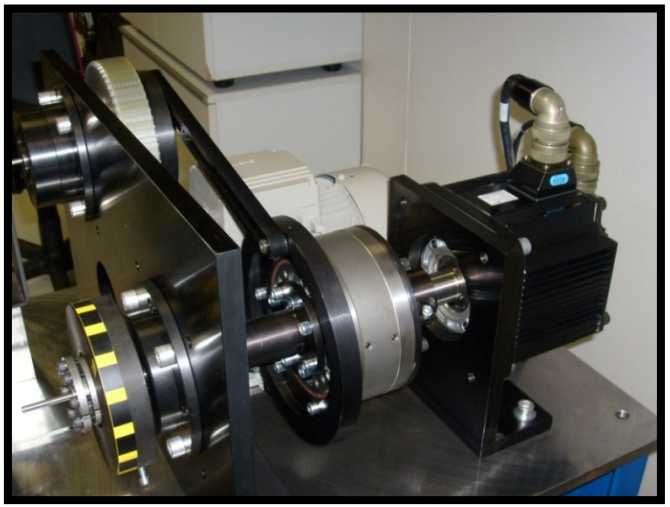


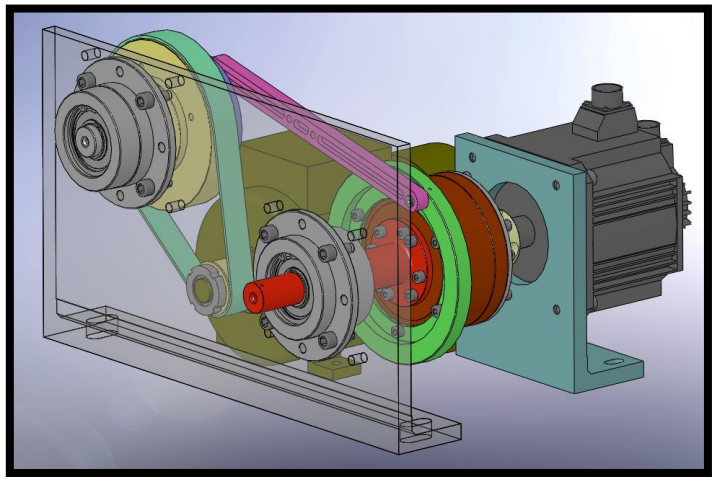




Mechatronic CAMs and gear-boxes

MSV 2008





VÚTS LIBEREC

Textile Industry

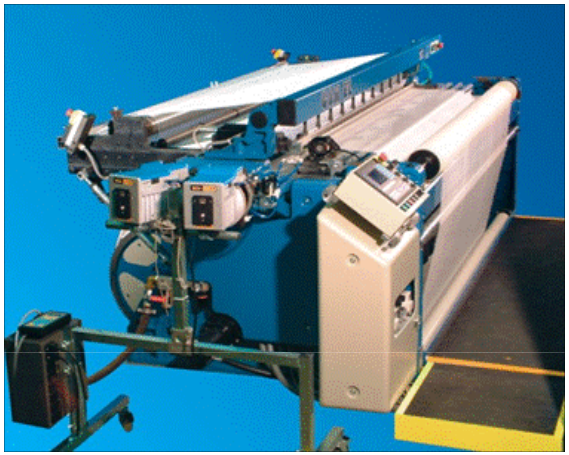
Weaving machines

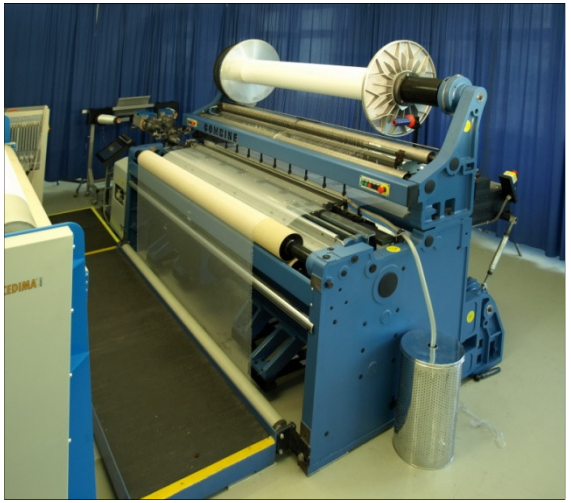
Technical fibres

www.vuts.cz

Air-jet weaving machines for production of technical fabrics – glass fibres, etc

SAINT-GOBAIN
VERTEX

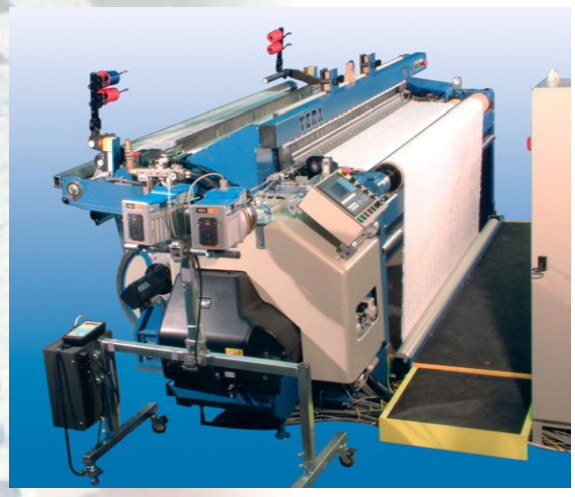




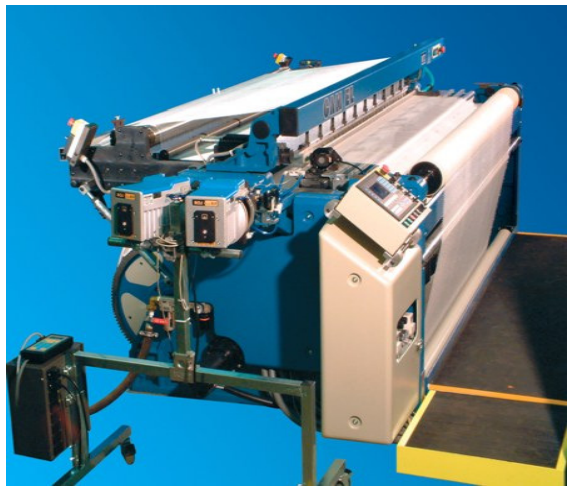
VÚTS range of air-jet jet weaving machines

- VÚTS serial products

VERA

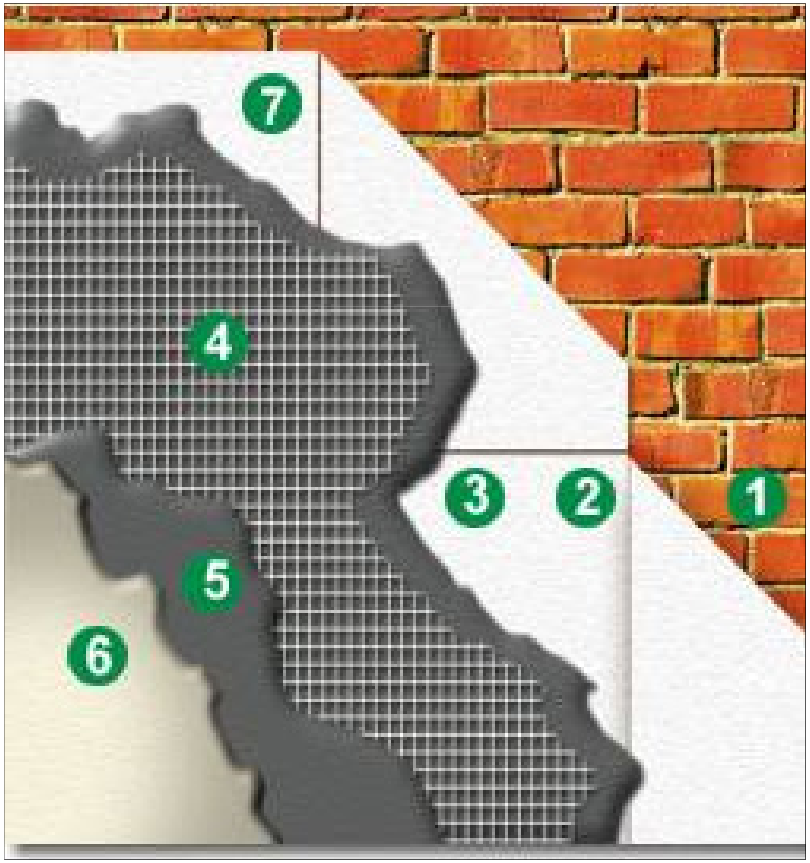


CAM EL



COMBINE

Final products from CAMEL Weaving Machine



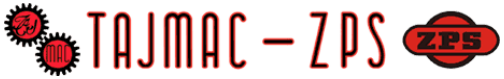
Advantages of cooperation with VÚTS

- Huge range of technical knowledge
- Technical experts in house
- Complexity of services
- Top technical equipment – SW, HW
- Own construction, own prototype shop and own production
- Communication in English, German, Russian language

Reference list

Automotive Area

Non Automotive Area



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Cooperation with Korea

- **KOTMI - Korea Textile Machinery Research Institute**

„New VÚTS“ (2010 – 2012)

VÚTS 5 main future streams / topics

- **Decrease of the energy consumption of machines**
  - Noise reduction
  - Vibrations reduction
- **Application of mechatronics**
- **Laser applications – laser integrator**
- **Application of composit materials**
- **Innovation, Optimisation, Modernisation**
  - increase of productivity

Thank you for your attention !!!

Contact:

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VÚTS Liberec, a.s.
U Jezu 525/4, P.O.Box 92
461 19 Liberec 1
Czech Republic

Tel: 00420 485 302 491
E-mail: jiri.vaclavik@vuts.cz