Kolzer 60 YEARS

HIGH VACUUM METALLIZATION

equipment

Range MK® **Range DGK®**

THE PROJECT

Be successful, take advantage of our more than 60 years of experience in system supplies

Glittering surfaces... as proof of being

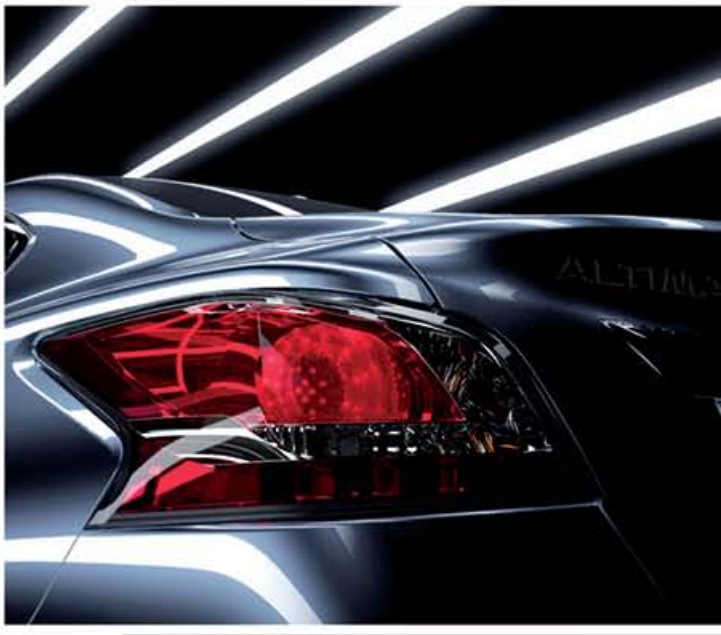
Kolzer's plants and metallization processes improve the quality and beauty of materials.

...the future of HiTech is biocompatible finishings.

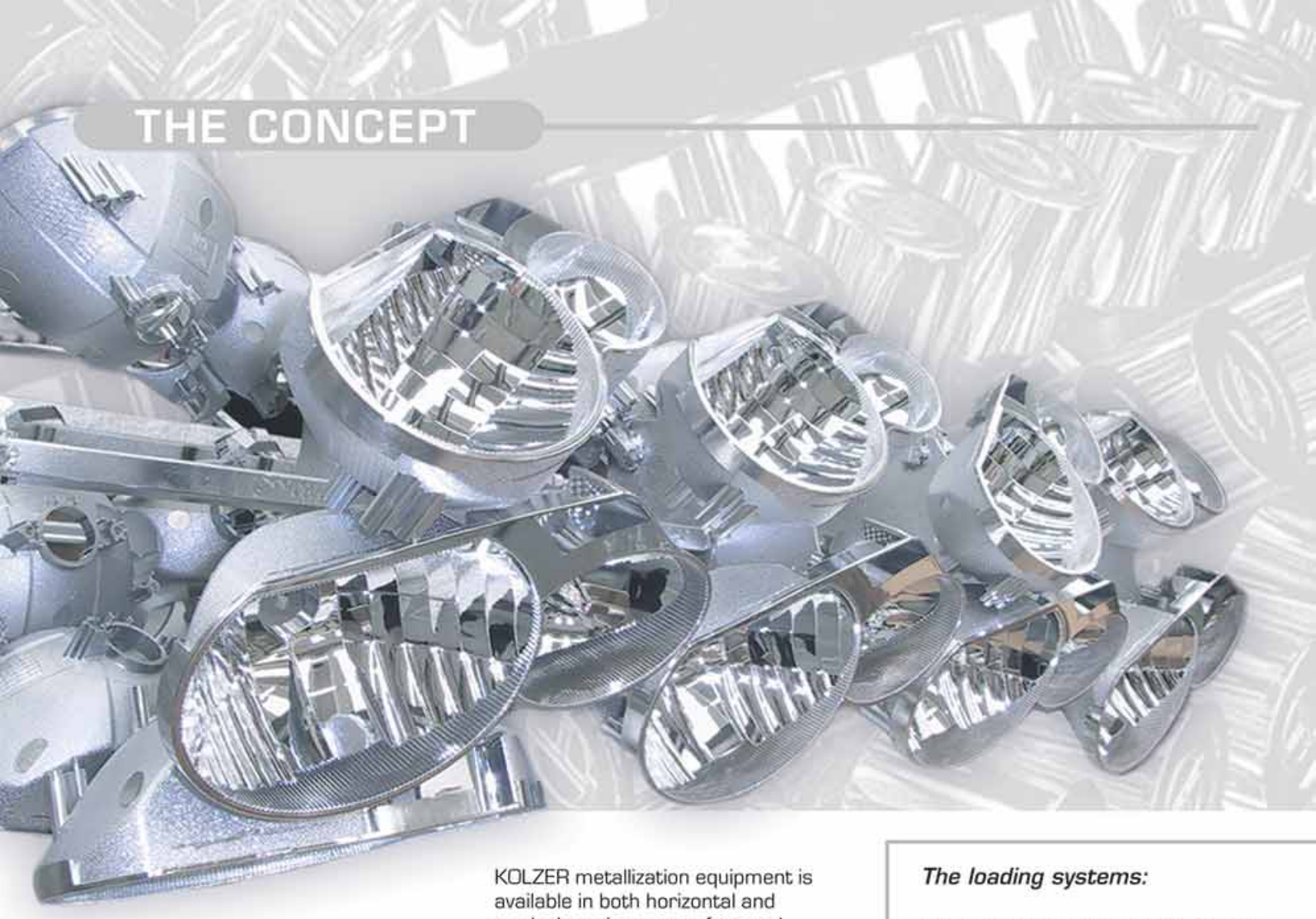
In many areas of application, vacuum coating technologies continue to replace traditional methods such as chrome electroplating.
The flexibility of this technique enables all types of materials, without distinction of shape, structure and size to be coated.
This process gives technical as well as ornamental objects a very shiny, reflective, metallic look which can be in different colours. In addition to obtaining high surface resistance products gain a decorative look that lasts over time.

The main existing applications for metallization are as follows:

- headlights for vehicles and parabolas for reflectors in general
- accessories for windows and door frames
- car rims in alloy
- EMI/RFI masks
- lifestyle products
- ornamental and decorative articles
- car interiours and exteriours
- toy parts
- fashion and costume jewellery accessories
- christmas tree decorations, buttons, frames, push buttons, handles, plates
- various accessories such as knobs, moulding, dashboards, doorhandles (only to mention a few...)



THE CONCEPT



KOLZER metallization equipment is available in both horizontal and vertical versions: manufactured using the best materials and components available on the world market, both have robust stainless steel process chambers which come in different sizes.

Characteristics and advantages:

- Low temperature ecological process
- Vacuum pump system efficiency and high productivity
- Simple visual interface for the operator
- Automated work cycle
- Process software with more than 60 years of database to pilot the completion of the operation according to the application in use.

The loading systems:

The materials to be coated are fixed onto piece holders also called "satellites", in turn, these are fixed onto the loading/unloading systems, also called "planetary systems".

During the coating process, the satellites rotate around the source of evaporation and on their own axis, to "metallize" even complex surfaces uniformly; the vacuum ensures the ideal conditions needed for a perfectly uniform and compact coating.

Quick and Clean

The operative phase:

- The pieces are fixed onto the satellites, which in turn are fixed onto the loading system.
- After closure of the coating chamber the automatic cycle starts.
- The metallization process starts when the vacuum reaches the optimal value.
- At the end of the process the system returns atmospheric pressure to the chamber.
- The plant is ready to metallize the next load, already set up on the second loading system.

THE PROCESS

The term metallization generically means sublimation and condensation (deposition) onto a substrate of a thin metal film at a low pressure of about 10^{-4} mbar. Low pressure (vacuum) enables the metal molecules to move from the source of evaporation to the surface to be coated avoiding contact with air and other gas particles.

Sublimation and deposition of aluminium onto a product is the most used mehod of industrial metallization.

After the pre plasma treatment in the process chamber, deposition onto moulded shiny "mirror-like" plastic materials requires a coat of preparation that levels and isolates, increasing adhesion of the subsequent metal layers and trasparent finishing. The base coat has three different functions which are fundamental in order to obtain the best process results:

a) aesthetics
b) isolation
c) interface for adhesion of the subsequent layers.

The deposition of aluminium and other metals has an aesthetic and functional role. An estimated 60% of metallization applications are fundamentally for aesthetic purpose, but with the progressive change of chrome electroplating coating processes, both expensive and highly dangerous for the environment, functional type applications are increasing.

- This process is used with multistage cycles which have been set up for the cycles which metallize vehicle headlights and parabolas for all types of reflectors:
  - plasma
  - metallization using aluminium
  - plasma polymerization (in a single process)

- This process is used in electronics and for electromagnetic insulation:
  - deposition of many layers of different metals.

- This process is used in cycles which metallize for aesthetic purpose. Today, transparent finishing is carried out mainly on varnishing products since their shiny and glass-like look enhances the bright effect and image definition reflected by the deposited metal coating giving extraordinary, both aesthetic and functional, results. The function of the finishing coat, also coloured, is very important too as it protects the deposited metal against wear and from chemical corrosion (perfume, essence, sweat etc) and completes a coating cycle made up of multi layers that cohere.

A complete installation for metallization in the decorative/functional field consisting of metallizer, cabin for varnishing objects, oven to dry the varnish, compressed air and water cooling systems. In addition to all the machines KOLZER supplies the materials and accessories needed for production, as well as providing skilled and technical post-sales assistance that is well know all over the world.

KOLZER is your partner for demanding surfaces

SMART, UNALTERABLE, ECOLOGICAL

Brillancy is essence

CONTROL

Automatic control:

A PC is used to automatize all the process phases (emptying, plasma cleaning, metallization and final protective coating).

A PC display supervises all the operative phases giving instant reports and data on the system and on the condition of the cycle, informing and guiding the operator through the process. Printer, keyboard, mouse, LCD video, lan card and modem for on-line assistance are provided.

Today the experience matured by Kolzer enables production of plants which have minimum process times, easy to use and totally automatic process control systems that eliminate operator errors.

Regardless of the technologies of the different fields, with KOLZER the client receives everything from a sole supplier, from optimal individual solutions, to advice, planning and adequate training up to made to measure plant technologies. Profitability and quality for the client are of prime importance.

Kolzer

Kolzer
1952 2012 60
YEARS OF EXCELLENCE
www.kolzer.com
MILAN ITALY

Since 1952 a company in continuous evolution, at the service of finishing industries.

THE PLANTS

KOLZER'S plants engineering technology stands out because it adapts its concepts to individual client requirements. In addition, Kolzer offers qualified engineering for complex production systems. The range of supplies includes plant families, from the "Mini compact plant" for research companies and laboratories, to bigger and more complex coating systems and special plants for in-line processes and large sized articles.

Horizontal range DGK®

The classical work system obtains excellent results with the most common deposition material, aluminium, also combined with SiO_x and Mgf_2.

The most complete range of process chambers in order of size:

DGK24" diameter 610 mm

DGK36" diameter 1000 mm

DGK48" diameter 1200 mm

DGK63" diameter 1600 mm

DGK72" diameter 1800 mm

DGK100" diameter 2500 mm

Comes with two loading systems with carriage to facilitate loading and unloading.

Vertical range MK®

The most modern and innovative work system: the material to be metallized is loaded directly onto the two doors of the system, for a faster work cycle:

This family plant range:

MK34" diameter 900 mm

MK48" diameter 1250 mm

MK63" diameter 1600 mm

MK72" diameter 1800 mm

Contact our headquarters, our technicians will be at your disposal at anytime for all the information you may require.

TECHNICAL CHARACTERISTICS

		Horizontal				Vertical	
METALLIZER		DGK24	DGK36	DGK48	DGK63	MK48	MK63
Chamber diameter	mm.	610	1000	1200	1600	1250	1600
Chamber length	mm.	1000	1250	1400	2200	1250	1250
Number of satellites	nr.	6	6 / 4	6 / 12	6 / 12	6 / 8 12	6 / 8 12
Satellite diameter	mm.	170	280 / 330	360 / 220	500 / 300	360 / 310 220	480 / 360 280
Satellites working length	mm.	900	1005	1200	2000	1005	1005
Surface that can be metallized	m^2	2,56	5	8 / 10 10	18	8 / 9	15,30
Production cycle frequency	Cycle/h	12	10	12	10	12	10
Emptying time $5x10^{-4}$ mbar	min.	2	4	4	4	4	4
Maximum vacuum	mbar	$1 x10^{-5}$	$1 x10^{-5}$	$1 x10^{-5}$	$1 x10^{-5}$	$1 x10^{-5}$	$1 x10^{-5}$
Rotary piston pump capacity	m^3/h	120	250	520	800	520	800
ROOTS pump capacity	m^3/h	1000	2000	3000	4000	3000	4000
Diffusion pump capacity "five phases autocleaning jet"	L/s	5.000	2 x 5.000	2 x 23.000	2 x 26.000	2 x 23.000	2 x 26.000
Manual cycle control		STANDARD					
Automatic cycle control		STANDARD					
Cooling water capacity (15°C - 3bar)	L/h	300	600	1000	1200	1000	1200
Electrical power supply installed (cosq 0,8)	KW	12	30	40	48	40	48
Absorbed electrical power	KW	6,5	15	20,5	24	20,5	24
Approximate delivery weight	Kg.	1000	2000	4800	6000	4800	6000

The technical characteristics shown in the table above are purely indicative.
Kolzer reserves the right to give precise details during machine manufacturing.

The family plants DGK and MK can come with:

Pre treatment

plasma:

specific cleaning, etching and activation before deposition

PVD deposition

Thermal evaporation:
tungsten filaments to deposit metals or molybdenum crucibles to deposit oxides, monoxides, alloys

Electron Beam gun:
for high quality deposition

Sputtering:
high efficiency deposition of any type of material

Protection

plasma:
plasma polymerization

DC-MF-RF-MW

Thermal evaporation:
SiO_x
MgF2

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