

## Developments in standard machine elements – incorporating high performing lines

By Nigel Pritchett, M.D. Elesa (UK) Ltd – who signposts some key developments in materials and design associated with standard machine components for industrial machinery and equipment.

Since the 1950's, Elesa has been actively involved in the cultural revision of machine tool aesthetics, that was taking shape around that time, by innovating the design of accessories and components for the mechanical industry, machinery and industrial equipment. An ongoing commitment to which they have been loyal over the decades, as proven by the 38 industrial design awards from the most prestigious juries, received in the last 30 years.

Elesa products are designed to offer perfect functionality and the best in ergonomics, whilst keeping in mind the creation of unique designs such as their "High Performing Lines" which represent a selection of handwheels, crank handles, knobs, levers, handles, indexing and spring plungers, hinges, levelling feet, castors and wheels and level indicators for applications in specific market sectors such as food processing, chemical, pharmaceutical, medical, clean room, urban and public fittings, ESD-Protected Areas and in environments subject to explosion (ATEX).

They are manufactured in the most advanced engineering plastics such as SUPER-Technopolymers, where the advantages of engineering plastics combine favourably with metal giving high mechanical and thermal performance representing the latest evolution of engineering polymer materials for the industrial sector. The most technologically advanced industries, such as automotive, aviation and electronics, have long understood the benefits of using these new generation engineering plastics. The possibility to replace metal, commonly called "metal replacement", in more numerous applications, is now possible with the use of



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**STANDARD MACHINE ELEMENTS WORLDWIDE**

**Ref: ELES2984 – standard machine elements**

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high performance engineering plastics.

In order to have technopolymer products in applications which have been so far a prerogative of metal products, the design phase needs to be performed with great expertise by optimising shapes and thickness, to benefit from all the typical characteristics of polymeric materials. Elesa has developed several components made of SUPER-technopolymer able to guarantee high mechanical performance and corrosion resistance, while being maintenance free, non-magnetic and with good thermal insulation.

Special Conductive Technopolymers prevent the accumulation of electrostatic charge between bodies with different electric potential. Developments with these materials have created a new line of antistatic elements, suitable for applications in ESD-Protected Areas (EPA) and assembly lines for electronic components, where components which are susceptible to electrostatic discharges must be handled with the minimum risk of damage. The ESD-C indelibly printed trademark on the surface of every single element identifies the specific conductive feature according to EN 100015/1 and IEC 61340-5-1.

Self-Extinguishing Technopolymer certified "V0" according to UL-94 V (Underwriters Laboratories) allows the manufacture of products meeting flame-proof requirements for use in public environments such as urban and public fittings and equipment for the lighting sector.

Antimicrobial Technopolymer used in the Elesa SAN LINE prevents the deposit of undesired organisms such as microbes, bacteria, mildew and fungi which are the major causes of unpleasant odours, discoloration, degradation and the formation of biofilm on surfaces. Moreover, the inorganic antimicrobial additive guarantees the absolute unalterability of the antimicrobial feature for a long time, even after several



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cleaning cycles at high temperatures with soap and solvents.

SOFT LINE commonly known as "soft-touch", has been developed using elastomer over moulding for use on machinery and equipment requiring frequent tightening, or for applications subject to severe stress. The major characteristics of "SOFT" products are to ensure a safer and more stable ergonomic grip and to improve the comfort of the operator's hand thanks to their soft coating which allows the absorption of vibrations even under unfavourable environmental conditions such as humidity, aridity, heat, cold and grease.

RAL 9002 white colour with a smooth surface to make cleaning operations easier and AISI 303 stainless steel metal inserts in compliance with the most rigorous sanitary laws, characterises the Elesa CLEAN LINE. Compact shape and lack of cavities avoid the deposit of dirt, dust and machining residues.

Other niche high performing lines include chromed technopolymer for resistance to sea water, detergents, acetone, ethyl alcohol, formic acid, chlorine solutions. Hydraulic accessories for systems complying with Health and Safety Requirements according to 94/9/EC ATEX European Directive (explosive atmospheres) for equipment in Group II, category 2GD.

Ergostyle® is a registered trademark that distinguishes a range of elements destined for hospital and medical equipment, scientific instruments, laboratory fittings, office furniture, leisure and sporting equipment, and, generally, whenever aesthetics and user-friendliness are key requirements for the market success of the product. A basic feature of the new elements, besides a perfect ergonomic function, is to contribute to achieve a higher quality and value of the equipment for which they have been designed, by fully blending with and enhancing the finished product.

Elesa also offers a wide range of products made out of

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AISI 303, AISI 304 and AISI 316 stainless steel and products made out of plastic with stainless steel inserts: handwheels, knobs, lever handles, adjustable levers, handles, positioning and control knobs, indexing and spring plungers, levelling feet, hinges, latches, level indicators and castors and wheels which guarantee the best performance in sectors requiring, by law, the use of corrosion resistant materials.

In addition to the widest range of standard machine elements available on the market, Elesa offers customised technical solutions in order to meet customer's specific needs. Production flexibility, technical know-how, R&D constant activity and high levels of customer care allow for quick answers and competitive solutions. Customisation can include the incorporation of logos and text by moulding, tampoprinting or laser engraving - the production of parts in special colours to RAL colour reference tables - the use of special material additives and surface treatments such as black-oxide coating, zinc-plating, nickel plating, chrome-plating, anodising and epoxy-resin coating - special shapes dimensions and materials for metal inserts and a post-production machining service for bores and keyways in compliance with DIN Standards.

Research & Development is a continual investment at Elesa and in particular in the innovation of its production technologies - always with the aim of creating new products or to further improve performance and reliability of existing ones. An internal testing laboratory with the most advanced equipment and measuring instruments studies the evolution of new technopolymers in order to extend their use in more high performing applications in the field of industrial components. All standard products in the Elesa range are subjected to mechanical, physical, chemical and durability testing in order to provide correct and reliable technical data. This Elesa laboratory is also at the disposal of customers for carrying out tests that simulate specific or particularly

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heavy conditions of use.

All these high performing lines and much more including full test and technical data have recently been compiled into a new 1600 page catalogue containing over 40,000 products, available free of charge. Requests can be made directly or online.

Further information regarding Elessa products may be found at: [www.elesa.com](http://www.elesa.com) or follow them on twitter: [www.twitter.com/ElesaUK](https://www.twitter.com/ElesaUK).

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