Adhesives - keeping the finishing line in sight

The June 2019 issue of <u>Industrial Technology</u> magazine contains a great piece from our Technical Manager, Kevin Cook, entitled **Keeping the Finishing Line in Sight**.

The Sydney Opera House turned out to be one of the most disastrous construction projects in history, running vastly over time and budget. Designed by Danish architect Jorn Utzon, the construction of Australia's most iconic monument was originally scheduled to take four years, with a budget of AUS \$7 million. However, due to poor planning, it ended up taking 14 years to complete, costing a grand total of AUS \$102 million. If your project involves the bonding of parts, Kevin gives his top tips for ensuring a prototype can be turned into an efficiently manufactured product. Forgetting to consider the adhesive from the offset may not have as drastic consequences as poor planning did for Jorn Utzon and his design of the Sydney Opera House, but following these steps will help ensure that your project runs as smoothly as possible.

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FASTENING & JOINING Adhesives

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this descripted apply to construction projects.

Posturing a probablym is a must profit to bely
maure that the set product is functional and let for
perpens. However, if the designers beautif musclessed
how the prototops will be put for production, they may
be boxed to adapt their design further down the line. To stop this from happening, here are seward concepts that the designer could consider at the start of a project where

the designer count consider at the start of a project where affectives are going to be used.

Designers should consider manufacturing costs as only as a project is possible. Affective application is easily automatable or uneversationatable and the capital costs for this can often be easily positive, inspresed could be this can often be easily published, improved quality, cransitatively, related weaking and speed, in well as potential before severge, can make the return or reventment calculations towersale. In commissioning the type of adherium to specify in the design, functionality in the primary tactor. The adherium

must core into a material capable of beining the toxice awolyed for the likeline of the boaded product. But material cost is office the east consideration and here, if is important to look at the overall process. An inexpresse, aftertransforms adhesive may be attractive, that if it exprises significant hereting or money, specialist application expanement or high labour input, then it may and being more expansive. For example, UV carries



facturers a fact care, no mix process which gives efficiency and

this process which gives efficiency and overall economy. The understanding of eventual production quantities will have an

muscl on adheavy chose with respect to care times ideally. The care time will fit into production into spouls used had forms, so as not be trackly bothlessake or hard up-large amounts of work in progress (WP). Maleitals which have longer cure regimes will have to be set wide off line. taking up space and resources. Thermal cures will require some form of overs, which entires a capital outlay and ongoing energy conts - these costs are greatally lower to LIV curing systems, for example,

Adheave choice is sufultate dependent as attenue to different materials will very for each affective. Consequently the admictor becomes more difficult if Consequently, the assistant increase rates official in there are mathiple statement increased. It all the design along, surfations can be chosen which are emire to bond in, then the choses of affection in females and other selection factors are able to be applied. Word, for example, "non-tick!" FITE and other low surface energy polymers it possible. If you are considering a light our adhesive, then the choice of light transmitting aubstrales

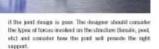
will harbitate their.

The best way to ensure that the serect adhesive is chosen for the final product is to use the same authorities. in the problepping and being alagor, as will be used in production. This level of consistency will bely fing up any

bonding issues their the outled fleet practice is to evaluate adhesives on actual production parts. The designer also needs to consider the constructional that the product will operate in, in this will also influence adirestive choice. If it will be subject to hands conditions, such as soft water or temperature fluctuations, the specifier weeds to make sure that the attresive, as well as

Be setables, our withstand it.

Some afficient types have process demands that nood to be dealt with Solvented advances wit requestigher leads of solvection. Meeding care products and cyangacytals adhesives are dependent on relative harridity, so areas or cleanrooms which have lose ITH may said be a succeeded production enumerous to these types. Some room temperature valcasining (STV) of kones have a contouve by product, which makes then unsuitable for use on electronics; in these cases, a neutral care RTV should be choses. A bonded joint with the most optimal adhesive can be inadequate for the job



As discussed earlier, the adhesive choice will have an As discussed ontire, the adherive choice will have in impact on the production process, including application methods. Adherives can be dispressed, breated, sprayed, printin or jethol. Single part atherives are cosian to dispense and handle than two part over, which have to be mixed. Single part UV carring adherives care only when exposed to the correct wavelength and referents of where exposed to the content waywarding and releasing of light, so the case is "no determed," way that and came to addressed. If the specifier has upted for a beopart adhestor, it can be a little trickion. Theopart materials begin begin and changes in waxundy as some one they are mixed. Other this, means that a metasting and maning pistern will need to be employed at the point of dispensi

The specifier should be thinking about the viscouth The specifier should be throwing about the viscosity resoluted is accessfully apply the adhesion. Will a seed to wick into a gap, bridge a gap or till a gap? Will on subsciso bead for request or will a soft-leveling product to prefusion? Will it seed to be dispersed with a surface that a not hereoviral and talk half da stage? Visionally

that is not instrume and still make a singlet visitable, contained with dispersing lectrinopie will have to work trigisher to overcome these challenges.

A good design for attresses will need to have a consistent adject on the adventor. This creatins a consistent adjective thickness, which enables the adherice to develop a sound structural board. If the observation is the state of the state o bondine is too thin, the joining parts can such the adhesive set and the boad will be poor Activeing higher productivity and throughput will insurably lead to an automated application process. The part will need to leave a bondino that is accessable to automated to be have a dispensing roted.

Forgelling to consider the adhesive from the offer may not have an deader consequences as poor planning did for Jorn Utron and his deapys of the System Opera House, but following these steps will help ensure that your project mas as smoothly as possible. www.intertronies.co.uk

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story.

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