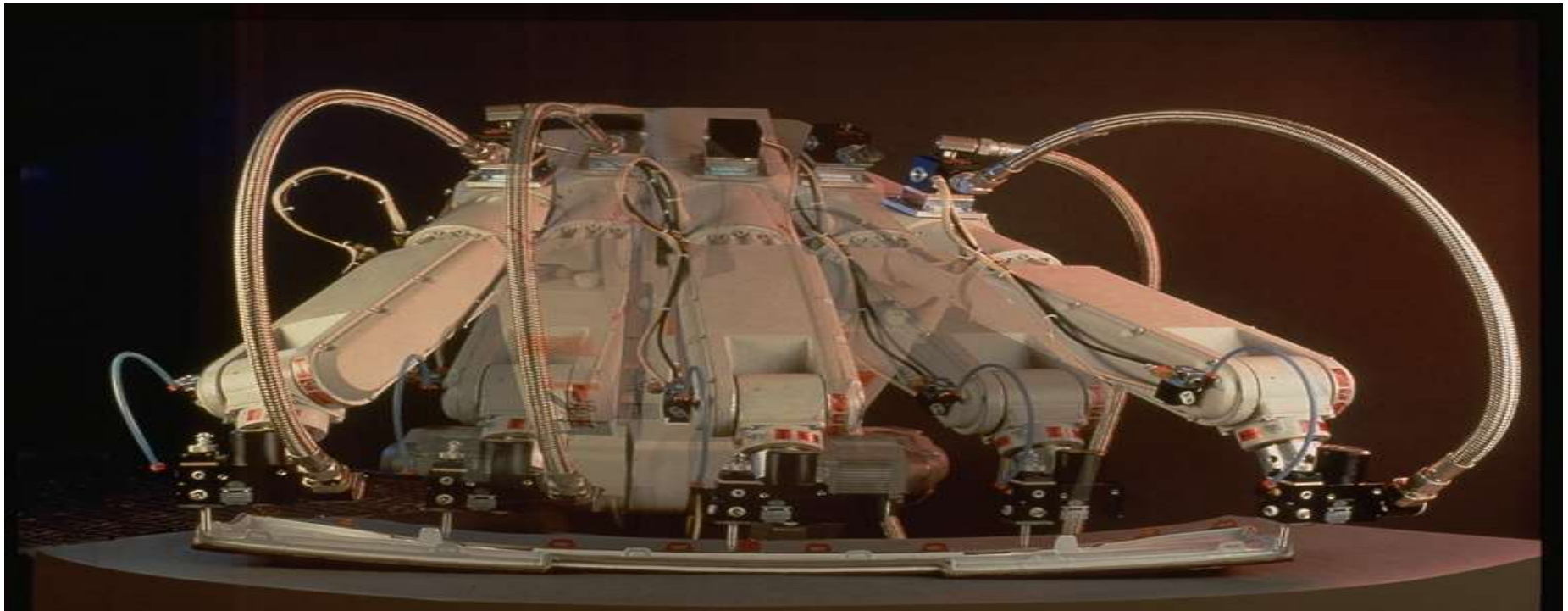


Getting Started with Automated Gasketing and Sealing

David K. Whiting, Advanced Engineering and Business Development



Gasketing and Sealing



Engineering is constantly faced with the challenges of sealing assemblies against air, dust, noise, and making sure that these assemblies do not squeak and / or rattle.

Commonly used methods have always included preformed rubber or molded gaskets, die-cut adhesive backed foams and tapes, and a myriad of extruded or molded sealing devices.

Automated gasketing and sealing systems that utilize dispensable materials are emerging as a cost effective alternative for many of these traditional forms of gasketing and sealing.

Goals for this presentation



- ⌘ To supply a starting point for your research
- ⌘ To supply a longterm tool for your reference
- ⌘ A breif familiarization with these types of systems

Definitions:

Gaskets and Sealants



⌘ Gaskets:

⌘ Gaskets are seals that are in assemblies that must be taken apart and put back together and still supply a seal after that has been completed

⌘ ex: door modules, lighting assemblies

⌘ Sealants:

⌘ Sealants are seals that are for one time use only. Meaning the whole assembly is replaced or the particular area that needs to be sealed will not be taken apart and put back together as part of its requirements

⌘ speaker assemblies, some lighting assemblies, license brackets, exhaust valves

Why Dispensable gasketing and sealing materials?



- Reduction of Direct Labor Costs**
- Reduction of Indirect Costs/Inventory
management**
- Reduction of Scrap Materials**
- Material Cost Reduction**
- Accomodation of Engineering Changes**

Typical Applications



Watersealing Applications:

NVH: sound dampening or sound absorption applications

Air and dust sealing applications

Door handles -against sheet metal replacing molded plastic

encapsulated glass- replacing extruded preformed butyl

HVAC, audio systems- replacing die cut gasket to door or package tray

lighting- access boxes, sheet metal seal

Electronics sealing

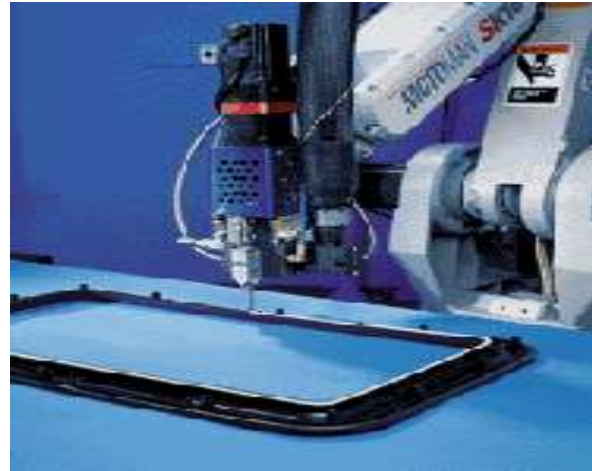
weatherstrip, in channel sealers

exhauster valves, replacing foam core butyl

filter assemblies, various applications

Interior trim, various applications

Typical Applications



xxx

Putting The Whole System Together



- ⌘ Define the material you will need to use
- ⌘ Take into consideration the part design criterion
- ⌘ Determine what dispense equipment will be required
- ⌘ Determine the level of automation you will require.

Define the Material Type



- ⌘ Service temperature
- ⌘ Serviceability
- ⌘ Define design gap and mating surface
- ⌘ Define required dimensions & compressions requirements
- ⌘ Process requirements
- ⌘ Costs per piece comparisons

Part Design Considerations



- ⌘ Design Gap (tolerances between parts to be sealed)
- ⌘ 30%-50% compression
- ⌘ Slopes and angles on the part
- ⌘ Channel design, (if no channel typically 2:1 ratio width to height)
- ⌘ Material expectations (height, force to compress, compression against angles,)

Define the Dispense Equipment



- ⌘ How is the material supplied?
 - (drums, pails, tubes etc.)
- ⌘ Does the material need to be heated?
 - Temp conditioning, high heat, no heat
- ⌘ Does the material need a specific type of pump?
 - Gear pumps, piston pumps, gravity feed
- ⌘ Are there any special handling requirements?
 - Ventillation, overtemp protection, airtight
- ⌘ Does the material need to be mixed or conditioned?
 - Ratio's, catalysts, nitrogen,

Define the level of automation desired

- ⌘ **Three Axis Automation**
- ⌘ **Six Axis Automation**
- ⌘ **Inline applications**
- ⌘ **Spin devices**
- ⌘ **Shuttle tables**
- ⌘ **Rotary Tables**
- ⌘ **Material handling**
- ⌘ **Heat & Humidity Chambers**
- ⌘ **Cooling Fans**
- ⌘ **Humidifiers**



Gasketing and Sealing Material Choices



⌘ There is an endless variety of gasketing and sealing products available on the market today. Each day new materials are being developed to address the ever changing environments for adhesives.

- ⌘ Foamable One Component Polyurethanes
- ⌘ Foaming two-component polyurethanes
- ⌘ Hot Melts
- ⌘ Foamed hot melts
- ⌘ Solvent and hot applied butyl & Hot Melt Sealants
- ⌘ Silyl Modified Polymers
- ⌘ Silicones (many forms)
- ⌘ UV Curable Polyurethanes and Silicones

Material Information Resources



- ⌘ SPE: Handbook of Adhesives and Sealants
Second Edition: Edward M. Petrie
- ⌘ ASC: Adhesive and Sealant Council's
adhesive library www.adhesives.Org

Presenter Information

David K. Whiting
Bostik, Inc.
OEM Market Manager, Bostik, Inc
360 E. Maple Road, Suite W
Troy, Michigan 48083

Mobile: (586) 612-1875

Voice: (800) 843-0844 x2789

Email: davidwhiting@msn.com



Conclusion



Automated gasketing and sealing systems offer manufacturers several overall benefits.

These systems can be complicated and require that material suppliers, dispense equipment and automation systems suppliers work hand-in-hand to develop an automated system meets and exceeds the anticipated benefits and production goals.

Automated gasketing and sealing materials will continue to develop and change with the manufacturing environment. These systems will always offer a differentiating advantage to suppliers who invest in the them for both internal and external cost and process benefits.