Engineering Solutions with Formed Thermoplastic Hose and Tubing

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Reduced Quality Issues

Examples of the benefits of formed thermoplastic hose and tubing can be seen with every day routing of hoses.

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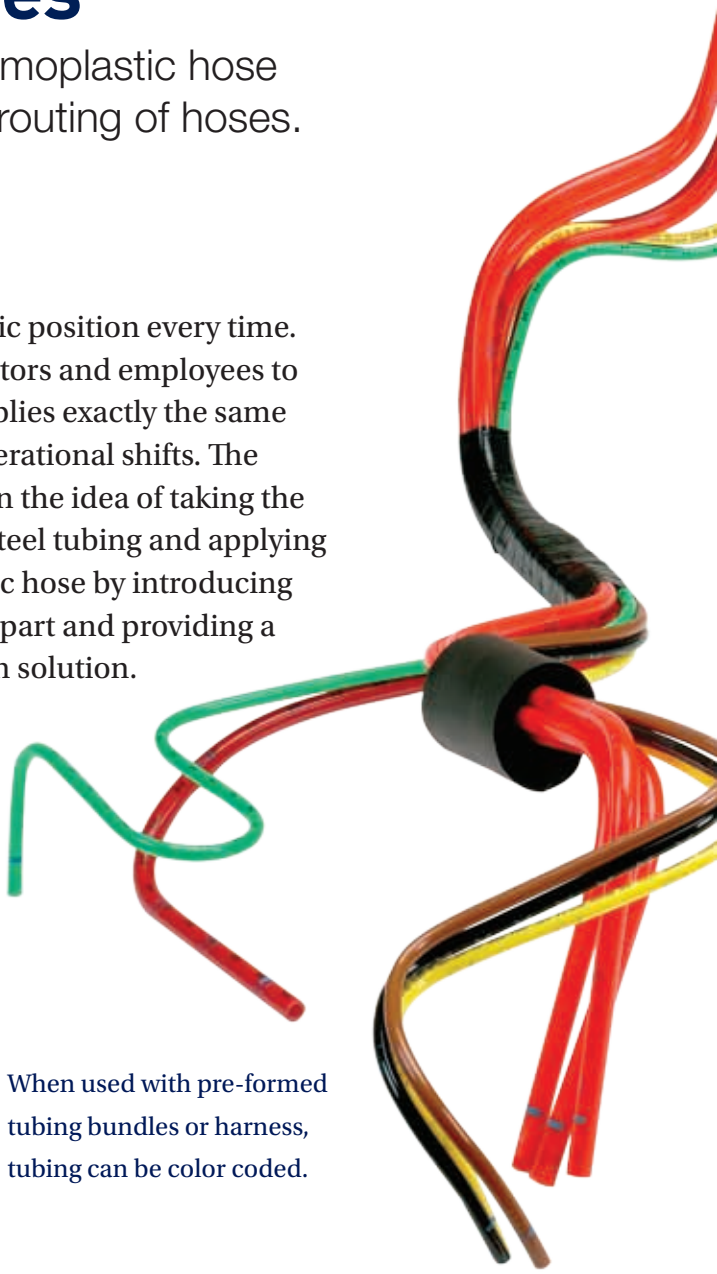
Matt has 6 years experience in partnering with customers to develop hose systems that speed up installation and extend hose life.

to fit into a specific position every time. This allows operators and employees to install the assemblies exactly the same way across all operational shifts. The design is based on the idea of taking the concept of bent steel tubing and applying it to thermoplastic hose by introducing memory into the part and providing a consistent drop in solution.



When used with pre-formed tubing bundles or harness, tubing can be color coded.

Formed Hose & Repeatability

Many OEM's provide assembly part numbers but not work instructions on how the assemblies are to be properly routed within the system. This potential concern can lead to different employees routing the assemblies differently which may result in quality issues like side load on the fitting or abrasion against edges of frames on the equipment.

Formed hoses allow for repeatability of the manufacturing assembly process by providing a consistently formed hose

Misalignment

As little as 1/8” of misalignment to the connection could create enough issues to potentially shut down an operation and require the product to be re-worked.

Reduced Misalignment

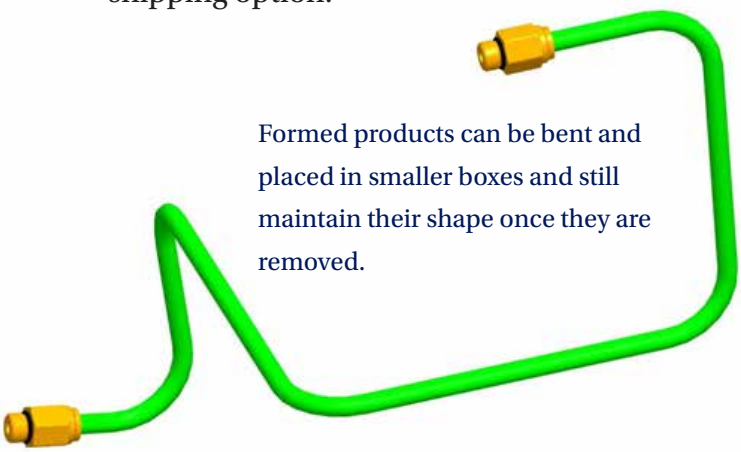
Another common area of concern can be seen with misalignment of steel tubing. Due to tolerance stack-ups within the manufacturing process of the different OEM equipment, it is often seen that steel tubing exhibits misalignment concerns. This concern could exhibit as little as 1/8” of misalignment to the connection and create enough issues to potentially shut down an operation and require the product to be re-worked.

Thermoplastic hose provides the forming characteristics of steel tubing while maintaining the flexibility of hose, allowing for movement and eliminating any issues of misalignment. A formed hose allows operators to continue to move the hose in all three planes which assists in the little bit of movement needed to thread connections and attach the assembly.

Reduced Leak Points and Shipping Costs

Manufacturers always push to reduce the number of potential leak points in hydraulic systems. Just one continuous formed thermoplastic hose can cut leak points in half when compared to hose to tube combinations. Not only does this solution reduce the number of fittings need to build the part, it also reduces warranty claims and eliminates the need to ship these parts in expensive crates.

Typically, the steel tubing/hose combination design requires crates as a shipping option.



Formed products can be bent and placed in smaller boxes and still maintain their shape once they are removed.

Customers strive to manufacture products in a way that improves their bottom line. Buying components with longer life spans that reduce warranty and service issues in the field and components that speed up installation while reducing man power are some of the most effective ways to create savings. Parflex helps customers achieve this all the time. See Skid Steer Success Story, next page

Parflex Success Story: Skid-Steer Application

Take out the unexpected during assembly and save $$$$

There are many different variables that go into plumbing fluid conveyance in systems and Parflex offers engineered solutions, taking the unexpected out of the equation and reducing costly consequences. Our formed thermoplastic hoses are a great solution to costly hose to tube combinations.

In the skid-steer redesign on the next page, the hose routing reduces the chance of hose damage from kinking and simplifies hose maintenance by opening up the visibility of the hose inside the enclosure. But more importantly, by delivering a ready to install hose assembly that was made to fit, operators were able to speed up assembly while reducing the chance of assembly errors and rework. This reduction in labor time created substantial costs savings.

	Rapid Assembly	Threaded Connection
Connections	50	50
Seconds/connection	10	40
Total Time/(sec)	500	2,000
Total Time/(hours)	0.139	0.556
Est. Labor/(hours)	$50	$50
Labor $/machine	$6.94	$27.78
1800 machine labor	$12,500	$50,000

Labor Savings $37,500.00

XDT harnesses removed 22 hose ends and the 515H rapid assembly system removed 28 hose ends in the joysticks alone. The XDT formed harnesses allow for the bundling of parts, eliminating order complexity and complication; rather than ordering 14 single tubes, now they order only 4 part numbers.

At Parker, each pre-formed product is formed during production to fit the specific application design and the light-weight fittings are designed to speed up assembly, especially in difficult to reach areas such as hydraulic joystick ports. When used with push-to-connect ends, assembly time was reduced by 60 seconds per connection compared to standard hose fittings, allowing the assembly to quickly snap into place. In addition, the system is up to 60% lighter than traditional pilot line hose assemblies, reducing annual shipping costs and vehicle weight.

Installation Time

Before
60 minutes

- 300 threaded BSPP connections
- Challenging and time consuming to assemble
- Hoses are difficult to access

After
15 minutes

- 210 threaded ORFS connections
- Routings are clean, orderly, and uncluttered
- Minimizes the probability that kinking will occur
- Lessens possibility that undue pressure will be exerted on adjacent components
- 50 push-to-connect connections
- Very easy to assemble
- O-Ring sealed

If your production lines could benefit from reduced assembly times and labor costs, please contact Parker representative:

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