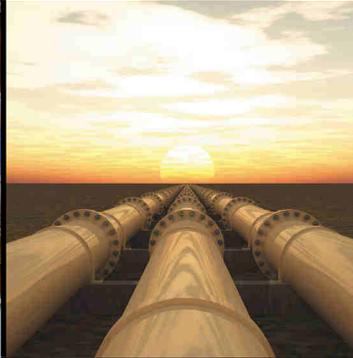




ENGINEERING TECHNOLOGY CORP.

 Toray Group



**GLOBAL  
EXPERT IN  
FILAMENT  
WINDING &  
COMPOSITE  
SOLUTIONS**



**MORE THAN MACHINES**

 Toray Group



DESIGNED & MADE IN THE USA

**ZOLTEK**   
Toray Group



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## STANDARD FILAMENT WINDERS

Over half a century of experience, tried and trusted design practices, years of cost reductions and decades of developing filament winding solutions have led Engineering Technology Corporation to create a competitive standard catalog of cost-effective and reliable machinery. This equipment covers the majority of market needs for filament winding and enables businesses of all sizes to quickly and affordably build up production capabilities.

Standard options range from tabletop filament winders to work cells that include multi-spindle automated winders with industry-leading fiber payout that can be used in a multitude of industries. Standard filament winders are easy to maintain with readily available spare parts.

In addition to standardized machinery, custom production solutions, production consulting, onsite machinery installation, process integration, training and other services are provided to meet customers' needs for manufacturing composite parts. The customers can count on receiving the same exceptional service that Engineering Technology Corporation has been known for over the past fifty years.

## CATALOG OF STANDARD FILAMENT WINDERS\*

		SS	SS+	SM	SM+	CXG	SL
Maximum Mandrel Weight	lbs	50	50	750	1 000	1 000	20 000
	kg	23	23	340	454	454	9 072
Mandrel Diameter	inches	1-12	1-12	1-24	1-30	1-16	1-80
	mm	25-305	25-305	25-610	25-762	25-406	25-2 032
Maximum Mandrel Length	inches	60	60	200	200	200	475
	mm	1 524	1 524	5 080	5 080	5 080	12 065
Number of Spindles		1	1	1	1-9	3-5	1
Number of Axes		2	3-4	2-5	2-5	4	2-6
Speed							

\* Variable characteristic based on wound part specifications

## STANDARD FILAMENT WINDERS: DESIGNED WITH THE CUSTOMER IN MIND

### SS Filament Winder



#### Lab-Scale Winder

- Ideal for R&D, lab and educational use
- Small and lightweight desktop winder
- 2 accurate axes of motion with adjustable tailstock
- Versatile wet winding or towpreg delivery systems

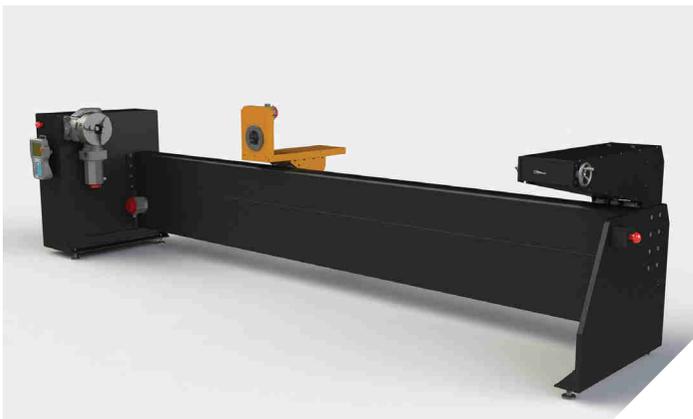
### SS+ Filament Winder



#### Small-Scale Production

- Ideal for small production applications
- 3 or 4 accurate axes of motion with adjustable tailstock
- Versatile wet winding or towpreg delivery systems
- Integrated table, control cabinet and storage

### SM Filament Winder



#### Economical Production

- Ideal for medium envelope part production
- Up to 5 axes of motion in a portable platform with multiple bed lengths
- Reliable and compact

## STANDARD FILAMENT WINDERS: DESIGNED WITH THE CUSTOMER IN MIND

### SM+ Filament Winder



#### High-Rate Production

- Ideal for medium envelope part production
- High-volume capability
- Up to 5 axes of motion in a portable platform with multiple bed lengths
- Reliable and compact

### CXG Filament Winder



#### High-Speed Production

- Ideal for high-volume automotive applications
- 4 high-speed axes
- Lightweight dual drive carriage

### SL Filament Winder



#### Large-Scale Winding

- Ideal for Aerospace, Utility and Oil & Gas applications
- Large format workhorse, easily handles any large tank or tube
- Up to 6 axes of motion

## COMPLETE SERVICE FOR THE FILAMENT WINDING INDUSTRY

### Production Lines & Custom Machinery

As a worldwide leader in the filament winding and composite market, we create custom filament winders and production lines with capabilities beyond our standard line of equipment. As industries shift to higher performing composite parts, ETC's custom equipment can help your company stay ahead of the competition.



### Retrofit & Service

Our dedicated service technicians and engineers can upgrade, maintain, repair and retrofit any brand or age of filament winding system. Control system upgrades are also available for FANUC, Siemens and our own in-house Windows 10 compatible system FWC-10.



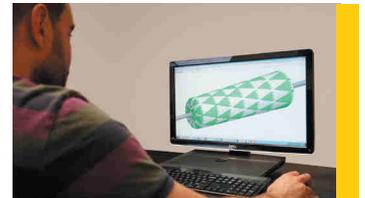
### R&D Services

We offer a variety of product development services such as composite part design, composite pressure vessel design, finite element analysis (FEA), feasibility studies, prototyping, testing, data acquisition and training. We also offer custom tooling design for composite parts.



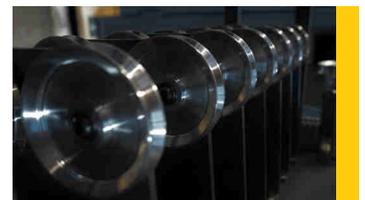
### FiberGrafIX®

FiberGrafIX® is our own filament winding software developed and improved over the years to provide accurate winding patterns. Simplify your manufacturing process by using FiberGrafIX® simulation and visualization tools as well as its advanced machine motion editor and optional FEA mesh generator.



### Auxiliary Equipment

As a global expert in filament winding, we know all about filament winding and provide everything needed to optimize the performance and safety of any filament winding work cell, including ovens, tensioners, extractors, creels, delivery heads and every fiber contact point between.



### Automation

As a FANUC Authorized Systems Integrator we offer process automation ranging from simple barcode reading to full scale automated work cells. A large variety of robotic technologies are available to improve manufacturing safety, efficiency and accuracy.

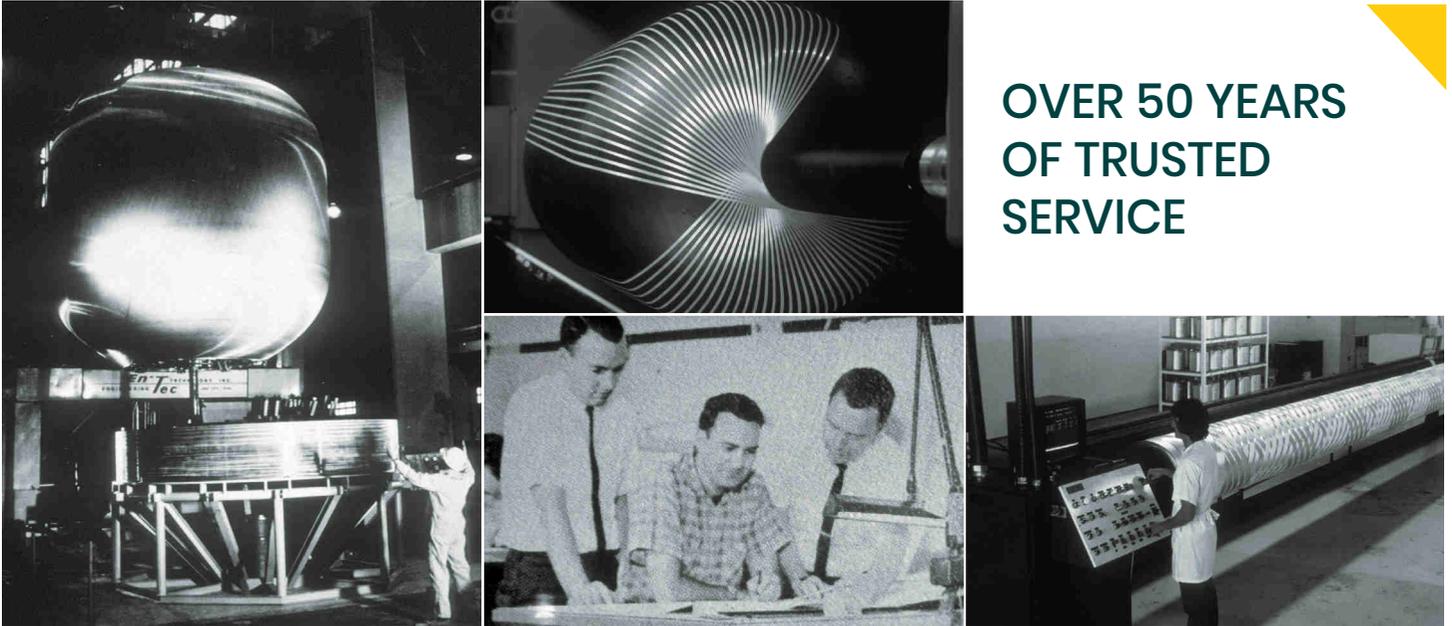


### Customer Support

We provide more than machines. Our goal is to achieve customer satisfaction and long-term partnerships through full commitment to the best outcome for each filament winding project. Our staff is available to solve your technical and production challenges across the globe.



## LEADING EXPERT IN FILAMENT WINDING



**OVER 50 YEARS  
OF TRUSTED  
SERVICE**

## ABOUT ENGINEERING TECHNOLOGY CORPORATION

Engineering Technology Corporation has been a worldwide leader in the filament winding and composite manufacturing industry since its founding in 1962. We developed the first CNC filament winder and pattern generating software, FiberGrafiX<sup>®</sup>, and have installed over 800 filament winders globally. The majority of these winders are still in operation today.

In March 2014 Engineering Technology Corporation was acquired by Toray Group, combining the filament winding experience of Engineering Technology Corporation and the carbon fiber manufacturing capabilities of both Zoltek<sup>®</sup> and Toray. This partnership allows us to provide customers with comprehensive solutions for manufacturing composite parts.

The evolutionary spirit that began in the '60s continues today with innovations to stay ahead of industry needs.

### **Engineering Technology Corporation**

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