

# FANUCI 5.0 PRO GenX Laser Welder

The best-selling, world-class industrial laser welder available in the following power variants: 1100W, 1700W, 2300W, 3400W. Designed to meet all production needs. Highly advanced fiber technology maximizing welding processes.



SGS



Assembled in the USA



## Fiber laser welding

# Introduction

Fiber laser welding technology is rapidly gaining popularity in the industrial sector, effectively replacing traditional, less efficient methods. With its exceptional precision, flexibility, and high operational efficiency, laser welding is the ideal solution for the most demanding industries. It is widely used in sectors such as aerospace, automotive, defense, medical device manufacturing, electronics, petrochemicals, telecommunications, energy, automation, and outsourcing services.

# Fanuc

5th Generation Laser Welding and Cleaning Equipment



# Fiber laser welding

## Key advantages



### Increased speed and flexibility:

Fiber laser welding provides faster processing times compared to conventional welding methods, allowing for greater flexibility in production schedules.



### High precision:

The technology ensures precise welds, minimizing material loss and improving product quality.



### Unmatched versatility:

Fiber laser welding can be used on a wide range of materials and thicknesses. A highly adaptable solution for a variety of applications.



### Deep weld penetration without deformation:

Fiber laser welding allows for deep, full weld penetration while maintaining the structural integrity of the materials.



### No post-welding processing required:

The welds are smooth and precise, reducing the need for post-process machining after welding.



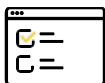
### Joining different materials:

Fiber laser welding allows for deep, full weld penetration while maintaining the structural integrity of the materials.



### Non-contact, single-sided process:

The non-contact nature of fiber laser welding reduces equipment wear and enables single-sided welding, which is advantageous for complex geometries.



### No special welding qualifications required:

Operators do not need specialized welding qualifications, which simplifies the integration of this technology into the existing production lines.



### Ease of process automation using robots:

Laser welding can be easily automated using robotic systems, increasing productivity and efficiency.



### Minimal maintenance:

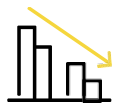
Fiber laser welding systems require little maintenance, resulting in reduced downtime and operating costs.

### Low operating costs:

The efficiency of fiber lasers leads to lower energy consumption and minimized operating costs. An external module allows the use of photovoltaic panels to provide the required power.

### Pulse or continuous welding modes:

Ability to switch between pulse welding modes and continuous modes provides versatility for different welding applications and material types.



supply up to 2 kW.



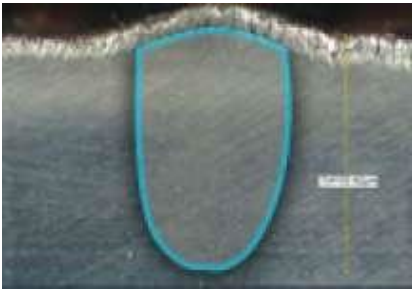


## Welding Testing

# Material Range

FANUCI fiber laser welding represents an absolute breakthrough in welding technology, offering numerous benefits that translate into higher productivity, better quality, and greater cost efficiency in a variety of industrial applications. Below are the results of tests performed on key materials such as stainless steel (SS), carbon steel (CS), and aluminum (AL), which have been officially certified by TUV Rheinland WPQR.

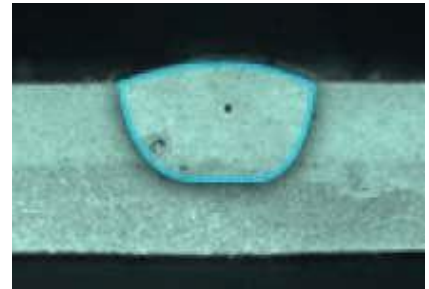
**Material: Weld depth profile - test performed on a 1500W FANUCI PRO laser welder**



Stainless steel (4.5 mm)

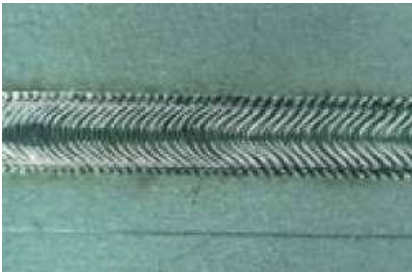


Carbon steel (4.5 mm)

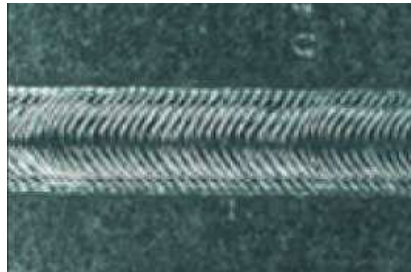


Aluminum (4.0 mm)

**Pattern: Fish scale effect - beautiful and solid without the need for corrections**



Stainless steel (4.5 mm)



Carbon steel (4.5 mm)



Aluminum (4.0 mm)

**Certificates: TUV Rheinland WPQR - complete documentation for basic materials SS, CS, AL**

TÜV Rheinland Polska Sp. z o.o.  
Certification Body for Welding Manufacturers  
...instytucja certyfikująca w zakresie procesów spawalniczych



TÜVRheinland®  
Precisely Right.

Welding Procedure Qualification Record (WPQR)  
Protokół Kwalifikowania Technologii Spawania (WPQR)  
Certificate No. / Certyfikat nr: 01 8610 PL/V-230018.00

Stainless steel

TÜV Rheinland Polska Sp. z o.o.  
Certification Body for Welding Manufacturers  
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Welding Procedure Qualification Record (WPQR)  
Protokół Kwalifikowania Technologii Spawania (WPQR)  
Certificate No. / Certyfikat nr: 01 8610 PL/V-240233.00

Aluminum

TÜV Rheinland Polska Sp. z o.o.  
Certification Body for Welding Manufacturers  
...instytucja certyfikująca w zakresie procesów spawalniczych



TÜVRheinland®  
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Protokół Kwalifikowania Technologii Spawania (WPQR)  
Certificate No. / Certyfikat nr: 01 8610 PL/V-230377.00

Carbon steel

## FANUCI 5.0 PRO

# General presentation

FANUCI 5th generation laser welding machines set a new standard for innovation and technological advancement in the welding industry. Designed for maximum precision, stability, and welding quality, they are the ideal replacement for traditional methods. The 5.0 model is perfect for processing a wide range of materials, such as stainless steel, carbon steel, aluminum, titanium, copper, brass, as well as precious metals, including gold and silver, and other highly reflective materials. FANUCI laser welders are covered by a comprehensive warranty for a period of 2 to 5 years, ensuring full support and reliability in use. The devices have global certifications confirming compliance with the highest quality and safety standards, including CE, SGS, WPQR TUV Rheinland, and FDA.



## FANUCI 5.0 PRO

# Key Features and Benefits

01

### **Absolute Technological Superiority:**

Unmatched laser welding power range: from 1100W to 3400W. Equipment assembly and technology control in the USA.

02

### **Certification and Work Safety:**

Global certificates confirming compliance with the highest quality and safety standards: CE, SGS, WPQR TUV Rheinland, FDA.

03

### **Quality and Reliability Guarantee:**

Comprehensive full warranty for a period of 2 to 5 years with the option to upgrade the device to the latest standards, ensuring reliability and modernity.

04

### **Professional Technical Support:**

Our own qualified service department, available throughout the country. We provide comprehensive service support 24/7/365.

05

### **Machinery and Parts Warehouse:**

Stock of equipment and parts available immediately to ensure the fastest supply chain for our customers.

06

### **Showroom and Demo Cars:**

Technology without secrets, i.e., presentations and device testing, both in a modern showroom and directly at customers' production facilities.

07

### **Purchasing and Financing Process:**

Flexible financing options, including leasing, installments, and assistance in obtaining subsidies.

08

### **Many Satisfied Customers:**

Proof of our professionalism and experience in laser welding, which forms a solid foundation for our reputation.

# FANUCI 5.0 PRO

## Available Configurations

The integration of advanced, patented technologies and the use of components from leading global suppliers mean that FANUCI laser welders set a new, previously unattainable standard in the welding industry in terms of quality, performance, and innovation. The specifications and functions of the available devices can be customized to the individual needs and production requirements of the customer, ensuring maximum flexibility and efficiency of use. This offer is subject to the General Terms and Conditions (available upon request).

Components	Manufacturer	Model	Options
Laser source	FANUCI	ULTRON PowerON	Fiber (1100W, 1700W, 2300W, 3400W)
Laser head	FANUCI	RAPTOR 5.0 PRO	Oscillation (single/double)
Control system	FANUCI	LaserWELD 5.0 PRO	4in1 / 2W
Wire feeder	FANUCI	EasyWIRE 5.0 PRO	Automatic (single/double)
Electrical	ABB	ABB Weidmuller	Integrated
Cooling	FANUCI	ChillIX 5.0 PRO	Integrated (water cooling)
Filter ventilation	FANUCI	CleanAIR 5.0 PRO	External (automatic)
Safety	FANUCI	Workstation / DefenderVV	External (workplace/operator)





## Laser source:

# FANUCI - ULTRON PowerON



ULTRON PowerON laser source has been designed to ensure stable and high-performance operation, which translates into optimal welding results. Based on advanced fiber optic technology, it guarantees exceptional efficiency, precision, and reliability, meeting the highest industrial requirements. ULTRON PowerON laser source combines innovative technology with functional solutions, offering exceptional welding performance. Thanks to its reliability and cost-effectiveness, it is an excellent choice for a wide range of industrial applications.

## Key Features:

### Actual Output Power:

Laser source provides an average output power of 112-120% based on its nominal power, which guarantees maximum efficiency.

### Weld Quality Control:

Ensures zero porosity and perfect weld quality, certified by TUV for materials such as aluminum (AL), stainless steel (SS), and carbon steel (CS).

### Advanced Laser Pump Technology:

ULTRON 976nm uses the same components as the IPG laser pump. It has an electro-optical conversion efficiency of 48%, which allows for cost savings of 15% compared to 915nm. Ability to weld and cut highly reflective materials.

### Smart Remote Access:

Equipped with smart automatic network access, remote diagnosis, and remote services. Up to 85% of system problems can be solved remotely, significantly saving time and reducing downtime.

### High Brightness:

Provides highly effective high brightness with a Gaussian spot,  $M<1.3$  and a limited cable output diameter of 10μm.

### Fast Response:

Reaches maximum power in less than 5 microseconds (us) with a response frequency of 50kHz, ensuring speed and efficiency.

### Programmable Output Power:

It has programmable and customizable output curves, with the ability to store and recall 64 sets of parameters for different applications.

### Durable Fiber Optic Cable:

Equipped with a double-layer 50μ fiber optic cable supported by a flexible spring for increased durability.

### Flexible and Modular Design:

Enables easier and faster modular changes for repairs or power upgrades, which is particularly beneficial for high-power sources.

### Local Service Support:

Supported by FANUCI repair and storage centers in the EU and US, enabling local switching and repairs for uninterrupted operation.

### Continuous Improvement:

Fiber optic technology is constantly being developed and improved to increase efficiency and reliability.

### Cost Efficiency:

Low operating and maintenance costs significantly reduce overall production costs.

### Lifespan:

The fiber optic source has an estimated operating life of approximately 100,000 hours, ensuring long-term reliability.

### Sustainability:

Designed to be environmentally and workplace friendly and safe, promoting sustainable manufacturing practices.

## Laser head:

# FANUCI - RAPTOR 5.0 PRO

RAPTOR 5.0 PRO laser head is designed for maximum precision and performance, thanks to its patented oscillating beam system in a single (4-in-1) or dual (2W) configuration. It combines advanced technology with intuitive user functions, ensuring optimal efficiency and reliability in welding applications. RAPTOR 5.0 PRO laser head is designed to provide exceptional precision, performance, and versatility in a wide range of welding applications. With its innovative design and intuitive operation, it is the ideal solution for achieving the highest quality in welding processes.

## Key Features:

### Patented Oscillating Beam Movement:

**Single Mode (4-in-1) Wobble:** Provides increased precision and efficiency thanks to the oscillating beam movement.

**Dual Mode (2W) Wobble:** Offers increased flexibility and accuracy in a variety of welding tasks.

### Two-stage fast power switching mode:

Enables easy switching between low and high power in real time during production. This function is implemented directly on the laser head trigger and system monitor.

### Weld Quality Control:

Ensures zero porosity and excellent weld quality, certified by TUV for materials such as aluminum (AL), stainless steel (SS), and carbon steel (CS).

### Ultra-lightweight and User-friendly Design:

FANUCI laser heads are designed to be ultra-lightweight, making them easy to handle and use. Provides intuitive operation, reducing operator fatigue and increasing productivity.

### Water Cooling System:

The integrated water-cooling system maintains optimal operating conditions without interruption, even at powers up to 3kW. It prevents overheating and ensures consistent performance.

### 4-in-1 Wobble Mode (Single) Equipped with Three Accessories:

**Remote Cleaning:** Enables touchless surface cleaning for added convenience. **Pre- and Post-Welding Cleaning:** Ensures clean welds before and after welding, improving weld quality. **Cutting:** Enables precise cutting operations, adding versatility to the welding process.

### Wobble Mode 2W (Double) Equipped with Three Add-ons:

**Gap Filling:** Ability to fill gaps up to 3-4mm, making it suitable for a variety of welding applications. **Seam Width:** Achieves a weld seam width of up to 10mm, providing flexibility in weld design. **Variable Welding Patterns:** Offers a variety of welding patterns (shapes), allowing for customization to specific welding needs.



### PRO Wobble Function

**Double-Coated Optics and Controlled Moving Lens:** The PRO Wobble function features double-protected, coated optics and a controlled moving lens that automatically corrects material imperfections.

**Automatic Material Imperfection Correction:** Ensures that welds are free from defects such as weld porosity, resulting in higher weld quality.

**High Operating Speed:** Increases welding speed while maintaining excellent quality.

**Elimination of Post-Processing:** The high quality of welds achieved with the PRO Wobble function eliminates the need for post-processing, saving time and resources.

RAPTOR 5.0 PRO [4in1]

RAPTOR 5.0 PRO [2W]



# Operating System: FANUCI - LaserWELD 5.0



LaserWELD 5.0 PRO operating system, available with 4in1 or 2W configurations, offers versatile and reliable control options for a wide range of welding applications. With advanced technology and intuitive, easy-to-use features, it delivers excellent performance and full compatibility with dedicated laser heads.

LaserWELD 5.0 PRO operating system, in combination with RAPTOR 5.0 PRO laser head, creates an advanced and efficient welding solution that offers unmatched precision, versatility, and intuitive operation. It is the perfect combination for the modern demanding welding applications.

## Key Features:

**Industry 4.0 Data Management: Efficient and Simplified Operations:** Manages production processes through Industry 4.0 data extraction, increasing efficiency and streamlining operations.

### Pre-stored Welding Parameters:

**Consistent Quality:** Includes pre-set welding parameters for real-time production, ensuring consistent and high-quality welds.

### Wireless Adjustment:

**Flexibility and Convenience:** Enables easy parameter adjustment using the wireless SmartTAB device, providing operational flexibility and convenience.

### Program Transfer:

**Increased Efficiency:** Operators can transfer ready-made programs for specific welding types or materials, tailored to the production profile.

### FanuciAPP Support:

**Online Management Available:** Supported by FanuciAPP, enabling easier online management and increasing accessibility and control over welding operations.

### User-Friendly Interface: Interactive and Intuitive

**Operation:** Features a color touch screen, offering a user-friendly and interactive interface for smooth operation.





## Automatic Wire Feeder:

# FANUCI - EasyWIRE 5.0 PRO



EasyWIRE 5.0 PRO automatic wire feeder supports both single and dual wire feeding, providing maximum flexibility for a wide range of welding applications. It is designed for seamless integration with the other FANUCI components and software, ensuring optimal performance and adaptability to individual production requirements. EasyWIRE 5.0 PRO automatic wire feeder extends the functionality of FANUCI welding systems, offering flexible, efficient, and fully synchronized wire feeding solutions. It is a key component that enables the highest quality results in demanding industrial applications.

### Key Features:

#### Flexible Operation:

**Wire Feed Range:** Capable of handling wire sizes from 0.8 mm to 2.0 mm.

**Automatic Modes:** Operates in both push and pull modes, ensuring perfect synchronization and adaptability to different production needs. Allowing operators to choose the best configuration for their specific welding tasks.

#### Full Integration:

**Seamless Software Integration:** Both single-wire and dual-wire feeders are fully integrated and synchronized with FANUCI software, ensuring smooth and efficient operation.

**Configured for Specific Requirements:** Wire feeders are tailored to the laser head and control system to meet specific production requirements, ensuring harmonious processes and increasing overall productivity and efficiency.

# Electrical Installation:

## ABB Weidmuller

FANUCI laser welders are equipped with a reliable ABB electrical installation, which guarantees a stable and safe power supply. This configuration plays a key role in ensuring uninterrupted operation, protecting equipment and production processes from potential electrical



problems. The integration of ABB's electrical installation and advanced safety solutions in FANUCI laser welding machines guarantees reliability and safe operation of the equipment. As a result, the welding machines operate at the highest level of safety, supporting high-quality production processes and ensuring operational and business continuity.

### Key Features:

#### Uninterrupted Operation:

**Stable and Safe:** Provides stable power supply, which is essential for continuous operation, reducing downtime and increasing the productivity of FANUCI laser welders.

#### Increased Safety:

**Surge Protection:** Protects the system from voltage spikes that can damage equipment.

**Short Circuit Protection:** Prevents potential damage and downtime caused by short circuits.

**Surge Protection:** Ensures that equipment is protected from electrical surges, maintaining operational integrity.

#### Power Management:

**Energy Consumption Monitoring:** Enables real-time monitoring of energy consumption, helping to manage and optimize energy usage.

#### Business Continuity:

ABB solutions ensure reliable power supply and protection, supporting business continuity and production operations while minimizing disruptions.

## Cooling system: FANUCI - ChillX 5.0



ChillX 5.0 PRO water cooling system has been designed to provide extremely effective cooling of both the laser source and the welding head simultaneously. Thanks to advanced cooling technology, it maintains optimal operating temperature, which translates into increased efficiency and durability of the equipment, supporting reliable operation in demanding industrial conditions. The ChillX 5.0 PRO water cooling system is a key element in ensuring the efficiency and durability of laser welding equipment. Its advanced cooling capabilities, combined with intuitive operation, make it an indispensable solution for modern welding operations. It ensures optimal performance, reliability, and protection of key components, supporting the highest production standards.

### Key Features:

#### Highly Efficient Cooling:

**Dual Cooling Capability:** Simultaneously cools both the laser source and the welding head for comprehensive temperature management. **Optimal Operating Temperatures:** Maintains reduced operating temperatures, maximizing performance and protects equipment.

#### Enhanced Equipment Protection:

**Temperature Control:** By maintaining low operating temperatures, ChillX 5.0 PRO helps prevent overheating that can damage sensitive components. **Extended Equipment Life:** Continuous cooling helps extend the life of the laser source and the welding head, reducing the need for frequent replacements.

#### Ease of Maintenance:

**Intuitive Design:** The system is designed to be user-friendly, making it easy to operate and maintain. **Minimal Maintenance Requirements:** Intuitive design also means less maintenance, reducing downtime and maintenance costs.

#### Increased Operational Efficiency:

**Continuous Performance:** By maintaining optimal temperatures, ChillX 5.0 PRO ensures that the laser and welding head operate at peak performance, resulting in higher productivity.

**Energy Efficiency:** Efficient cooling translates into lower energy consumption, contributing to cost savings and environmental sustainability.

#### User-Friendly Operation:

**Simple Control:** The cooling system has simple, easy-to-understand controls, ensuring that operators can manage the cooling process with minimal training.

**Quick Installation and Adjustment:** The system is designed for quick installation and easy adjustment, allowing for rapid implementation into the existing work processes.

# Filter

## FANUCI - CleanAIR 5.0



CleanAIR 5.0 PRO dust-based filter unit is designed to automatically remove smoke from the workplace ensuring a healthier and safer working environment. This advanced system not only supports environmental protection but also extends the life of consumable parts and brings additional operational benefits, improving efficiency and comfort of use. CleanAIR 5.0 PRO filter unit is a key component in ensuring a safe, healthy, and productive working environment. With its advanced features, it effectively removes harmful particles, protecting the operator and equipment while supporting environmentally friendly and responsible practices in the workplace.

### **Automatic Smoke and Dust Removal:**

**Increased Safety:** Automatically eliminates harmful fumes and dust particles, creating a safer working environment for operators.

**Healthier Workplace:** Reduces air pollution, contributing to better air quality and improved operator health.

### **Environmentally Friendly:**

**Eco-Friendly Operation:** With its effective filtration of pollutants, CleanAIR 5.0 PRO minimizes environmental impact, supporting sustainable manufacturing practices.

**Reduced Emissions:** The system ensures that only purified air is released back into the environment, helping to meet environmental standards.

### **Extended Service Life of Consumable Parts:**

**Component Protection:** By removing harmful particles from the air, the system helps protect consumable parts from premature wear and damage, extending their service life and reducing replacement costs.

### **Recycling of Purified Air: Reuse of Air:**

Purified air can be returned to the work area, maintaining a clean and safe atmosphere.

**Additional Heat:** If needed, the returned air can provide additional heat, increase operator comfort and reduce heating costs.

### **User-Friendly Operation:**

**Automatic Functionality:** The system operates automatically, requiring minimal operator intervention, allowing full focus on their tasks.

**Easy Maintenance:** Designed for easy maintenance, ensuring that the system remains efficient and effective with minimal downtime.



## External security: FANUCI -

## Workstation

Safety is a priority in any work environment, especially in demanding conditions such as welding stations. FANUCI offers advanced safety equipment designed to protect operators and bystanders. These solutions effectively minimize the risk of dangerous situations, ensuring a safe and compliant workplace. The external enclosure of the FANUCI workstation has been designed to provide comprehensive protection for operators and bystanders, effectively minimizing the risk of dangerous situations and creating a safe working environment. With customized solutions and advanced features, FANUCI sets a new standard for safety in welding operations, supporting process efficiency and reliability.



### Key Features:

#### Enhanced Safety Measures:

**Automatic Stop Function:** Welding machines can automatically pause operations when someone enters the work area without authorization, preventing accidents and injuries.

**Quick On/Off Mode:** Quick on/off mode is integrated with safety doors and other devices, ensuring immediate response to any safety violations.

#### Customized Safety Solutions:

**Customized to Customer Needs:** Safety equipment can be customized to specific requirements, providing a flexible and comprehensive safety solution for a variety of work environments.

#### Prevention of Hazardous Situations:

**Component Protection:** By removing harmful particles from the air, the system helps protect wear parts from premature wear and damage, extending their service life and reducing replacement costs.

**Continuous Monitoring:** Continuous monitoring and automatic responses ensure that any potential safety hazards are addressed immediately.

#### Operator and Bystander Protection:

**Comprehensive Coverage:** Ensures that both operators and bystanders are protected from potential hazards associated with welding operations.

**Increased Awareness:** Safety systems increase awareness and compliance with safety protocols, promoting a culture of safety in the workplace.

# Operator safety:

## FANUCI -



Safety is the highest priority in any workplace, especially in high-risk environments such as welding operations. DefenderVV protective mask from FANUCI is designed to provide comprehensive protection for operators, effectively preventing potential hazards. Available in two versions, BASIC and PRO, it offers an excellent level of protection and comfort, tailored to the diverse needs of users.

### Key Features:

#### Comprehensive Protection:

**Full Face Coverage:** The DefenderVV mask provides full face protection, shielding against harmful sparks, debris, and intense light.

**BASIC and PRO Options:** Available in two variants, BASIC and PRO, to meet different levels of protection needs and preferences.

#### Advanced Safety Features:

**High-Quality Materials:** Made from durable, high-quality materials that provide long-lasting protection.

**Enhanced Visibility:** Designed to offer clear visibility, reducing eye strain and allowing operators to work with precision.

#### Comfort and Ergonomics:

**Ergonomic Design:** Both BASIC and PRO masks are ergonomically designed to provide a comfortable fit, allowing operators to wear them for extended periods without discomfort.

**Adjustable Straps:** Equipped with adjustable straps for a secure and customized fit, ensuring that the mask stays in place during operations.

#### Ease of Use:

**User-Friendly Design:** The masks are easy to put on and take off, making them convenient for quick use in busy work environments.

**Lightweight Design:** Despite their sturdy protection, the masks are lightweight, minimizing fatigue during long hours of work.

### Always remember to protect yourself!

DefenderVV protective mask from FANUCI provides operators with confidence and safety during work, effectively protecting against a variety of hazards associated with welding and other industrial operations. Both the BASIC and PRO versions offer reliable protection and high comfort of use, making the DefenderVV mask an essential piece of protective equipment in any professional work environment.