



**Achieving standardization  
in robot programming**

# Introduction

Despite a lack in programming language standardization for industrial robots, solutions have emerged to alleviate the challenges these variants pose.



Our Robotmaster® software makes programming industrial robots simple and fast with a single solution to program multiple robot brands that is easy to learn and can handle complex programming.

Since the early 1990s, organizations such as the International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC) have been releasing robotics standards for this rapidly growing field.

Currently, these international standards comprise safety requirements, definitions and terminology, performance criteria and test methods for the field of robotics. However, there is no standardization when it comes to robot programming languages.

# Why is standardization important?

## Ease of integration



The vast scope of knowledge required by integrators could be reduced which would facilitate the integration process

## Improved efficiency



Users could program faster by eliminating the need to switch between programming languages

## Cost savings



The cost of maintaining multiple programming tools and brand-specific training could be reduced

## Increase in ROI



The decrease in programming time and the reduction in costs would result in an increase in ROI

A grayscale photograph of an industrial robot arm in a factory setting, performing a welding task. The robot arm is the central focus, extending from the left towards the right. At the end of the arm, a welding torch is positioned, creating a bright, starburst-like spray of sparks that dominates the lower right portion of the frame. The background shows the complex metal structure of a factory ceiling with various beams and supports. The overall tone is industrial and technical.

## **Current state**

**Currently most robot manufacturers each have their own programming language, not just from a vocabulary standpoint, but also the context. Each robot brand supports different control standards and features that may not be available in other brands.**

A black and white photograph of a worker in a protective helmet operating a large industrial machine in a factory setting. The worker is on the right side of the frame, looking towards the machine. The machine is a large, cylindrical component, possibly a part of a turbine or engine, with a bright light reflecting off its surface. The background is dark and industrial.

**The lack of standardization makes the robot implementation process time-consuming and tedious.**

The implementation team must be familiar with the specific robot brand being implemented in order to be successful. If multiple brands are being implemented, a team with experts on multiple brands is required.

In a world with a standard programming language, multiple robot brands would be implemented with ease.

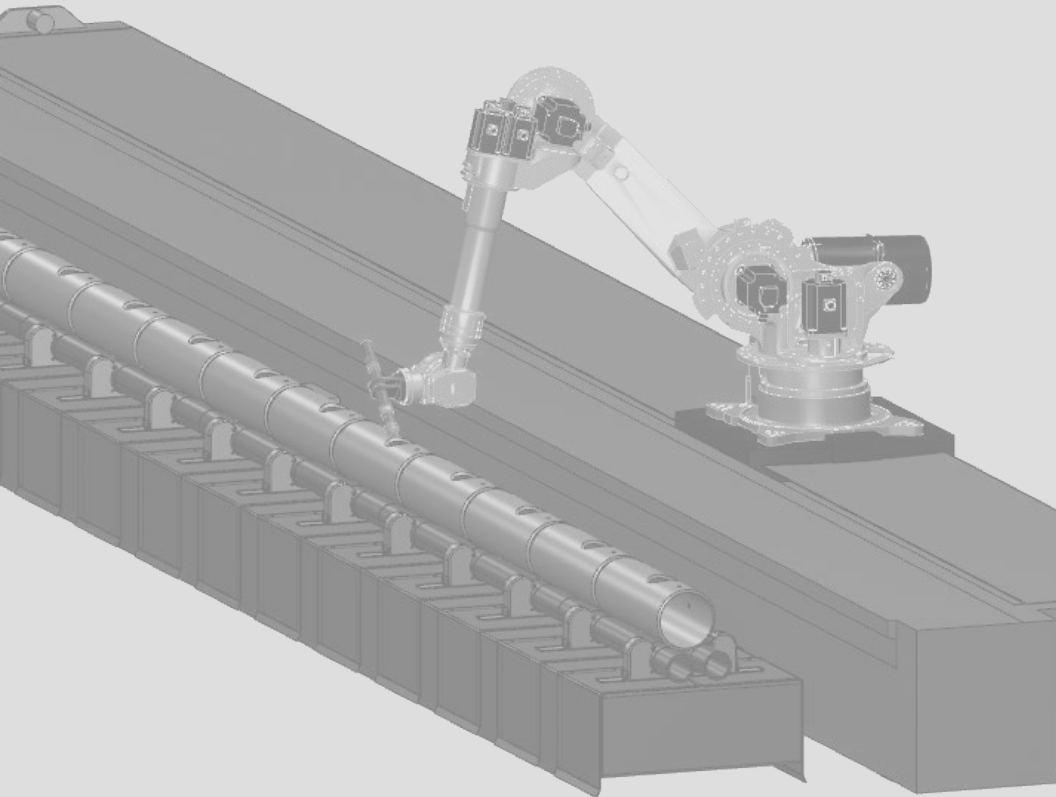
# What's the holdup?

There is a strong incentive from manufacturers to demand standardization of programming languages. However, it may never happen.

# Specific business objectives

Each of the major robot manufacturers has their own areas of expertise, markets they focus on, and, as a result, their robots have certain features tied to their business objectives. This is reflected in their programming vocabulary and context.

The lack of standardization also increases brand loyalty. A customer is more likely to select the same robot brand such that they don't have to invest in learning something new and different.



# The desire for flexibility

Different robots are best suited for different applications or processes. Regardless of the robot manufacturers' objectives to achieve customer retention and achieve brand loyalty, manufacturers are looking for flexibility when automating their processes.

Multiple proprietary programming languages and interfaces are a hurdle to manufacturers looking to take automation to the next level.

A large red graphic with a diagonal split. The top-left and bottom-right corners are a darker red, while the top-right and bottom-left corners are a lighter red. A white text box is positioned in the lower-left quadrant of the graphic.

**Despite a lack of standardization, there are solutions in the market that help alleviate these challenges.**



# Universal operating system

A brand-agnostic universal robot operating system, like ForgeOS gives users the ability to create robot programs and control components in an automated work cell for multiple robot brands. This low-code/no code solution replaces complex proprietary languages.

**Innovative companies such as READY Robotics are enabling operators to control their robots, regardless of brand, from a single platform.**

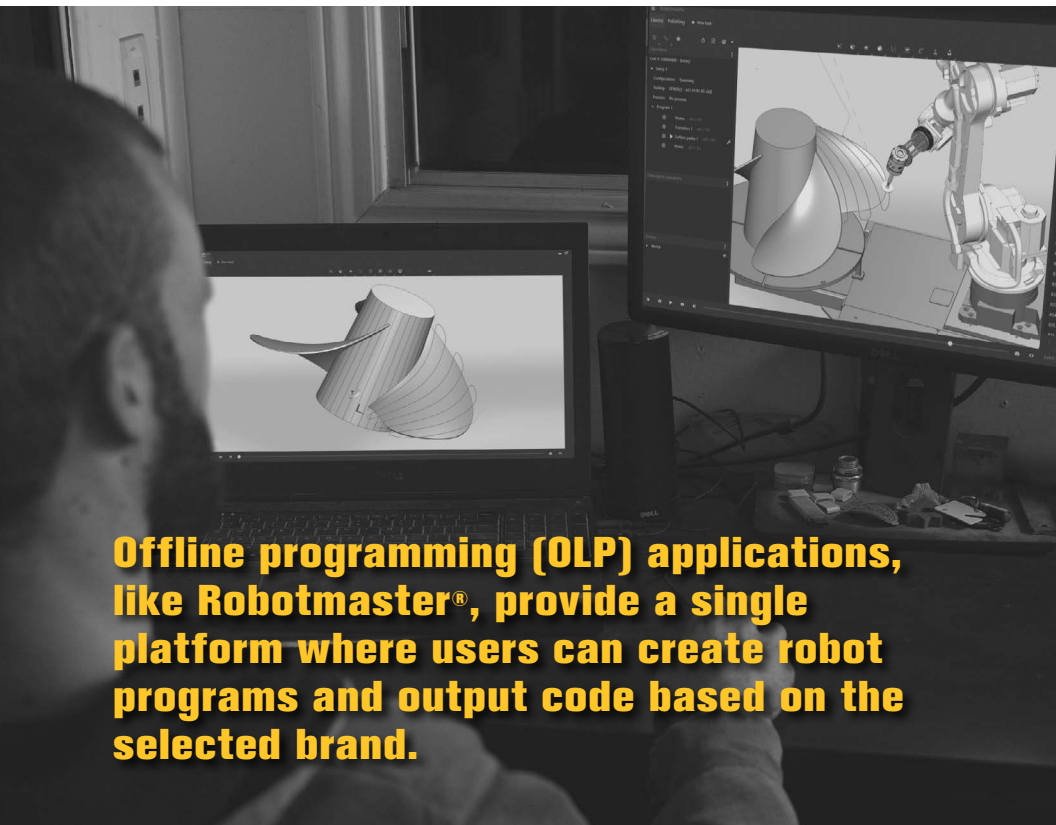


**Learn more about Ready Robotics**



# Universal offline programming software

A brand-agnostic software programming solution creates a universal programming method while also providing all the benefits of taking the programming “offline” or away from the robot. This increases production time and decreases robot downtime.



**Offline programming (OLP) applications, like Robotmaster®, provide a single platform where users can create robot programs and output code based on the selected brand.**

**Learn more about Robotmaster OLP**



# 10 reasons to put down the teach pendant and program industrial robots using offline programming software

**01**

Standard method of programming major robot brands

**02**

Program simple to complex parts with ease

**03**

Does not require programming or robotics expertise

**04**

Eliminate robot downtime – keep robots in production

**05**

Simple and intuitive programming workflow

**06**

Virtual models and environment for simulation and validation

**07**

Drastically reduces programming time

**08**

Generate robot trajectories based on a CAD model

**09**

Reduce cycle time and increase output

**10**

Embedded process knowledge

# Conclusion

With the increased usage of robots, the need for standardized solutions has intensified. Multiple programming languages and interfaces have created a hurdle to taking automation to the next level. Any level of digital transformation and connected factory ambitions are met with this obstacle. Currently, there is no standardization in programming languages, however, there have been some innovative technology developments that build a bridge over this hurdle. The goal of standardization is for a user to be able to program any robot brand in the exact same way.

Robotmaster offline programming software, part of the Hypertherm Associates family of brands, strives to enable manufacturers to embrace automation by providing an **easy-to-use and universal solution to program industrial robots that will increase their productivity and profitability.**

SHAPING POSSIBILITY®

PLASMA | LASER | WATERJET | AUTOMATION | SOFTWARE | CONSUMABLES

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