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The Fundamentals of Laser Technology

ULS History of Innovation

Universal Laser Systems was founded in 1988 with the vision of expanding the potential for laser materials processing to include multiple materials and multiple processes with a single laser system. The foundation of ULS laser systems is a modular design that allows a single platform to be configured to process a myriad of materials.

1988 Company is launched in October as Applied Laser Technology with introduction of ALT-2010 with 20 watt laser.

1990 Introduction of ALT-5010 with 50 watt laser.

1991 Company name change to Universal Laser System (ULS) and re-naming of products ULS 1720 and ULS 1750.

1992 Introduction of 100 watt laser version of ULS 1750 dubbed ULS 17100.

1993 ULS-25 introduction and creation of an OEM version for Trotec (Trotec 25R).

1994 PS introduction with new, larger motion system and OEM versions for Trotec (Trotec 25PSR and Trotec 50PSR). +

1995 — Introduction of the 25E and OEM versions for Trotec (Trotec 25ER) and New Hermes/Gravograph (ISL2000).

1996 — Introduction of Optima and Optima Jr, exclusive OEM product for New Hermes/Gravograph.

1997 — Introduction of M, V and X laser systems and OEM versions of M and V models for New Hermes/Gravograph (ISL2001, ISL3001).

Introduction of first ULS designed and manufactured 25/30 watt lasers.

1998 — Introduction of first desktop laser system C-200. Additionally, introduction of the first all-in-one laser kiosk for the personalization industry.

1999 — Introduction of ULS 40 watt and 50 watt lasers.

Launch of OEM division.

2000 — Introduction of the "Platform" quick-change laser concept, Rapid Reconfiguration™ (/discover-uls-innovations/rapid-reconfiguration) and ULS 60 watt laser.

Introduction of Dual Laser Configuration™ (/discover-uls-innovations/dual-laser-configuration) concept in X2 platform.

2001 — Introduction of SuperSpeed™ (/discover-uls-innovations/superspeed-technology).

2002 — Introduction of high-speed laser pulsing enhancements.

2003 — Introduction of VersaLaser Lasers® Systems and next generation software with first materials database and introduction of ULS 10 watt laser.

2004 — Introduction of first laser system geared for industrial markets the XL with first ULS servo-drive system.

2005 — Introduction of HPDFO™ (/discover-uls-innovations/hpdfo).

2006 — Introduction of new generation ULR Lasers (new OEM versions: class 4, Basic, Air-Cooled, and Water-Cooled).

2007 — Introduction of PLS, VLS Desktop and ILS along with Laser Interface+ (second generation materials database driver) and laser job estimation software.

2008 — Introduction of ULS 75 watt laser, PLS SuperSpeed and VLS Platforms.

Introduction of 30 and 50 watt 9.3 micron CO_2 lasers.

2009 — Introduction of ILS SuperSpeed, 1-Touch Laser Photo™ (/discover-uls-innovations/1-touch-laser-photo) and new Universal Control Panel (UCP) single software interface for all laser systems with new features including relocation and duplication modes.

2010 — Introduction of new version of 1-Touch Laser Photo™ with material simulation preview.

2011 — Introduction of PLS6MW Multi-Wavelength laser system.

2012

Introduction of Universal Camera Registration™ (/discover-uls-innovations/universal-camera-registration) feature for ILS, DXF/PDF (/discover-uls-innovations/direct-file-import) import feature.

2014

Introduction of XLS10.150D and XLS10MWH industrial laser systems with hydrostatic bearing techology, new generation camera registration, MultiWave Hybrid™ technology (/discover-uls-innovations/multiwave-technology), and the LSM™ (Laser System Manager) next generation control software.

Introduction of UAC 4000 Air Cleaner with patented dual carbon filters for ILS and XLS platforms.

2015

Introduction of 250/500 watt high-power lasers.

2016

Introduction of UAC 2000 Air Cleaner for VLS and PLS platforms.

Awarded patents for Flexible Manufacturing and Multi-Wave Hybrid Technology.

Introduction of 75 watt 9.3 micron CO_2 laser.

2017

Introduction of High Power XLS with a 250 watt CO_2 laser and a 50 watt fiber laser.

2018

Introduction of ULTRA 9 platform with advanced functionality such as high-accuracy beam positioning and auto-focus, collision detection, smart path planning, and support for MultiWave Hybrid technology.

ULS Portfolio of Patents

From its founding in 1988, Universal Laser Systems has been a company driven by innovation, and motivated by the advancement of laser technology and its applications to materials processing. R&D efforts have resulted in a significant portfolio of patents.

Laser Resonators

- US 8,599,898 Slab Laser with Composite Resonator and Method for Producing High Energy Laser Radiation – Dec, 2013 (http://pdfpiw.uspto.gov/.piw?docid=8599898&PageNum=1)

Laser Source Construction Innovations

- US 6,983,001 Laser With Heat Transfer System – Jan, 2006 (http://pdfpiw.uspto.gov/.piw?docid=6983001&PageNum=1)

- US 9,263,844 Air Cooled Gas Lasers and Associated Systems and Methods – Feb, 2016 (http://pdfpiw.uspto.gov/.piw?docid=9263844&PageNum=1)

Laser Source Cooling Innovations

- US 7,415,051 Air Cooled Laser Apparatus and Method – Aug, 2008 (http://pdfpiw.uspto.gov/.piw?docid=7415051&PageNum=1)
- US 9,263,845 Air Cooled Gas Lasers with Heat Transfer Resonator Optics and Associated Systems and Methods – Feb, 2016 (http://pdfpiw.uspto.gov/.piw?docid=9263845&PageNum=1)
- US 9,281,649 Air Cooled Gas Lasers with Heat Transfer Assembly and Associated Systems and Methods – Mar, 2016 (http://pdfpiw.uspto.gov/.piw?docid=9281649&PageNum=1)

Laser Source Response Improvement

- US 7,469,000 Gas Lasers Including Nanoscale Catalyst and Methods for Producing Such Lasers– Dec, 2009 (http://pdfpiw.uspto.gov/.piw?docid=7469000&PageNum=1)

Laser Source RF Power Supply

- US 6,181,719 Gas laser RF Power Source Apparatus and Method – Jan, 2001 (http://pdfpiw.uspto.gov/.piw?docid=6181719&PageNum=1)

SuperSpeed™

- US 6,313,433 Laser Material Processing System With Multiple Laser Sources Apparatus and Method – Nov, 2001 (http://pdfpiw.uspto.gov/.piw?docid=6313433&PageNum=1)

Portable Laser Kiosk Concept

- US 6,342,687 Portable Laser System with Portable or Stationary Fume Evacuation – Jan, 2002 (http://pdfpiw.uspto.gov/.piw?docid=6342687&PageNum=1)

Dual Laser Configuration

- US 6,423,925 Apparatus and Method for Combining Multiple Laser Beams in Laser Material Processing Systems – Jul, 2002 (http://pdfpiw.uspto.gov/.piw?docid=6423925&PageNum=1)
- US 6,424,670 Apparatus and Method for Making Laser Sources and Laser Platforms Interchangeable and Interfaceable – Jul, 2002 (http://pdfpiw.uspto.gov/.piw?docid=6424670&PageNum=1)

VLS Desktop Cabinet Design

- US D517,474 Laser Cabinet – Mar, 2006 (http://pdfpiw.uspto.gov/.piw?docid=D0517474&PageNum=1)

HPDFO™ (High Power Density Focusing Optics)

- US 7,060,934 High Resolution Laser Beam Delivery Apparatus – Jun, 2006 (http://pdfpiw.uspto.gov/.piw?docid=7060934&PageNum=1)

In-Line Air Cooling

- US 7,715,454 Method and Apparatus for Cooling a Laser– May, 2010 (http://pdfpiw.uspto.gov/.piw?docid=7715454&PageNum=1)

Class 4 Conversion Module

- US 7,723,638 Laser Conversion Systems and Methods for Converting Laser Systems for Operation in Different Laser Safety Classifications – May, 2010 (http://pdfpiw.uspto.gov/.piw?docid=7723638&PageNum=1)

Traveling Exhaust

- US 7,947,919 Laser-Based Material Processing Exhaust Systems and Methods for Using Such Systems – May, 2011 (http://pdfpiw.uspto.gov/.piw?docid=7947919&PageNum=1)

Laser System with Inkjet Innovation

- US 8,101,883 Laser-Based Material Processing Systems and Methods for Using Such Systems – Jan, 2012 (http://pdfpiw.uspto.gov/.piw?docid=8101883&PageNum=1)

Laser Beam Positioning Innovation

- US 8,294,062 Laser Beam Positioning Systems for Material Processing and Methods for Using Such Systems – Oct, 2012 (http://pdfpiw.uspto.gov/.piw?docid=8294062&PageNum=1)
- US 9,737,958 Laser Material Processing Systems with Beam Positioning Assemblies Having Fluidic Beating Interfaces and Associated Apparatuses and Methods – Aug, 2017 (http://pdfpiw.uspto.gov/.piw?docid=9737958)

Air Filtering Innovation

- US 8,603,217 Recirculating Filtration Systems for Material Processing Systems and Associated Methods of Use and Manufacturing – Dec, 2013 (http://pdfpiw.uspto.gov/.piw?docid=8603217&PageNum=1)
- US 9,155,988 Multi-stage Air filtration Systems and Associated Apparatus and Method – Oct, 2015 (http://pdfpiw.uspto.gov/.piw?docid=9155988&PageNum=1)

Multi-Wave Hybrid™ Technology

- US 9,346,122 Multi-Wavelength Laser Processing Systems and Associated Methods of Use and Manufacture -- May, 2016 (http://pdfpiw.uspto.gov/.piw?docid=9346122&PageNum=1)

Flexible Manufacturing Method

- US 9,354,630 Flexible Laser Manufacturing Systems and Associated Methods of Use and Manufacturing – May 2016 (http://pdfpiw.uspto.gov/.piw?docid=9354630&PageNum=1)

New Method of Purchasing Laser Energy

- US 9,694,448 Methods and Systems for Operating Laser Processing Systems – Jul, 2017 (http://pdfpiw.uspto.gov/.piw?docid=9694448)

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Laser Engraving (/learn/laser-engraving)

Laser Marking (/learn/laser-marking)

List of Laser Processes (/learn/list-of-laser-processes)

DLMP® (Digital Laser Material Processing) (/learn/digital-laser-material-processing)

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