



# VERDOT®

## SPLG GROUP

*« BENEFIT FROM 30 YEARS OF EXPERIENCE IN  
BIOPHARMA PROJECT MANAGEMENT »*

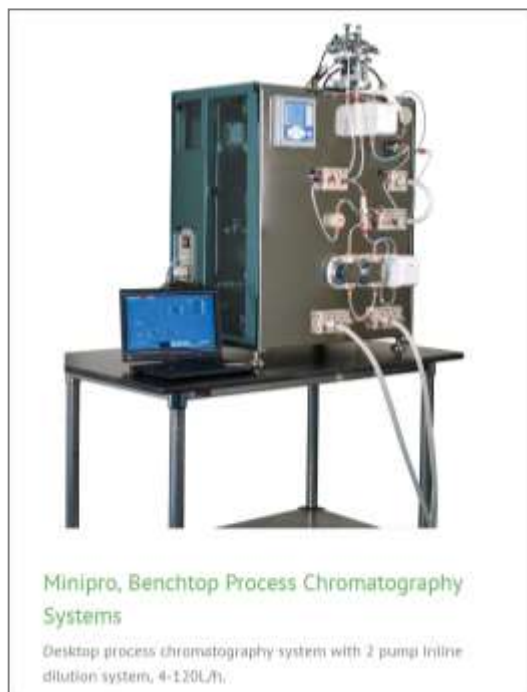


# Introduction

- Verdot has a 30 years experience in designing and manufacturing LPLC (Low Pressure Liquid Chromatography) equipment (large scale and pilot size).
- We are worldwide known in the delivery of LPLC. LPLC purification is used for several application as vaccines, mAbs, blood of plasma fractionation.
- We have delivered more than 1000 equipment all around the world for Biopharma companies leader and also for food industry.
- Due to the quality of our equipment for LPLC, we also start to design and manufacture their filtration system.
- Our reactivity, flexibility and sense of customer service is well known and allows us to be a major actor on this market.
- Since 2010, Verdot starts to implement equipment in Russia (under the name of Bio-Rad Verdot until 2014)



# Our pilot equipment



- MiniPro skid :Flowrate 4 – 120LPH
- Columns diameter 10 to 20cm.
  - Packed mode
  - Expanded mode
  - Agitated mode
- Dedicated to small production or pilot test before going on large scale activities
- Equipment can be rented under request



# Our pilot equipment : installation in Russia



2 MiniPro

5 columns in packed mode:

- 1 x D100
- 2 x D140
- 2 x D200

1 resin transfer system

1 EasyPack column D446

1 column lifter



# Our pilot equipment : vegetal application

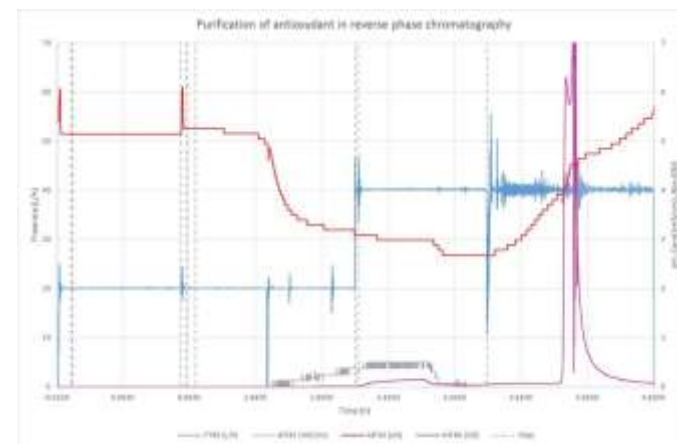


Installation in Turkey

1 x MiniPro

2 x columns PilMod D140

1 x degassing unit



# Our Large Scale columns



- Columns diameter 30 to 160cm.
  - Packed mode
  - Expanded mode
  - Agitated mode
- Dedicated to large scale production for BioPharma and food industry
- Equipment can be rented under request (D60cm)



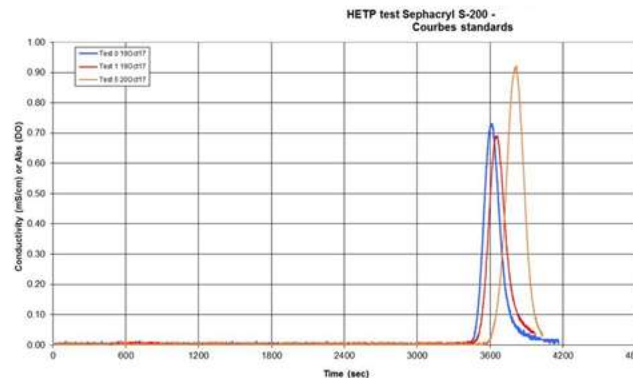
# Our Large scale column: vaccines



InPlace D1200 column in France  
Used in packed mode

Packed with several type of media  
(protein A, cation/anion exchange, size exclusion...)  
 $0.8 < A_s < 1.6$  depending on media  
Number of plates around 10.000 plates /m

Easy to pack due to slurry valve design  
Lots of integrated accessories to facilitate unpacking without opening the column



InPlace D596 column in Belgium  
Used in agitated mode



# Our Large scale column: insuline



3 x InPlace D1600 column in China





# Our Large scale column: rare disease



3 x InPlace D1200 column at Biomarin Ireland  
Press article regarding our collaboration



# Our Large scale column: milk industry



17 x EasyPack D1000 column in USA



# Our Large scale column: vegetal industry



3 x EasyPack D596 expanded bed in France

1 process skid including continuous chromatography



# Our purification skids



- Chromatography skids:
  - 40LPH to 5000LPH
  - Form 3/8 inch to 1.5 inches
  - Isocratic or gradient
  
- Filtration system:
  - Absolute filtration
  - Depth filtration
  - TFF
  
- Specific skids
  - Including preparation tanks
  - CIP/SIP
  - Heat exchanger



# Our purification skids



Resin preparation in Belgium:

- 1 x Chromatography skid
- 1 x agitated column D1200



# Our purification skids



1 Chromatography skid 600LPH during SAT /  
Commissioning in Japan



# Our purification skids



6 x Chromatography skids for mAbs in Belgium:

- up to 3.500LPH
- Integrated Inline dilution
- SIP
- 4 x filter housing for product pre-filtration
- Controlled by DCS delta V system



# Our purification skids



1 full Harvest package for Ireland:

- 1 tank 1.000L
- Depth filtration 2 x 44m<sup>2</sup>
- Absolute filtration 30 x 0,2µm
- 1 tank 3.000LPH- SIP
- Software developed by Verdot : InTouch





# Our purification skids



1 special chromatography skid including agitated column D800 for Israël:

- Software developed by Verdot on Siemens Wincc



# Our disposable system



## FlexiPro, Process Chromatography Skids with Disposable fluid path

Interchangeable low flow and high flow kits Ideal for multi-products purification suite

- Full disposable flowpath for single-use production
- Available at 3 flowrates:
  - High Flow Kit : 20-600LPH
  - Low Flow Kit : 5-150LPH
  - Very Low Flow Kit : 1-30LPH
  - Ultra Low Flow Kit : 0.6 – 6.6LPH
- Rental under request



## Our Profile

**VERDOT:** a team of **40** people, more than **60%** with qualified degree certificate, **50%** are experienced engineers and executives, **30%** works in production

**Experience:** average age of **44** and tenure of **13** years

**Safety:** **2600 days** without a work accident, current record

**Commitment:** annual absenteeism rate is between **0.4** and **0.7%**

**Environment:** carbon footprint in 2017 was **839 t CO2 eq**

**R&D:** more than **15 %** of the time is spent **on product development**

**Turnover:** **95%** of sales are export business

## Our Values

The shared values on which we rely every day to adapt our offers to meet the expectations and needs of our customers are:

**Business expertise, adaptability, sense of customer service, ethics and commitment.**

The values which guide our individual behaviors within the team are:

**self-monitoring, discipline, responsiveness, curiosity and respect for procedures.**





**Manufacturing : 1.400 hours / month**





**Design and engineering : 1.800 hours / month**



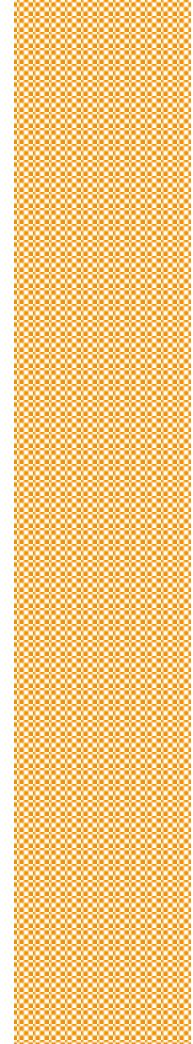
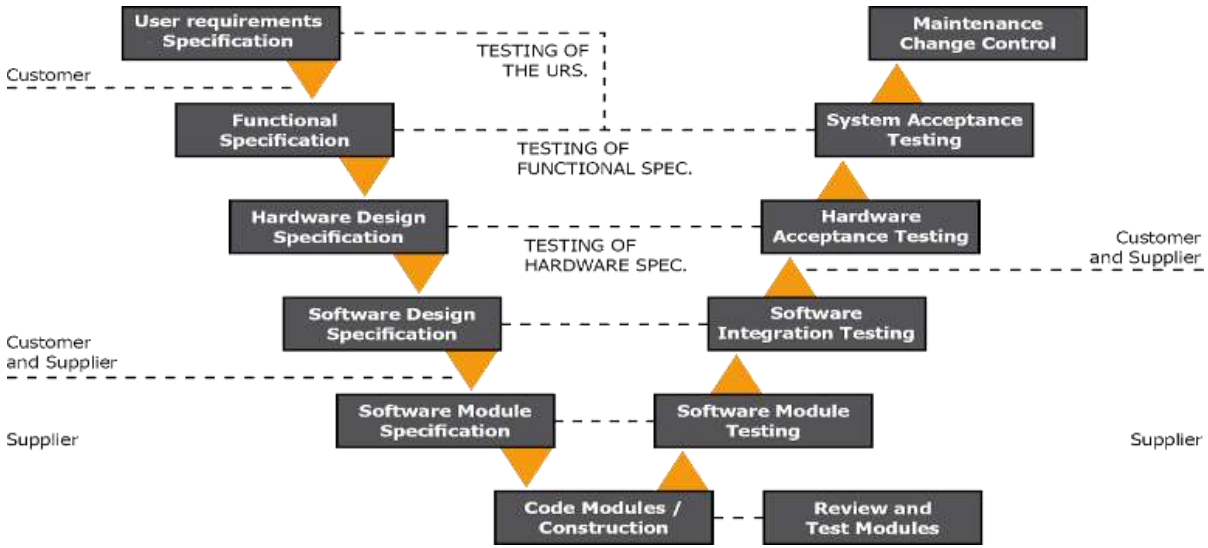
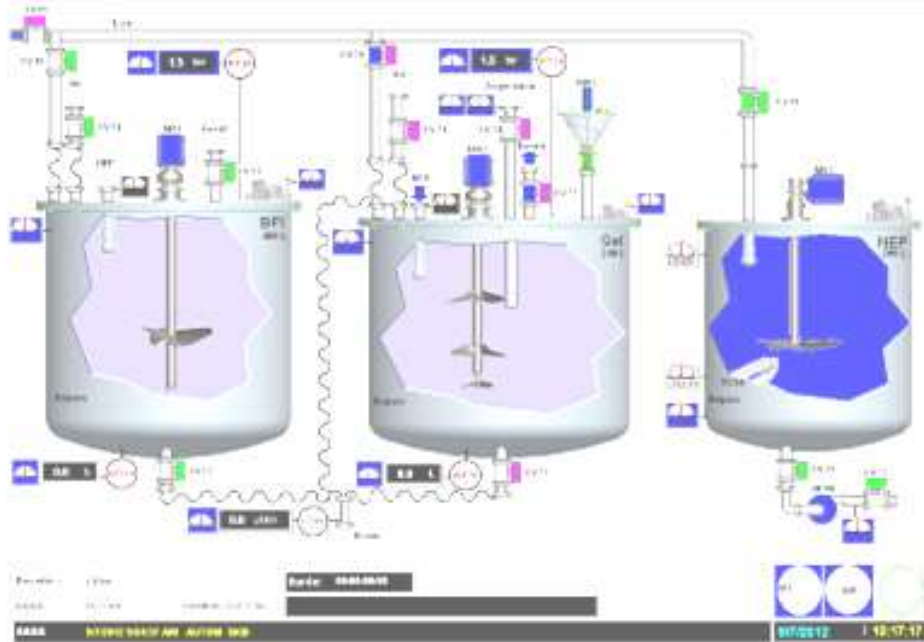
## Our Expertise

- Our expertise is the result of our knowledge in mechanical-, computer- and bio-engineering and our 30 years of project management for various companies from major multinationals to starts-ups in multiple markets: Biopharma , Food , Agriculture, and Cosmetics industries.
- This expertise is also maintained by regular contact with the universities with which we regularly work in the context of specific projects.
- We are curious to learn about new technologies through specific projects and development.

## Our Experience

- Thanks to our ability to adapt to the specific requirements of Biopharma, Food, Agriculture and Cosmetic markets, over 1000 pieces of our purification equipment are used in over 20 countries all over the world.
- More than 85% of the products are tailor-made.
- Our customers have continued to trust us for over 30 years.





## Our partnership

In order to provide the best expertise and solutions, we work with lots of partners to integrate their solutions in our systems:

- Supplier of valves
- Supplier of pumps
- Supplier of instrumentation
- Supplier of resin
- Engineering group

With this strong relationship, we can give confidence to the final customer about the quality of our products



**GEMÜ®**



**Endress + Hauser**



**JACOBS®**



**TOSOH**



**QUATTROFLOW™**  
Fluid Systems





# OUR CERTIFICATIONS

## Our management system:

All requirements of ISO 9001 are integrated into the quality management system of VERDOT Ips<sup>2</sup> without exclusion since 2006.



## Our products:

Our Agitated and InPlace columns have been assessed by a notified body and are labelled CE-compliant according to the European directive of equipment operating under pressure, in categories from I to IV.

Our product masters are manufactured in compliance with the directives and regulations on products and equipment security (CE Mark), on equipment, automatized systems, and on quality of wetted parts materials.

## Our team:

Each of our welders has several qualifications issued by a notified body according to standards ISO 14732 and EN 287-1 / ISO 9606-1.

## Our procedures:

Our procedures regarding pressurized parts are qualified by a notified body according to standards ISO 15613 et ISO 15614.



# OUR CUSTOMERS

