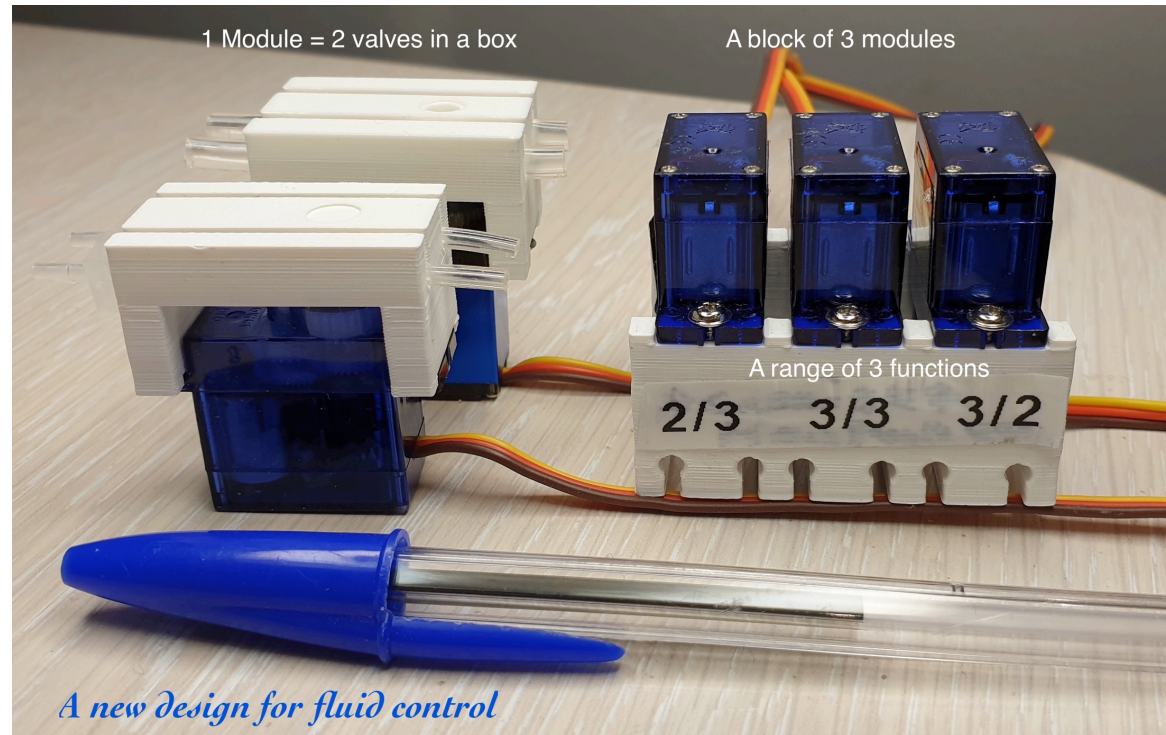


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- We conceive:
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  - New technologies
- We protect inventions
- We give them away so that they can become industrialized and commercialized products!

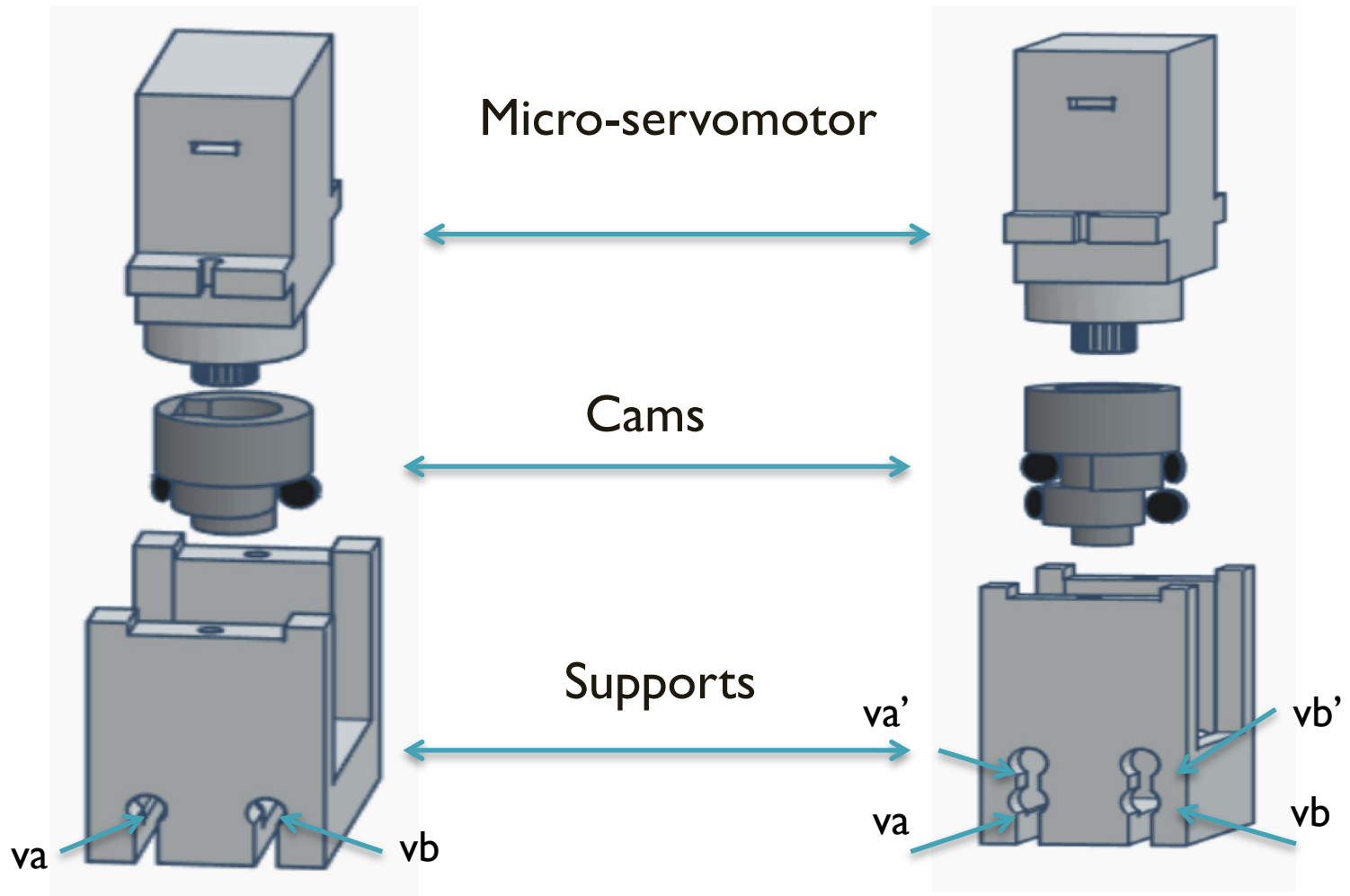
## The Micro Servomotor valve module



### Why a new technology?

- ✓ To simplify fluidic diagrams
- ✓ To lower the cost of manufacturing
- ✓ To reduce energy consumption
- ✓ To promote digital inclusion
- ✓ To reduce the weight of the appliances

# Micro-Servomotor Valve Modules



Module 2 valves

Module 4 valves

## A shift in paradigms

### What does it consist of?

- ✓ Using a micro-servomotor as an actuator
- ✓ Benefiting from a high torque
- ✓ Benefiting from 2 valves in a single module
- ✓ Implementing new functions implicitly
- ✓ Simplifying the realisation of the module itself

### Three active states

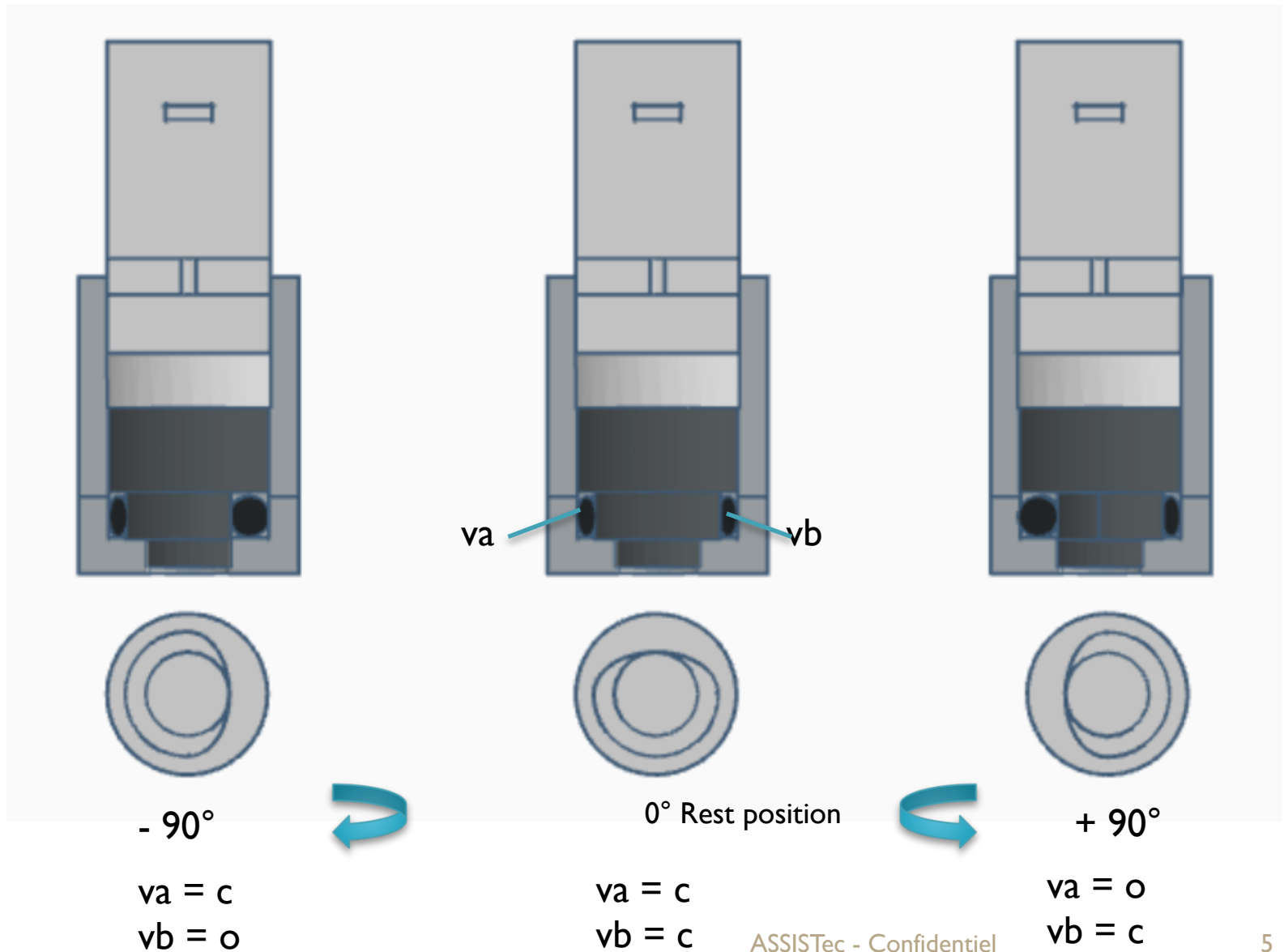
- a) V1 normally open (no) & V2 normally closed (nc)
- b) V2 normally open (no) & V1 normally closed (nc)
- c) V1 & V2 normally closed (nc)

### Standard fluidic functions

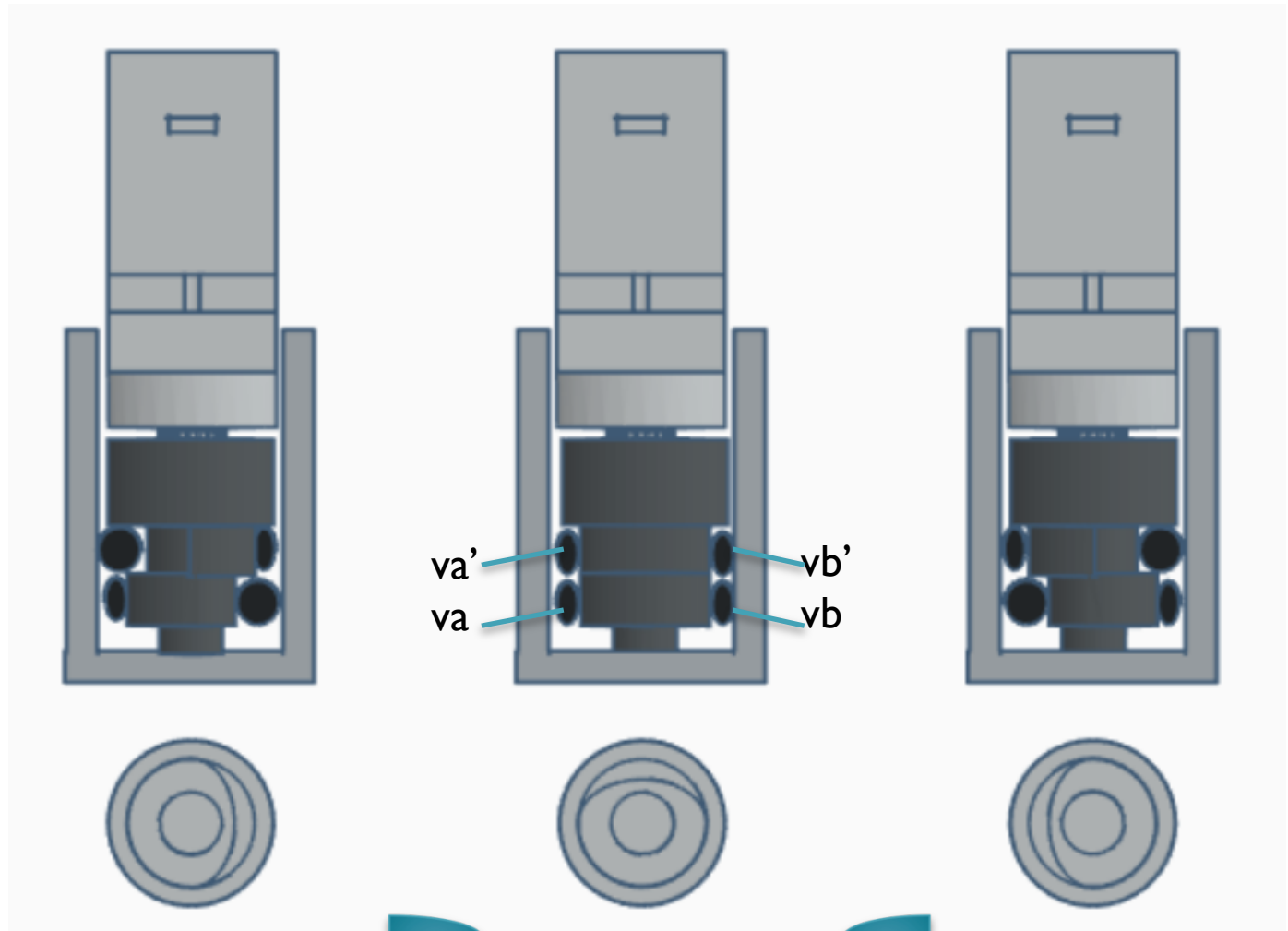
- ✓  $2 \times 2/2$ : V1 no and V2 nc, simultaneously and vice versa
- ✓  $2 \times 2/3$ : V1 no and V2 nc, V1 nc and V2 no, V1 and V2 nc simultaneously
- ✓  $1 \times 3/2$ : depending on external wiring
- ✓ Multiple combinations depending on cam profile and number of stages

# The active positions of the valve module

## The module 2 x 2/3



# The active position of the 4 valve positions Inverter Module



- 90°

$va' \& vb = o$   
 $va \& vb' = c$

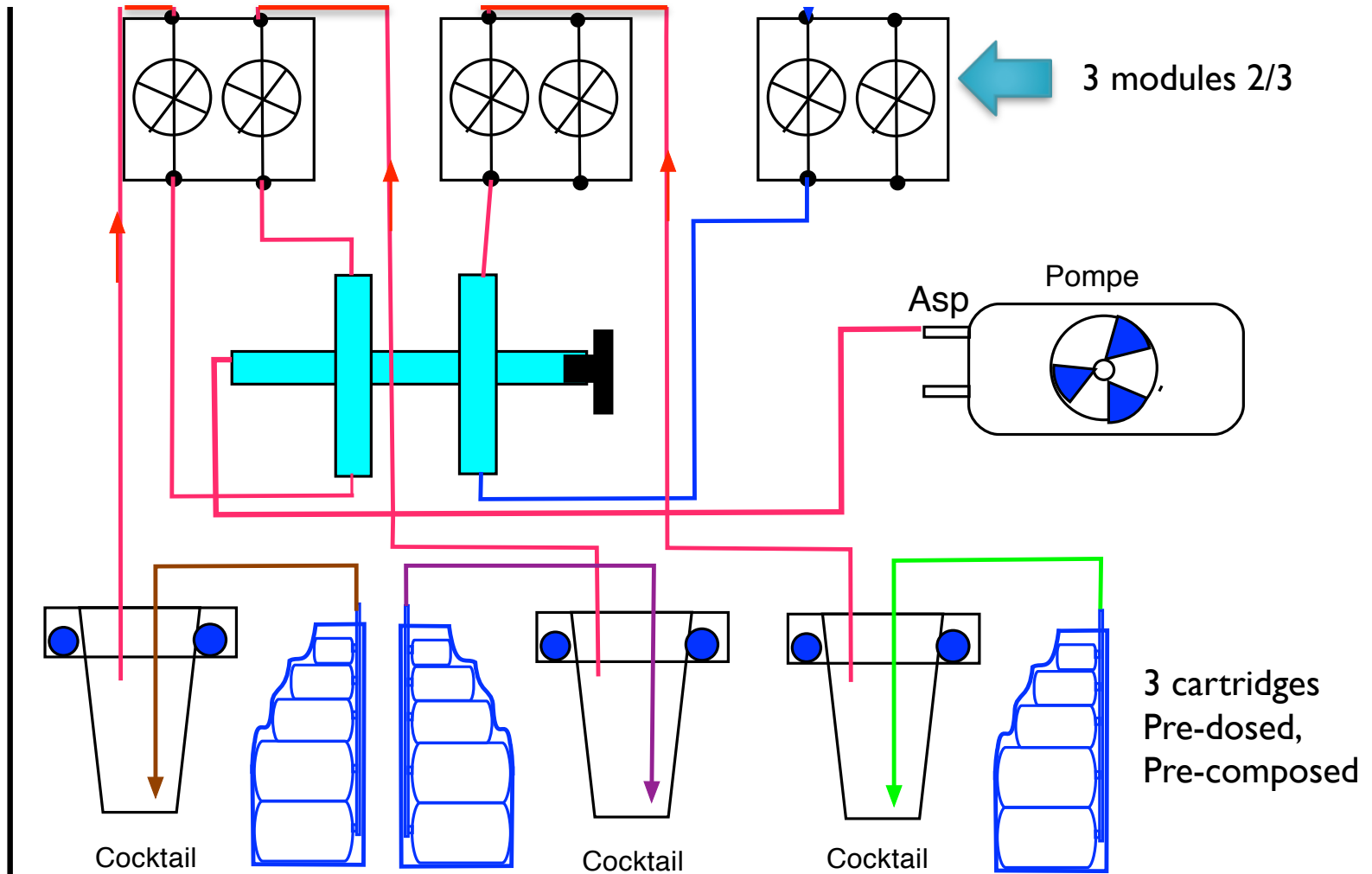
0°

$va' \& vb' = c$   
 $va \& vb = c$

+ 90°

$va' \& vb = c$   
 $va \& vb' = o$

# Application of the concept and technology to a 3-way cocktail dispenser





GDS-G4  
Standard valves



GDS – G6  
Micro-servo  
valves

Comparison of price, weight, power

Désignation	GDS – G4	GDS – G6 – Micro-servomotor
Manufacturing price	1500 €	70 €
Weight	3,7 kg	370 g
Power	24 v, 1 A	5v, 1 A



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- ASSISTec is a small company resulting from CNRS Scientific Research and, in particular, from more than 35 years of experience in Life Sciences instrumentation for which Dr Jean Neimark\*, Research Engineer, has designed and produced scientific instruments and devices which, for some, have contributed to the advancement of research and, for others, to the birth of a company, the second largest in the world in the field of drug peptides: see photos IBMC, Peptide Synthesizer, Inauguration of Neosystem, PolyPeptides, Small Organic Molecules Synthesizer in Combinatorial Chemistry, Prototype of this apparatus.
  - The realisation of these different instruments and devices has required conceiving and inventing specific components, generating technologies adapted to the management of liquids and fluids sensitive to residual biological contamination. These technologies must also be resistant to strong acids and bases.
- 
- \*Research Engineer at the CNRS for 35 years, first CNRS Crystal in 1992, designated Grand Prix "First Research Team 1993" awarded by Georges CHARPAK, Nobel Prize in Physics 1992. Inventor of the first Solid Phase Peptide Multi-synthesizer and Co-Creator of the company "NEOSYSTEM", in 1986, nowadays "Polypeptides", ranked 2nd worldwide for the production of medicinal peptides.

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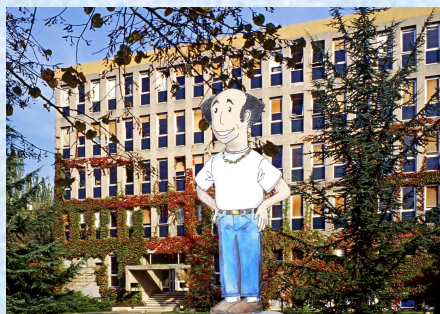
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- On the strength of this experience, Dr Jean Neimark, Managing Director of ASSISTec, has continued his work of innovation to, initially, develop equipment for the preparation of plant nutrients, by creating a first generation of equipment, very elaborate technically but commercially unsaleable because of their construction cost (see photo GDS-G4).
- In a second phase, this experience led to a re-examination of the concepts and means to respond to the problems of managing fluids and liquids that are diverse and varied in nature and viscosity, but above all to reduce manufacturing costs while guaranteeing performance
- Flexibility and efficiency, combined with the support of the companies with which Dr. Jean Neimark has collaborated, has made it possible to bring the ideas behind the technology and examples of its application to fruition and fruition.
- Thus, from this reflection was born the technology which is proposed to you and whose comparison in terms of price, weight, consumption and adaptation to digital techniques, should convince you to adopt it and promote it as a manufacturer or future user, for the realization of existing or future objects!



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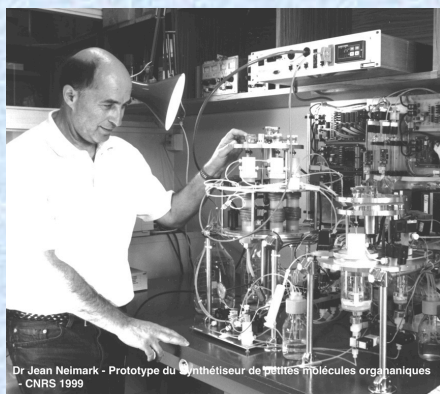
IBMC of the CNRS Strasbourg  
35 years of innovation



1988: Hubert Curien, Minister for Research and Industry inaugurates the Peptide Multi-synthesizer invented by Dr. JP Briand and Dr. J. Neimark



Neosystem, now PolyPeptides,  
2nd largest manufacturer of drug peptides  
in the world

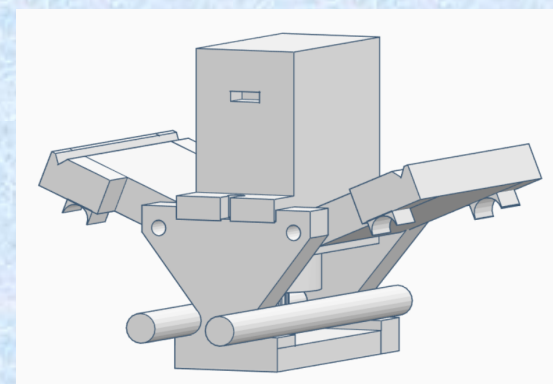


Dr Jean Neimark - Prototypé du Synthétiseur de petites molécules organiques - CNRS 1999

From a laboratory prototype: to :



An industrial realization of the Synthesizer of Small Organic Molecules in combinatorial chemistry, solid phase



Removable hose module for contaminants

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Bureau international



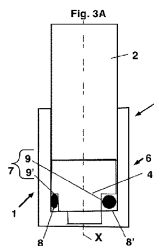
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(54) Title: VALVE MODULE WITH INBUILT ELECTRIC ACTUATOR, AND AUTOMATED MIXTURE-PREPARATION DEVICE COMPRISING AT LEAST ONE SUCH MODULE

(54) Titre : MODULE DE VANNE À ACTIONNEUR ÉLECTRIQUE INTÉGRÉ ET DISPOSITIF AUTOMATISÉ DE PRÉPARATION DE MÉLANGES COMPORTANT AU MOINS UN TEL MODULE



(57) Abstract: The invention relates to a valve module (1) with an inbuilt electric actuator (2), said module comprising, on the one hand, a valve device (3) comprising a mobile member (4) the positioning of which controls the circulation of a fluid in at least two circulation lines passing through said valve device, and, on the other hand, an actuator able and intended to move the rotary mobile member (4) of the valve device in rotation about an axis (X). The valve device comprises a support body (6) in which said at least one aforementioned mobile member is mounted, forming a cam guided in rotation and provided with at least one control surface (7), and also at least two duct portions (8, 8'), these duct portions and this mobile member being arranged and configured in such a way that said at least one control surface is able to come into engagement with, and, by localized crushing, alter the passage cross sections of, said at least two duct portions, this being done in a manner that is mutually differentiated and dependent on the rotational position of the mobile member. The actuator consists of a micro-servomotor mounted on the support body.

(57) Abrégé : L'invention concerne un module de vanne (1) à actionneur électrique (2) intégré, ledit module comprenant, d'une part, un dispositif de vanne (3) comportant un organe mobile (4) dont le positionnement contrôle la circulation d'un fluide dans au moins deux lignes de circulation traversant ledit dispositif de vanne, et, d'autre part, un actionneur apte et destiné à déplacer en rotation l'organe mobile rotatoire (4) du dispositif de vanne autour d'un axe (X). Le dispositif de vanne comprend un corps support (6) dans lequel est monté ledit au moins un organe mobile précité, formant came guidée en rotation et pourvue d'au moins une surface de commande (7), et également au moins deux portions de conduits (8, 8'), ces portions de conduits et cet organe mobile étant arrangés et configurés de manière à ce que ladite au moins une surface de commande puisse venir en engagement et modifier par écrasement local les sections de passage desdites au moins deux portions de conduits, ce de manière mutuellement différenciée et en fonction de la position en rotation de l'organe mobile. L'actionneur consiste en un micro-servomoteur, monté sur le corps support.



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[Suite sur la page suivante]

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