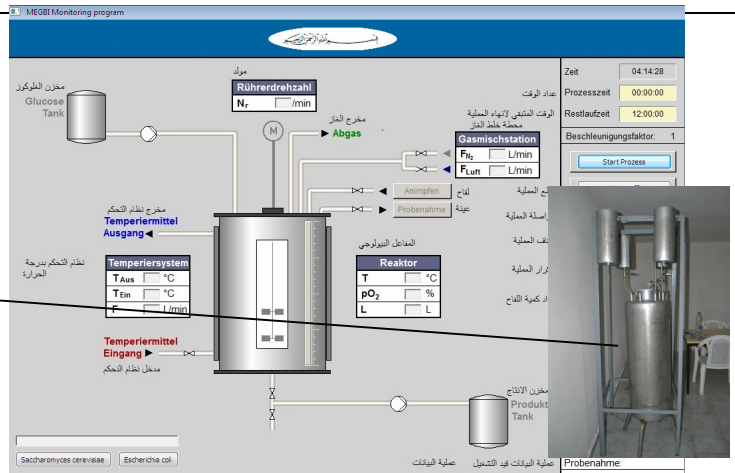
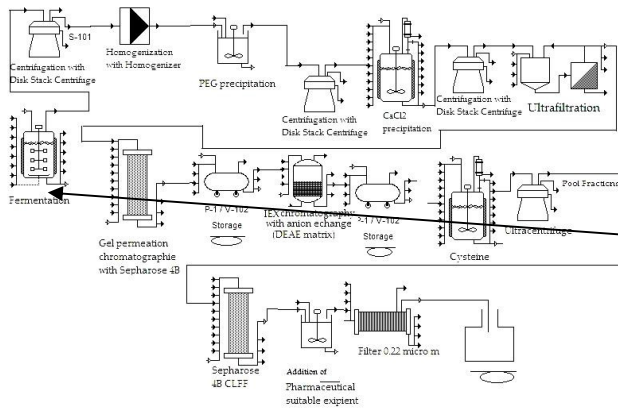


رقم ٣٩٩ في سجل التجاري بيروت مسجل في تاريخ ٢٨/٥/٢٠٠٩

Ras Nhache/Batroun - Tripoli, 13<sup>th</sup> Jan 2015

**MEGBI-VPP system design**



البيوريكتور (Fermentation) و شاشة التحكم للبيوريكتور

Downstream System (Purification) from Solaris Group (in this way MEGBI-VPP downstream processing shall be developed)

Operation sequence of ion exchange chromatography device (to be automated)

Operation Sequence	
	<b>EQUILIBRATE-1 (Column Equilibration)</b>
	Column Testing (Holding)
	LOAD-1 (PBA Column Loading)
	WASH-1 (Column Wash)
	ELUTE-1 (Column Elution)
	Strip (Column Regeneration)
	Rinse (Column Wash)
	Chromatographic rig CIP (In-Place-Cleaning)



PLC System for MEGBI-VPP downstream processing system: Siemens S7-300 with PROFIBUS

**Master Thesis**

**Automation for the downstream processing system of the DNA vaccine production plant MEGBI-VPP**

- Design of Software (State machines) for Homogenizer, Disc Stack Centrifuge in including CIP/SIP functional elements, Process Scale Gel Permeation and ion exchange chromatographic devices, Process Scale Ultrafiltration Device (6 weeks)
- Graphical User Interface for the automation of MEGBI-VPP downstream processing (DSP) unit (4 weeks)
- Adaptation of a Graphical User Interface to a Siemens S7 PLC system (6 weeks)
- Documentation (3 weeks)

Keywords: Automation, PLC, Siemens S7, Programming, User Interface, C++/Java, Biotechnology