Simulation of “A+ --> wait 2 sec --> B+ --> wait 5 sec -> A- --> B-“ sequence of 2 cylinders”

Submitted in fulfillment of the requirements of

ESZG511 MECHATRONICS

(Assignment)

By

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BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI

Work Integrated Learning Program

Second Semester 2019-20

Hall Ticket:

BITS, PILANI

Birla Institute of Technology & Science, Pilani (Raj.)
Work-Integrated Learning Programmes Division
Second Semester 2019-2020
HALL TICKET FOR MAKEUP MID SEMESTER TESTS

ID No : **2018HT01513**
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Degree : **M.Tech. Embedded Systems**
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Date & Time of Hallticket Downloaded : **9/3/2020 - 11:24:05 PM**

Comp. Code	Course No.	Course Title	Units	Mid Semester Regular	Mid Semester Makeup
5050	ES ZC446	DATA STORAGE TECH & NETWORKS	3	Not Appeared	20/03/2020 AN
5666	ES ZG511	MECHATRONICS	5	Not Appeared	21/03/2020 FN
5048	ES ZG642	VLSI ARCHITECTURES	4	Not Appeared	22/03/2020 FN
5049	ES ZG524	REAL TIME OPERATING SYSTEMS	5	Not Appeared	22/03/2020 AN

Exam Timings **Forenoon (FN) :10 AM to 12 Noon IST** **Afternoon (AN) :2 PM to 4PM IST**

Exam Centre	**PUNE**, Smt. Kashibai Navale College of Engineering, Survey No. 44-1, Vadgaon Budruk, Off Sinhgad Road, PUNE - 411041 Maharashtra INDIA

Note:

1)**This Hall Ticket is valid only for the Makeup Mid Semester Tests scheduled for March 20,21 and 22, 2020.**
2)Appearing in both Mid Semester Tests as well as Comprehensive Exams is mandatory for clearing any course.
3)Please check all the information given in this Hall Ticket carefully. If there is any discrepancy in your course package or identification information, please contact the Registration Cell, WILP Division at registration@wilp.bits-pilani.ac.in immediately. Always refer your complete BITS ID No and Name in all your transactions with BITS, Pilani.
4) You must carry this Hall-Ticket to the examination centre alongwith any original Government-issued photo Identity Card like Aadhaar Card, Passport, PAN Card or Driving License. You will NOT be permitted to appear in examinations without the Hall-Ticket.
5)Please check the Course Number and Course Title on the question paper and ensure it is the same as per Hall Ticket.
6)All Mid Semester Tests are of Closed BOOK type.
7)Electronic Devices like Mobile Phones, E-book readers, Computers, iPods or other wireless devices of any kind should NOT be brought inside the examination premises.
8) Please bring your own scientific calculators and writing / drawing instruments. No exchange of any material will be allowed.
9) Please reach the exam venue at least 40 minutes before the start of each exam session. **Students reaching the exam venue late (after the start of the exam) will not be permitted to take the exam.**
10) No student will be allowed to leave the exam hall during the first 60 minutes of the exam.
11) As the parking space may be limited or not available at some exam centres, students should make their own arrangements for parking their vehicles elsewhere.
12) Please carry a bottle of drinking water with you always during the exams.
13)Use of any unfair means / malpractice will result in severe disciplinary action.
14)Please refer to the "Important Information" link on the eLearn website for the **Makeup Exam Policy** and directions to the venue at selected exam centres.

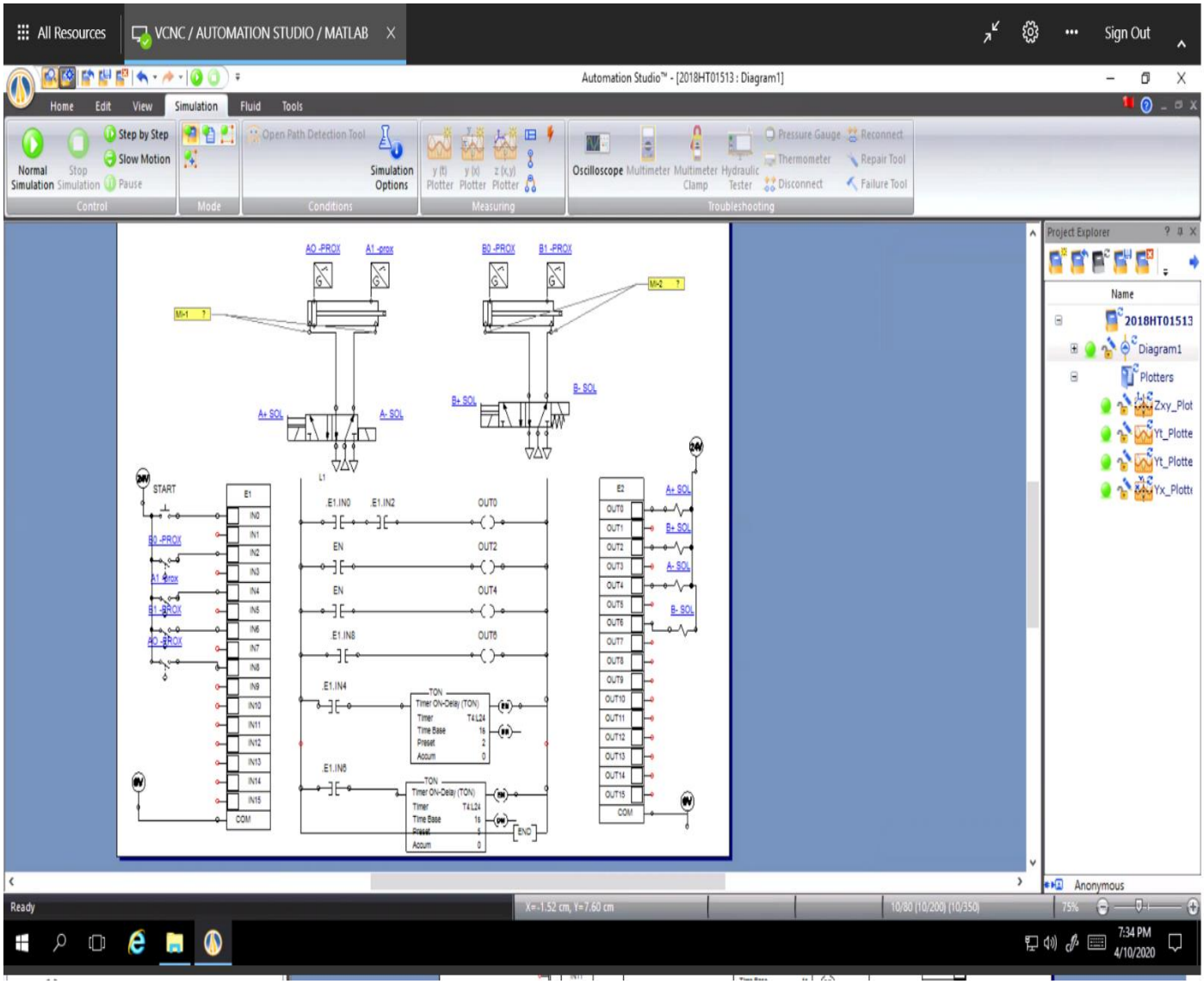
Aim

To simulate the following sequence of 2 cylinders “A+ -> wait 2 sec -> B+ -> wait 5 sec -> A -> B-“

List of components required

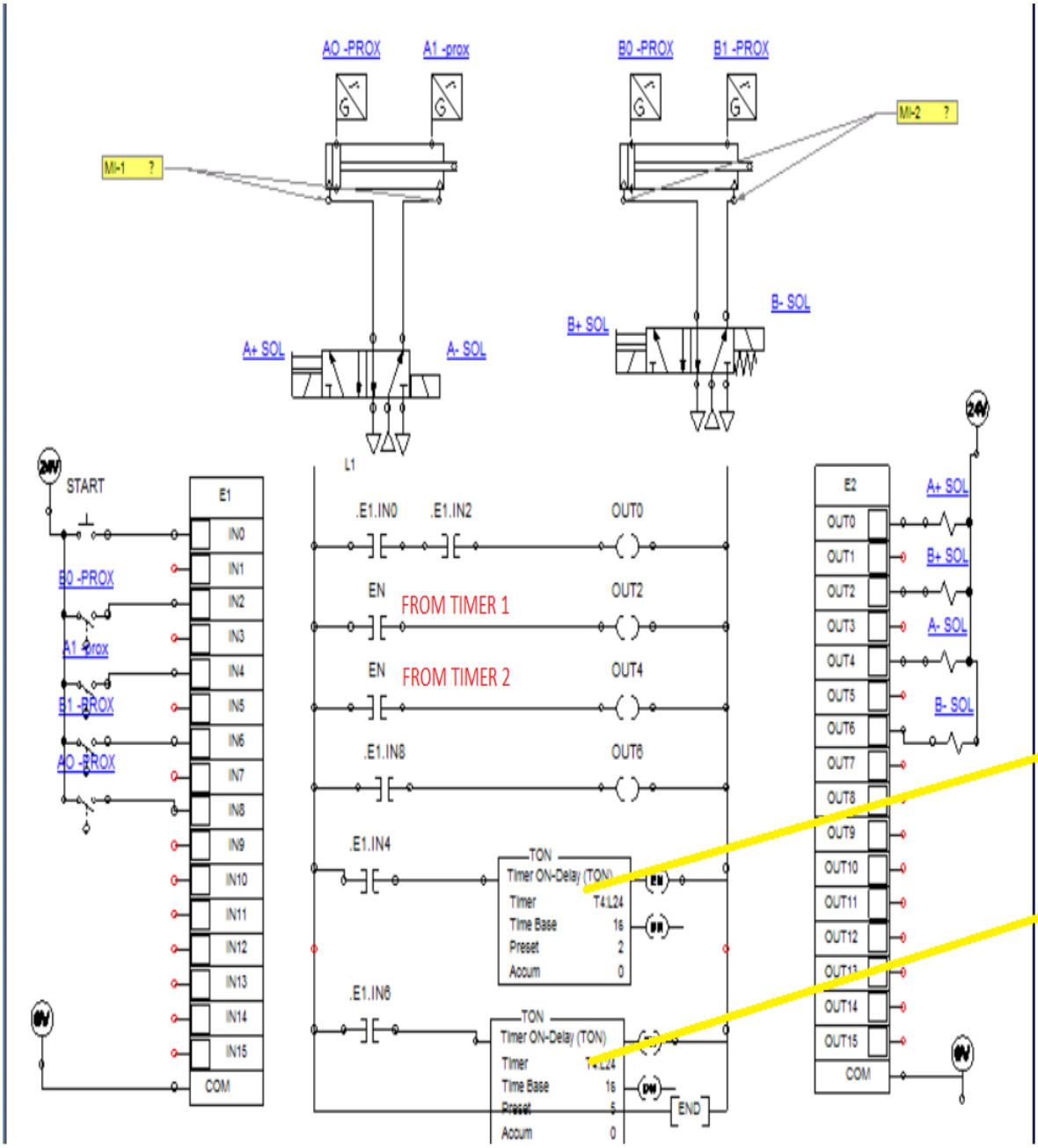
Sl. No.	Component Name	Quantity
1	Double acting cylinder (Pneumatic)	2
2	5/2 solenoid operated DCV	2
3	Pressure source	2
4	Exhaust	4
5	Rung (Ladder for AB PLC)	1
6	PLC Input Card (Electrical Control (JIC Control)	1
7	PLC Output Card (Electrical Control (JIC Control)	1
8	NO Push button (Electrical Control JIC)	1
9	Solenoid	4
10	NO proximity switch	4
11	OTE	4
12	Pneumatic proximity sensor	4
13	ON Delay Timer	2
14	Examine if closed	6
15	OTE	4
16	24V power source, 0V common	2 each

Circuit Diagram



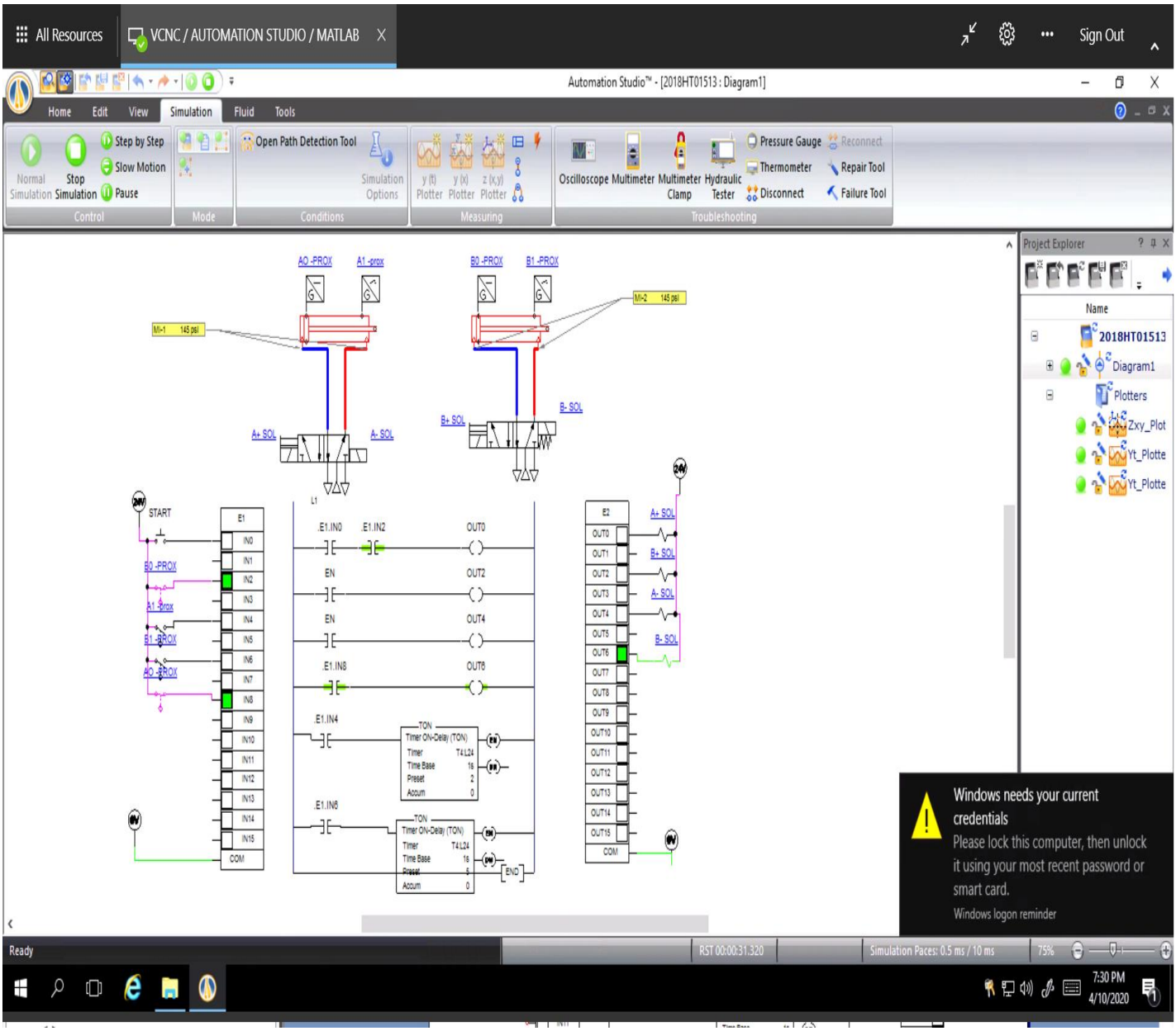
(Please go to next page for clear picture)

Clear picture of circuit Diagram



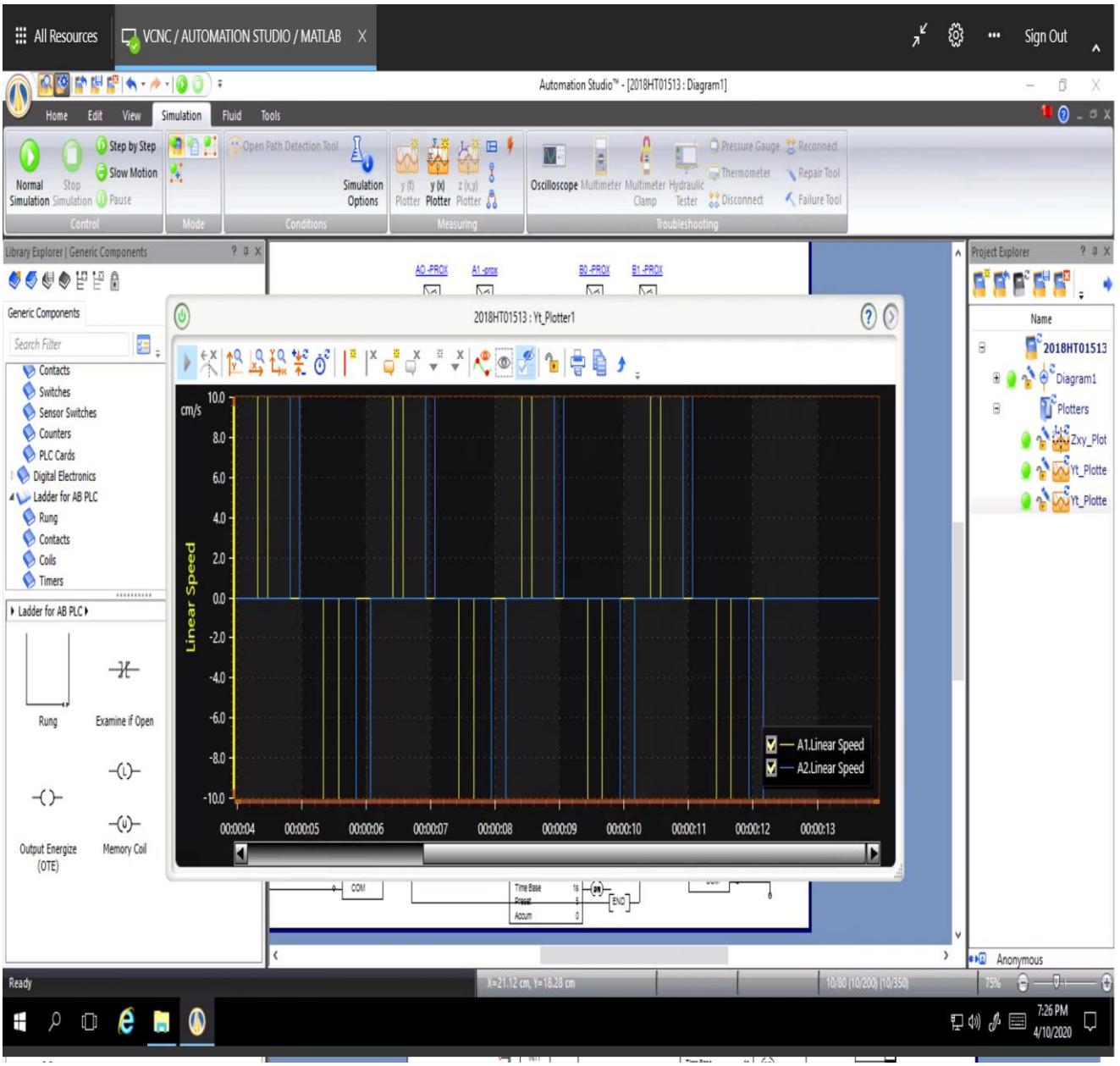
Results and observation

1. Differential Pressure value in psi of each cylinder (at fully retracted and fully extended position)

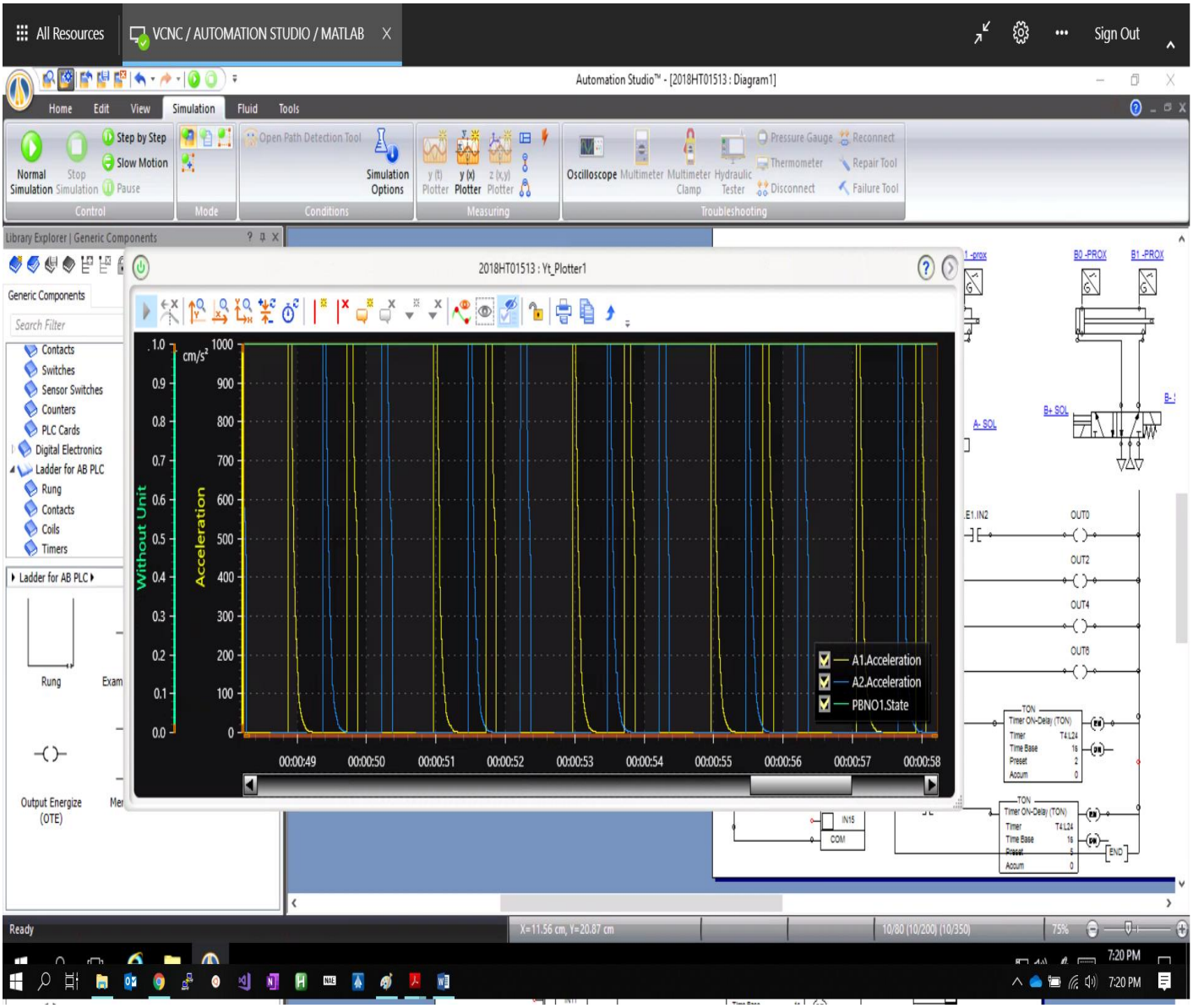


Differential pressure in each cylinder = 145 psi (10 bar)

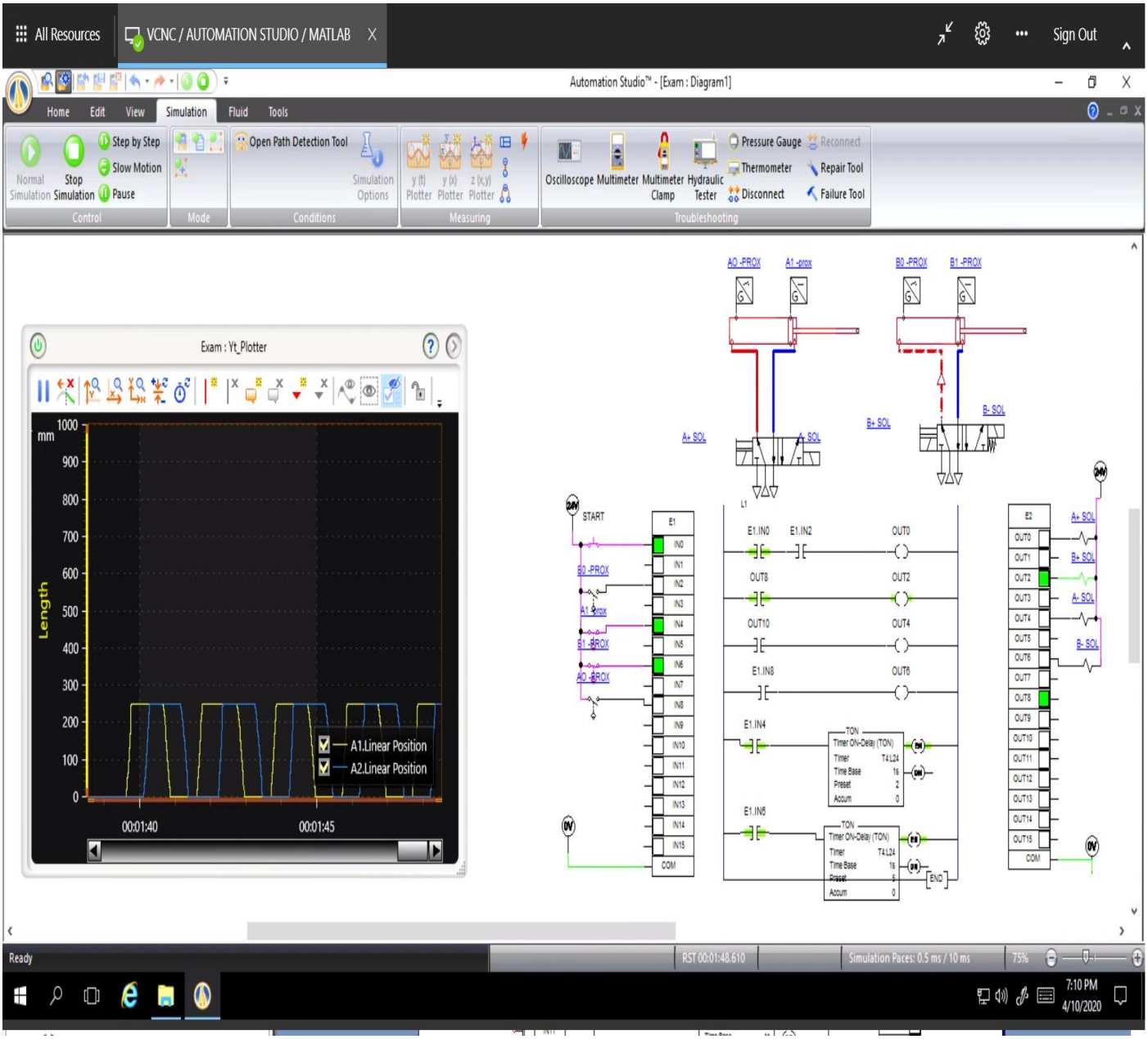
2. Graph of linear speed in cm/s of all cylinders in same graph



3. Graph of acceleration in cm/s^2 of all cylinders in same graph



4. Graph of position in mm of all cylinders in same graph



5. Graph (input pressure vs linear speed) of each cylinder as a separate graph