

Los Medanos College

**Process Technology
Program**

By Jim Martin

Seven areas to consider when deciding on a career:

- ? • Do something you like! (By far, most important!)
- ✓ • \$\$\$\$\$\$\$\$\$\$
- ✓ • Get Hired
- ✓ • Stability
- ✓ • Location
- ✓ • Ability for Growth
- ✓ • Reasonable Cost and Ease of Attaining Certification (Becoming Qualified)

What is a *process technician* and what does one do?

- **Works in the Petrochemical and related Industry**
- **Runs the plant, makes the product, oversees the operations (around the clock).**
- **Monitors the equipment, takes readings, makes rounds**
- **Make sure everything is operating safely and efficiently.**
- **Traces lines, turns valves, starts and stops pumps, lines up equipment.**
- **Interacts with process through a computer**
- **Samples product, runs lab analyses.**
- **Analyzes and resolves technical problems utilizing a sound knowledge of petrochemical operations.**
- **“Hands-on” jobs where one uses one’s “head”.**

Typical Petrochemical Type Operation



Typical Control Room











Typical Plant Operating Technicians

(Work is outside and inside)























***Do you feel you have a
basic understanding of
what a process technician
does?***

Questions?

OK, How About





Tesoro Refining and Marketing Company, Golden Eagle Refinery in Martinez, CA, is actively recruiting for the following:

OPERATOR HELPER TRAINEES

HOURLY RATE \$29.17

Requires High School Diploma or GED, valid driver's license. Must be a dependable team player and capable of handling multiple assignments. Candidates must take and pass an Operator Trainee Entrance Examination. Must be able to work shift-work and overtime. Successful candidates will be required to become qualified as a member of the Fire Brigade, as well as respond to emergencies, as directed by appropriate supervision. To apply, qualified candidates resumes must be received by **midnight Friday, September 18** to:

Tesoro Refining and Marketing Company
Golden Eagle Refinery
150 Solano Way
Martinez, CA 94553
Attn: Human ResourcesFax: 925-372-3021
Email: tammy.m.meamber@tsocorp.com

No Walk-ins. EOE

- Principals only. Recruiters, please don't contact this job poster.
- Please, no phone calls about this job!
- Please do not contact job poster about other services, products or commercial interests.

PostingID: 1305689493

SHELL MARTINEZ REFINERY - YEAR 2009
12-HOUR OPERATING SHIFT SCHEDULE (3-1, 3-3, 4-7, 4-3)

○ = Holiday	M	T	W	TH	F	SA	SU	M	T	W	TH	F	SA	SU	M	T	W	TH	F	SA	SU	M	T	W	TH	F	SA	SU
DEC 08 - JAN 09	12/8	12/9	12/10	12/11	12/12	12/13	12/14	12/15	12/16	12/17	12/18	12/19	12/20	12/21	12/22	12/23	12/24	12/25	12/26	12/27	12/28	12/29	12/30	12/31	1/1	1/2	1/3	1/4
JAN - FEB	1/5	1/6	1/7	1/8	1/9	1/10	1/11	1/12	1/13	1/14	1/15	1/16	1/17	1/18	1/19	1/20	1/21	1/22	1/23	1/24	1/25	1/26	1/27	1/28	1/29	1/30	1/31	2/1
FEB - MAR	2/2	2/3	2/4	2/5	2/6	2/7	2/8	2/9	2/10	2/11	2/12	2/13	2/14	2/15	2/16	2/17	2/18	2/19	2/20	2/21	2/22	2/23	2/24	2/25	2/26	2/27	2/28	3/1
MAR	3/2	3/3	3/4	3/5	3/6	3/7	3/8	3/9	3/10	3/11	3/12	3/13	3/14	3/15	3/16	3/17	3/18	3/19	3/20	3/21	3/22	3/23	3/24	3/25	3/26	3/27	3/28	3/29
MAR - APR	3/30	3/31	4/1	4/2	4/3	4/4	4/5	4/6	4/7	4/8	4/9	4/10	4/11	4/12	4/13	4/14	4/15	4/16	4/17	4/18	4/19	4/20	4/21	4/22	4/23	4/24	4/25	4/26
APR - MAY	4/27	4/28	4/29	4/30	5/1	5/2	5/3	5/4	5/5	5/6	5/7	5/8	5/9	5/10	5/11	5/12	5/13	5/14	5/15	5/16	5/17	5/18	5/19	5/20	5/21	5/22	5/23	5/24
MAY - JUNE	5/25	5/26	5/27	5/28	5/29	5/30	5/31	6/1	6/2	6/3	6/4	6/5	6/6	6/7	6/8	6/9	6/10	6/11	6/12	6/13	6/14	6/15	6/16	6/17	6/18	6/19	6/20	6/21
JUNE - JULY	6/22	6/23	6/24	6/25	6/26	6/27	6/28	6/29	6/30	7/1	7/2	7/3	7/4	7/5	7/6	7/7	7/8	7/9	7/10	7/11	7/12	7/13	7/14	7/15	7/16	7/17	7/18	7/19
JULY - AUG	7/20	7/21	7/22	7/23	7/24	7/25	7/26	7/27	7/28	7/29	7/30	7/31	8/1	8/2	8/3	8/4	8/5	8/6	8/7	8/8	8/9	8/10	8/11	8/12	8/13	8/14	8/15	8/16
AUG - SEPT	8/17	8/18	8/19	8/20	8/21	8/22	8/23	8/24	8/25	8/26	8/27	8/28	8/29	8/30	8/31	9/1	9/2	9/3	9/4	9/5	9/6	9/7	9/8	9/9	9/10	9/11	9/12	9/13
SEPT - OCT	9/14	9/15	9/16	9/17	9/18	9/19	9/20	9/21	9/22	9/23	9/24	9/25	9/26	9/27	9/28	9/29	9/30	10/1	10/2	10/3	10/4	10/5	10/6	10/7	10/8	10/9	10/10	10/11
OCT - NOV	10/12	10/13	10/14	10/15	10/16	10/17	10/18	10/19	10/20	10/21	10/22	10/23	10/24	10/25	10/26	10/27	10/28	10/29	10/30	10/31	11/1	11/2	11/3	11/4	11/5	11/6	11/7	11/8
NOV - DEC	11/9	11/10	11/11	11/12	11/13	11/14	11/15	11/16	11/17	11/18	11/19	11/20	11/21	11/22	11/23	11/24	11/25	11/26	11/27	11/28	11/29	11/30	12/1	12/2	12/3	12/4	12/5	12/6
DEC 09 - JAN 10	12/7	12/8	12/9	12/10	12/11	12/12	12/13	12/14	12/15	12/16	12/17	12/18	12/19	12/20	12/21	12/22	12/23	12/24	12/25	12/26	12/27	12/28	12/29	12/30	12/31	1/1	1/2	1/3
DAYS	3	3	3	3	1	1	1	2	2	2	2	4	4	4	1	1	1	1	3	3	3	4	4	4	4	2	2	2
NIGHTS	1	2	2	2	4	4	4	4	1	1	1	3	3	3	3	4	4	4	2	2	2	2	3	3	3	1	1	1
	M	T	W	TH	F	SA	SU	M	T	W	TH	F	SA	SU	M	T	W	TH	F	SA	SU	M	T	W	TH	F	SA	SU

TEAM 1	44	4	36	84	40	8	36	84
TEAM 2	36	8	40	84	36	4	44	84
TEAM 3	40	8	36	84	44	4	36	84
TEAM 4	36	4	44	84	36	8	40	84
	ST	SchOT	ST	Total	ST	SchOT	ST	Total

Tesoro Starting Salary = \$60,673/yr

With built in overtime = \$65223/yr

Assume work one extra = \$72049
12 hr shift in four weeks

Assume work two extra = \$78875
12hr shift in four weeks

Typical Progression, Shell Refinery, Martinez.....

Head Board Operator	\$33.03
Senior Board Operator	\$32.42
Board Operator	\$32.12
Operator After 36 mos	\$31.22
Operator After 24 mos	\$27.67
Operator After 12 mos	\$26.50
Operator Start	\$23.62

* 2007 Rates

Which Companies Hire Process Technicians?



Human Energy™



What is the probability of being hired?

- 100 to 150 jobs become available in Contra Costa County each year
- 450 jobs in the Greater Bay Area
- Several thousand jobs in California
- Very few people in the Bay Area are qualified for these positions (who are not already employed)
- Future impact of the retiring “baby boomers”
- Completion of PTEC program does not guarantee employment

How about the PTEC program at LMC?

- **Certificate of Achievement (33units) or Associate of Science degree (60units).**
- **Tuition cost is \$26 per unit. Through 2010, tuition for PTEC courses (21 units of the 33) is refunded.**
- **Books average about \$125 per class.**
- **Total cost (Certificate) is approximately \$2700**

Process Technology Curriculum

MATH – 4 units
ENGLISH – 5 units
COMPUTER SCI
3 to 4 units

Laboratory
Instrumentation
1 unit PTEC 27

PTEC 902- 1 unit
Industrial Technology
Career Skills
OVERVIEW – 3 units PTEC 10
Basics, Terms, Equipment,
Technician's job, Job Safety

SAFETY – 1 unit
PTEC 12

EQUIPMENT – 3 units
PTEC 25

SYSTEMS – 3 units
PTEC 35

PROCESS SIMULATION
1 unit PTEC 44

OPERATIONS
3 units PTEC 45

TROUBLE SHOOTING
3 units PTEC 48

CHEMISTRY – 4
units
PHYSICS- 4
units

Process
Instrumentation
3 units PTEC 24

PTEC curriculum was designed by industry for industry.

All of the PTEC courses are taught by adjunct instructors who work in the petrochemical industry or are retired from the industry.

Learning Process – Classroom lecture/hands-on lab

A similar curriculum is taught in community colleges and private schools throughout the USA

Valves used in industry



Cut-Away's of Typical Process Valves



Study various kinds of valves in the PTEC lab



PTEC Classroom



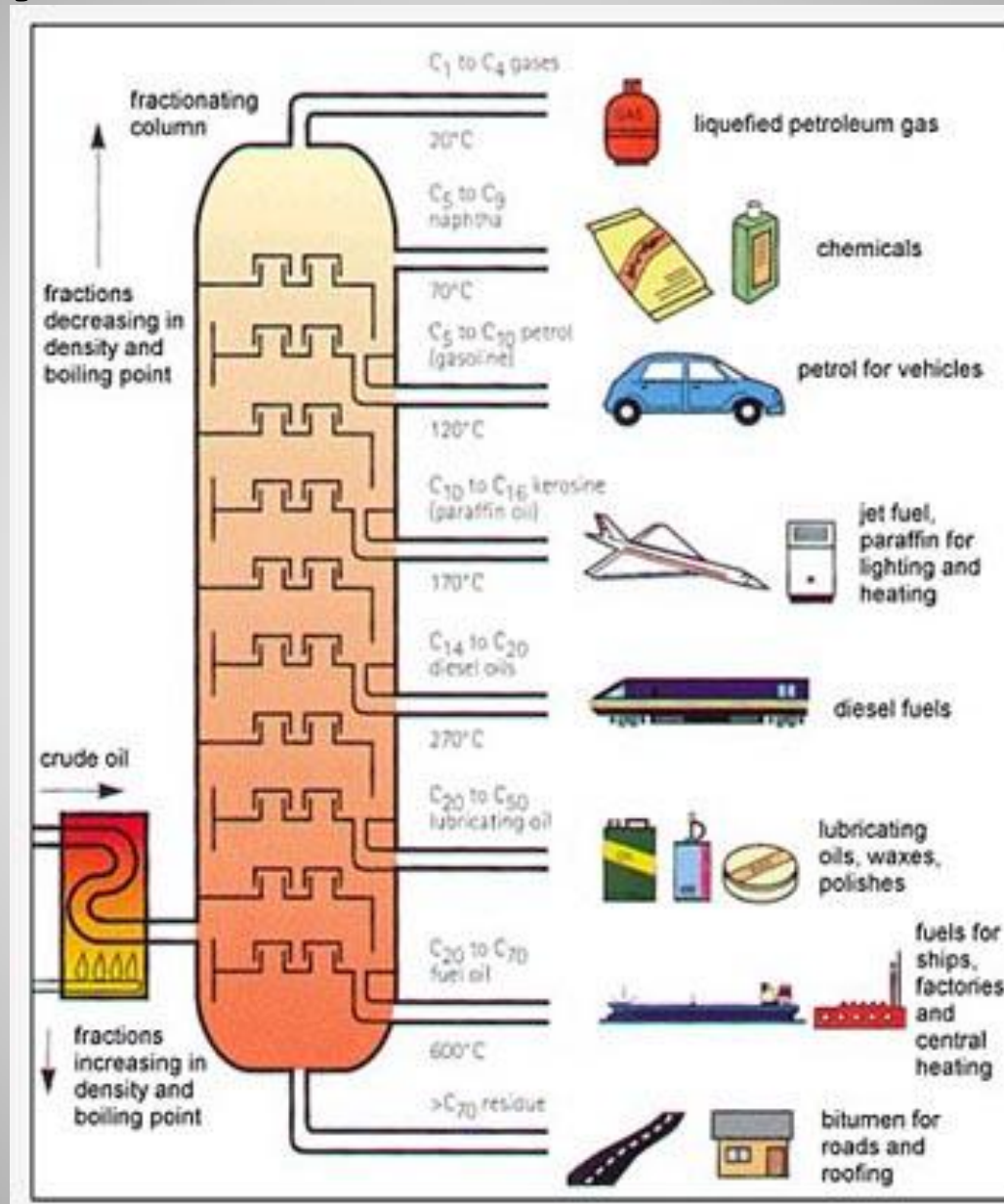
Hands-on PTEC Lab



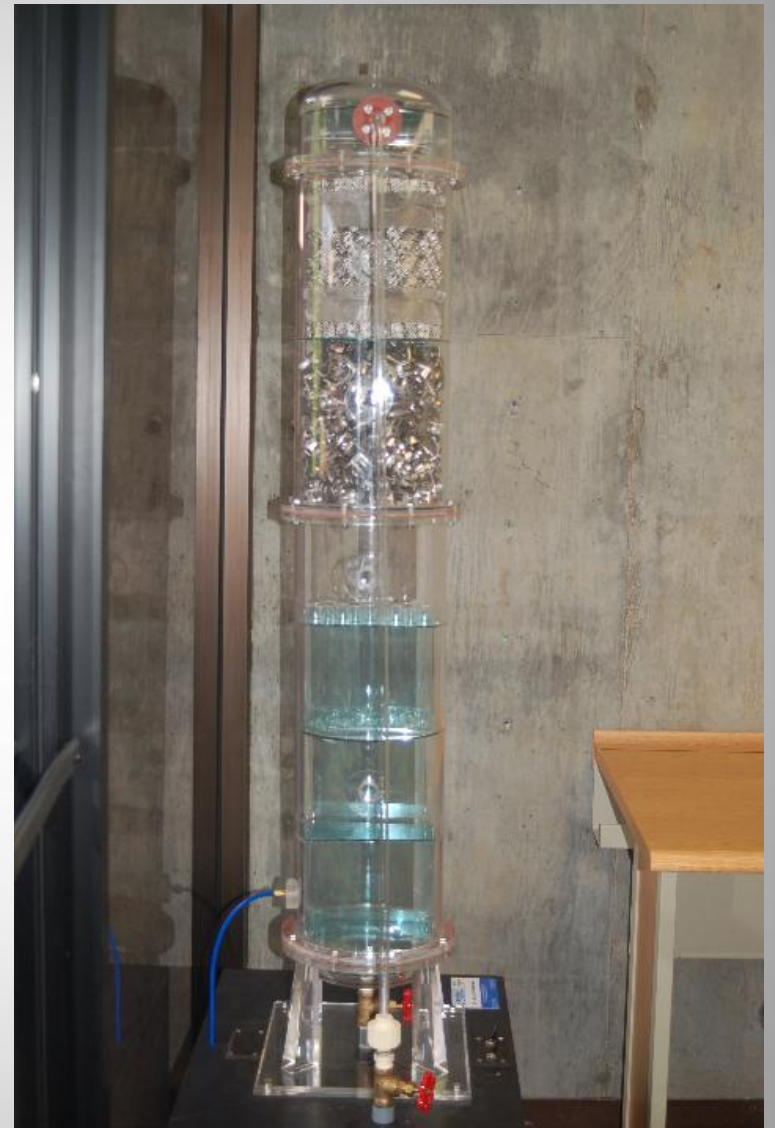
Distillation Column in Industry



Study Distillation in the Classroom



Distillation Demonstrator



Hands on Operation in the PTEC Lab

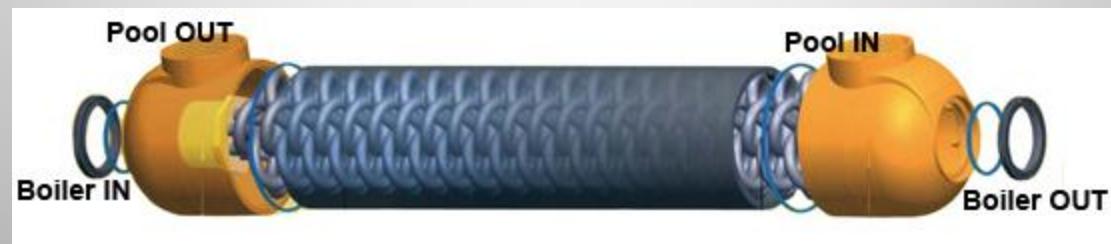
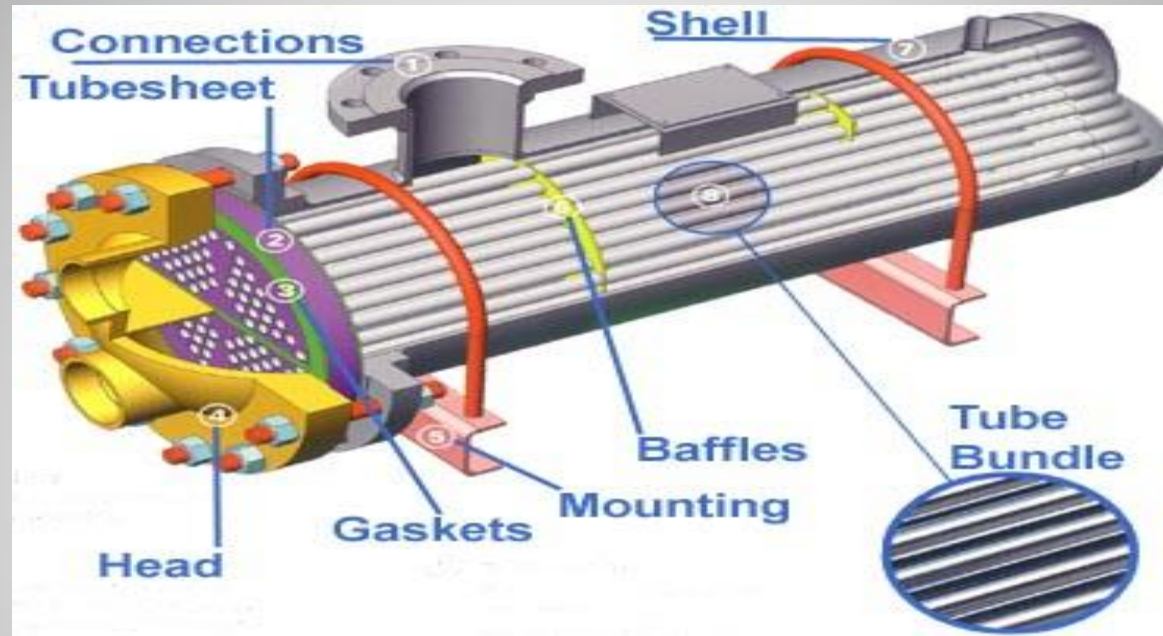


Heat Exchangers in Industry

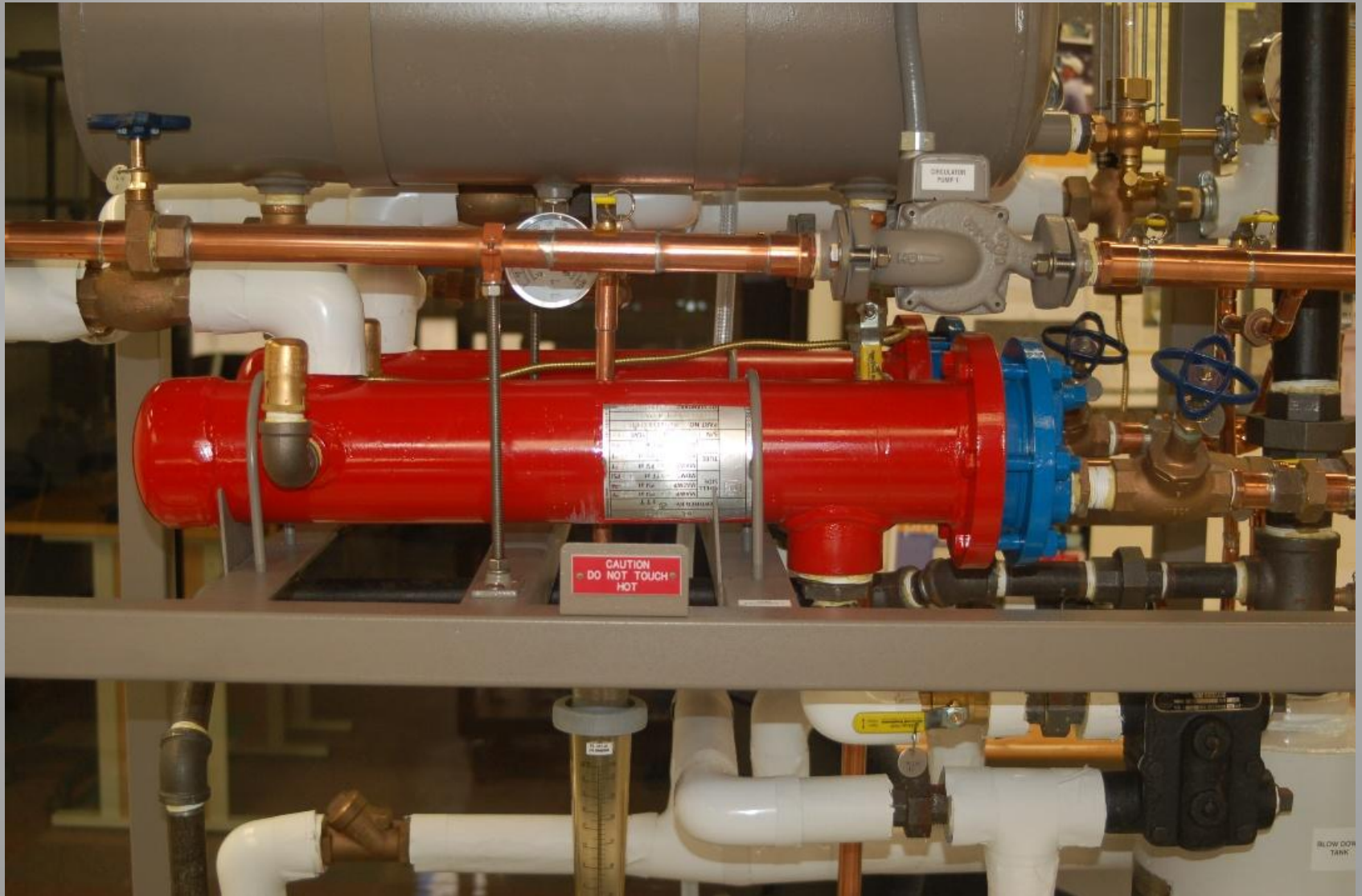


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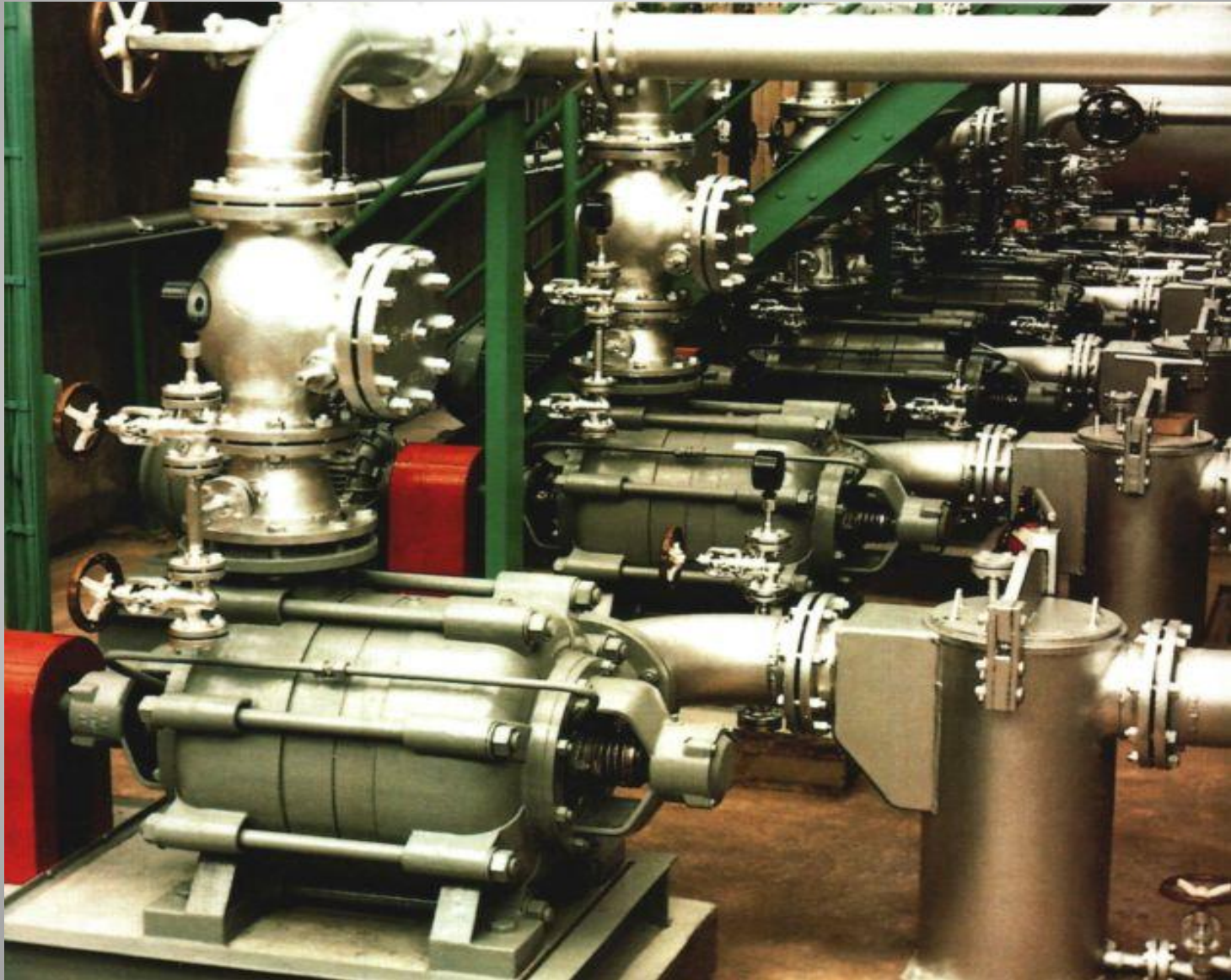
Classroom



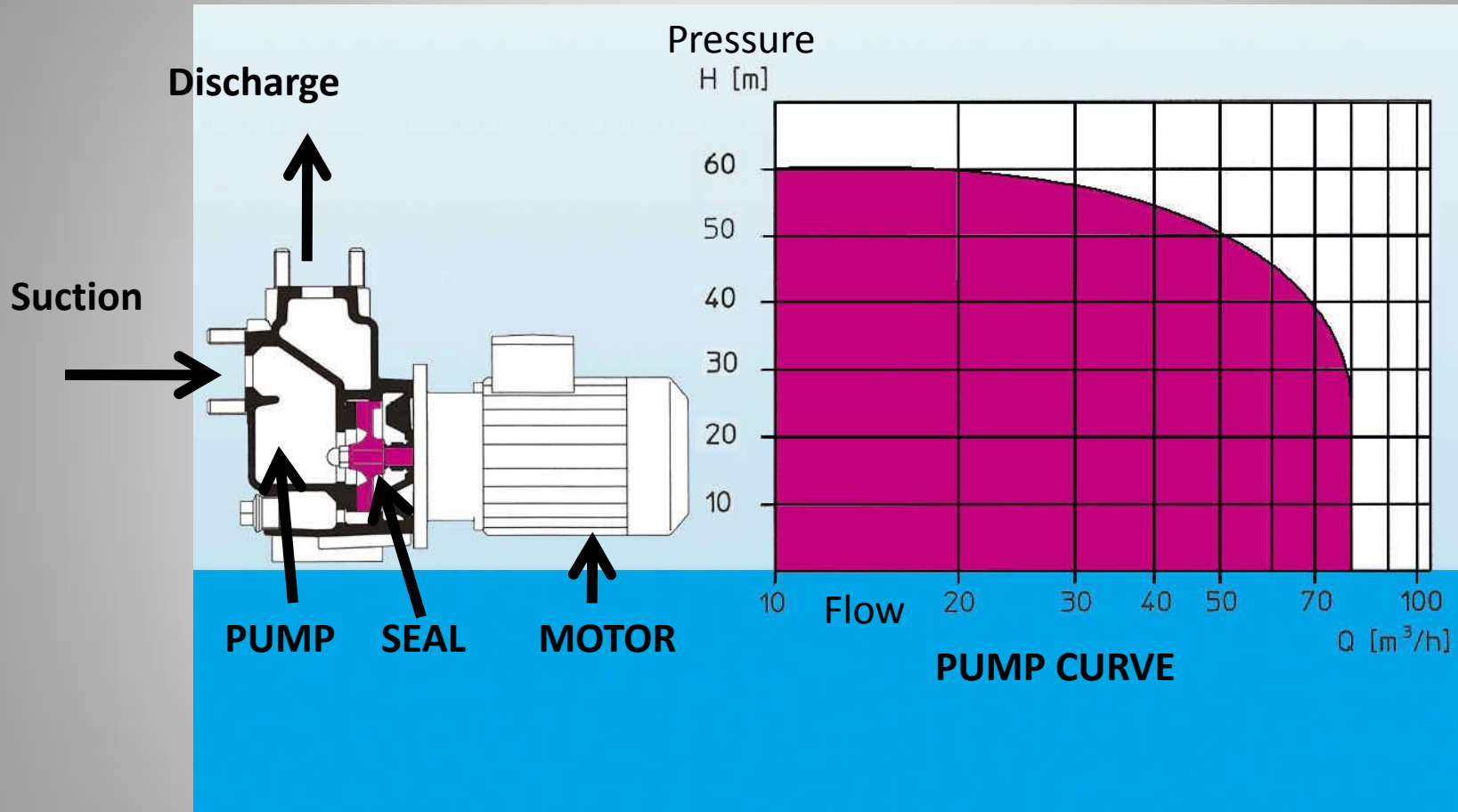
PTEC Lab



Pumps in Industry



Classroom



Centrifugal Pump Cut-Away



PTEC Lab



PTEC Lab Pump Unit



The only prerequisite for entering the program is elementary algebra.

New students must take an assessment to determine their math proficiency.

If assessment shows the need to start with math 12 or 25, student must obtain a variance from the program director to take PTEC 10 (until math 25 is completed).

Why is Algebra Important?

$$Q = UA(T-T) \quad \text{Heat Transfer}$$

$$V_2 = V_1 \left(\frac{P_2}{P_1} \right) \quad \begin{array}{l} \text{Volume relation to} \\ \text{pressure} \end{array}$$

$$M_{\text{out}} = M_{\text{in}} - M_{\text{accu}} \quad \text{Mass Transfer}$$

$$P_{\text{drop}} \sim V^2 \quad \text{Pressure relation to velocity}$$

Other qualifications:

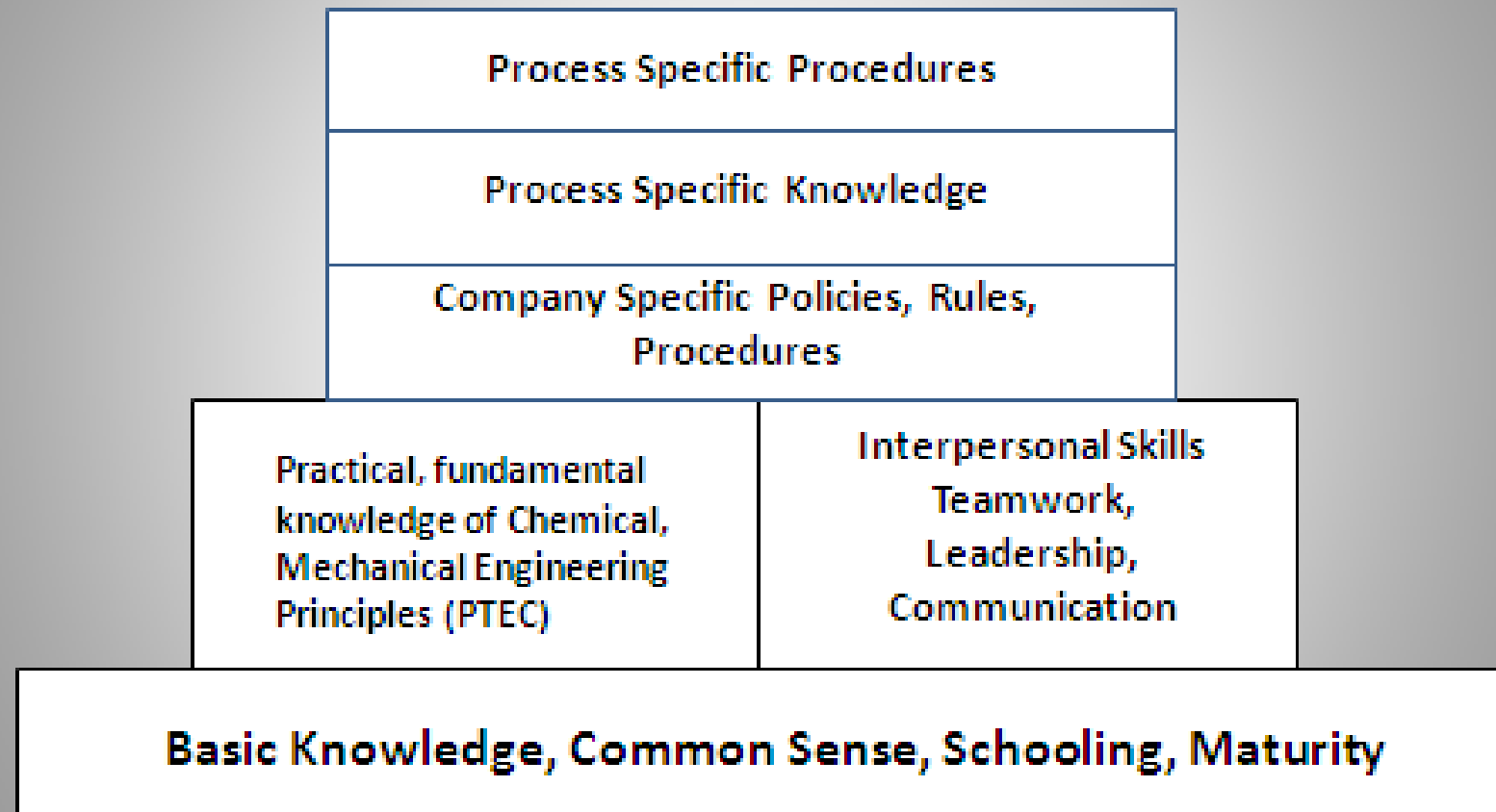
- ***Clean background. Many jobs require a Transportation Workers Identification Credential (TWIC Card)***
- ***Drug and alcohol free***
- ***Good with one's hands***
- ***Excellent "Soft Skills"***
 - ***Ability to focus on the task at hand***
 - ***Ability to ask questions***
 - ***Positive attitude***
 - ***Ability to work well with others***

Soft Skills

Why are they important?

Employers value soft skills, because research suggests that they ***are just as good an indicator of job performance as traditional job qualifications or hard skills.*** One recent study, for example, found that personality measures like conscientiousness and agreeability were equally important predictors of work success as cognitive ability and work accuracy.

BUILDING BLOCKS FOR SUCCESS AS A PROCESS TECHNICIAN



Pay Attention

Listen & Watch



Speak up!

(but watch your language)

I Don't
Understand !



How to Enroll in PTEC at LMC

- Take the Math assessment test
 - Check dates and times for assessment tests at www.losmedanos.edu/assessment.
 - You must assess at MATH-030 or higher to sign up for PTEC classes.
- Or schedule an appointment with an LMC councilor to review your official transcripts for algebra or higher math classes that you passed after high school.



How to Enroll in PTEC at LMC

- Enroll in class either on-line or at the LMC Admissions Office. (see example schedules).
- Pay enrollment and other fees (tuition for PTEC classes only will be refunded for a limited time).

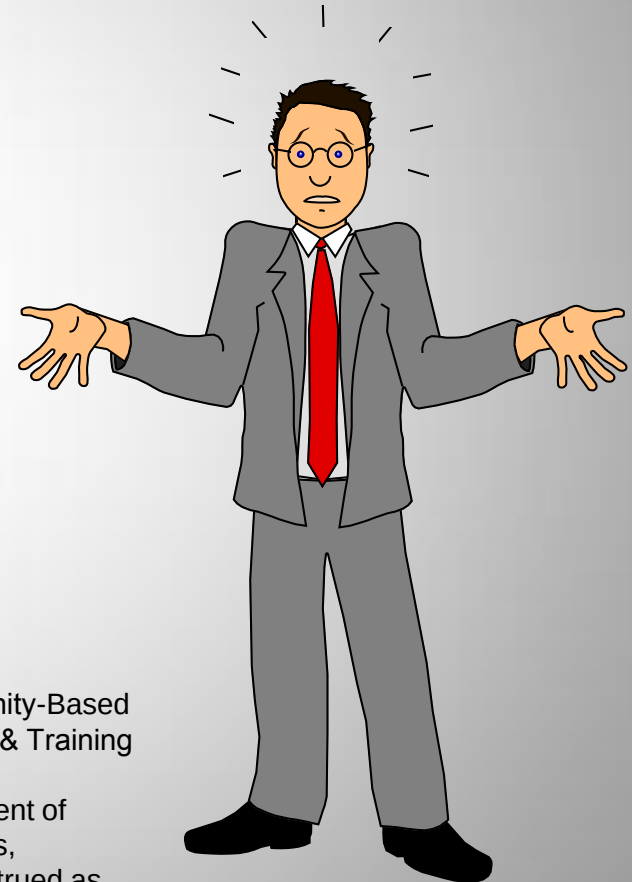


- Purchase books at the book store.

***Not sure if PTEC is the Career you want to pursue,
then PTEC 901 may provide you an answer***

- PTEC-901: Process Technology (PTEC) Career Exploration on-line class.
 - No Pre-requisite; open to everyone
 - One semester (18 weeks)
 - 2 units of college credit
 - Tuition (\$52) reimbursed to you at the end of the semester (class is FREE)
 - Scholarships available for books if needed.

Questions?



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