

E-Book Development for Technical Education

NSF ATE Award Number 2000454

PI: Dr. Elena Brewer, SUNY Erie Community College (Presenter)

Co-PI: Nancy Louwagie, Normandale Community College

Consultant: David Hata, Portland Community College (retired)

External Evaluator: Bob Bailey, Outcomes Consulting Services



#ATEPI Oct 26-28
ATE | **2022** PRINCIPAL INVESTIGATORS' CONFERENCE

Reconnecting & Advancing the Skilled Technical Workforce



Outline

- Project Background
- Choosing the E-Publishing Platform
- Demo of select E-book components
- Strengths and Weaknesses

What is your background?

- Q1: Which one of the following options best describes your affiliation?
- Q2: Briefly list or describe the primary technology area of interest to you.
- Q3: What is your experience with e-learning? Examples includes creating and/or publishing e-books; creating video content; creating content for use on LMS; creating animations



SCAN ME

[Or Enter in Your Browser](#)

<http://www.pollev.com/bobbailey086>

Project Background:

Why Vacuum Technology?

- Enabling technology
- 2-year technician programs lack access to suitable textbook resources that support curriculum related to this technology
- Creation of a customized AAS program
- Gap analysis
- Teaching vacuum technology

Project Background:

Lack of Technician-Level Educational Resources

- Textbooks:

- O'Hanlon
- Harris
- Gessert
- Hata (Out of Print)

- Laboratories:

- ECC
- NCC
- PCC
- Among others

Choosing the E-Publishing Platform:

Overview of Existing E-Publishing Platforms

- Pressbooks
 - [Milne Publishing](#) Platform based on Pressbooks
- OER Commons
- OpenStax
- Merlot
- MathBook XML
- Others: see OER Authoring Tools compiled by [Michele DeSilva](#), [COCC](#), and by [SUNY Empire State College](#)

Choosing the E-Publishing Platform:

Criteria for Choosing the Platform

- Sustainability
- Functional Requirements
- Ease of Use

Choosing the E-Publishing Platform:

Criteria for Choosing the Platform

- **Sustainability**



➤ free or low-cost platform to both develop the resource during the grant project and subsequently provide on-going access after the grant project ends

- Functional Requirements

- Ease of Use

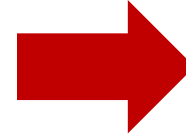
Choosing the E-Publishing Platform:

Criteria for Choosing the Platform

- Sustainability

- **Functional Requirements**

- Ease of Use



- self-generated table of contents
- math formulas engine
- embedded videos, animations, simulations
- embedded interactive quizzes
- different publishing formats: Web, EPUB, PDF

Choosing the E-Publishing Platform:

Criteria for Choosing the Platform

- Sustainability
- Functional Requirements
- **Ease of Use**



- Developer learning curve
- Developer support
- User experience

Choosing the E-Publishing Platform:

Criteria for Choosing the Platform

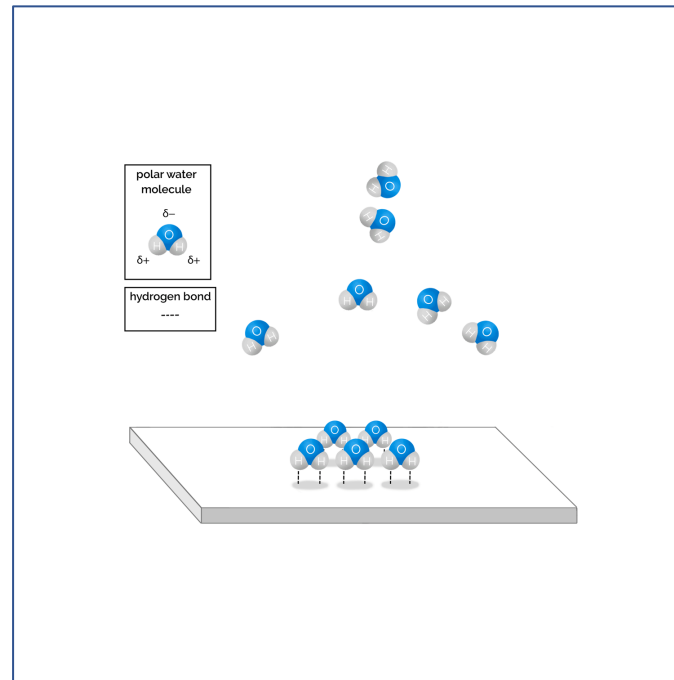
- Sustainability
- Functional Requirements
- Ease of Use

Milne Publishing
at SUNY
Geneseo Library

Demos of Select E-Book Components: Animations

- Finished Product View:

[Animation Example](#)



- Editing View:

[Creating Animation Using GIF free maker](#)

What Other E-Book Components would you like to see? Pick top 3.

- TOC and Learning Objectives
- Sample text in editing view
- Videos
- Figures
- Math formulas
- Interactive Quizzes
- Licensing



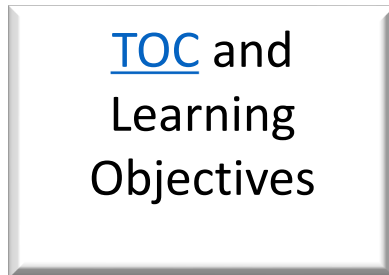
SCAN ME

[Or Enter in Your Browser](http://www.pollev.com/bobbailey086)

<http://www.pollev.com/bobbailey086>

Demos of Select E-Book Components: TOC and Learning Objectives

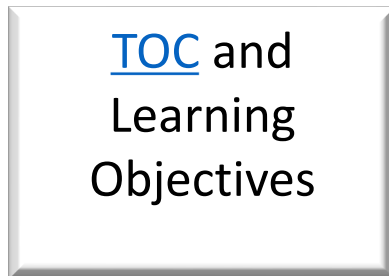
- Finished Product View:



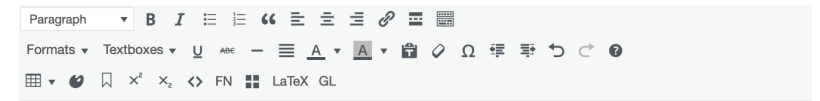
Editing Views:

Demos of Select E-Book Components: TOC and Learning Objectives

- Finished Product View:



Editing Views:



Introduction to Vacuum Technology View Chapter

Edit Chapter [Add New](#)

[← Edit Previous \(Chapter\)](#)

CHAPTER 4: Rough Vacuum Regime

Permalink: <https://milnepublishing.geneseo.edu/introtovacuumtech/chapter/chapter-4-rough-vacuum-regime/> [Edit](#)

[Add Media](#) [Add H5P](#)

[b](#) [i](#) [link](#) [b-quote](#) [del](#) [ins](#) [img](#) [ul](#) [ol](#) [li](#) [code](#) [more](#) [close tags](#) [fn](#)

```
<div class="__UNKNOWN__">
<div class="textbox shaded">
<p class="import-Normal" style="margin-left: 18pt;"><a href="#4.L0"><strong>Learning Objectives</strong></a></p>
<p class="import-Normal" style="margin-left: 18pt;"><a href="#4.1"><strong>4.1 Introduction</strong></a></p>
<p class="import-Normal" style="margin-left: 18pt;"><a href="#4.2"><strong>4.2 Overview of a Rough Vacuum System</strong></a></p>
<p class="import-Normal" style="margin-left: 18pt;"><a href="#4.3"><strong>4.3 Gas Load in the Rough Vacuum Regime</strong></a></p>
<p class="import-Normal" style="margin-left: 18pt;"><a href="#4.4"><strong>4.4 Rough Vacuum Pumps</strong></a></p>
<p class="import-Normal" style="margin-left: 36pt;"><a href="#4.4.1"><strong>4.4.1 Diaphragm Pumps</strong></a></p>
<p class="import-Normal" style="margin-left: 36pt;"><a href="#4.4.2"><strong>4.4.2 Scroll Pumps</strong></a></p>
<p class="import-Normal" style="margin-left: 36pt;"><a href="#4.4.3"><strong>4.4.3 Rotary Vane Pumps</strong></a></p>
<p class="import-Normal" style="margin-left: 36pt;"><a href="#4.4.4"><strong>4.4.4 Roots Vacuum Pumps</strong></a></p>
<p class="import-Normal" style="margin-left: 36pt;"><a href="#4.4.5"><strong>4.4.5 Other Rough Vacuum Pumps</strong></a></p>
<p class="import-Normal" style="margin-left: 18pt;"><a href="#4.5"><strong>4.5 Rough Vacuum Gauges</strong></a></p>
<p class="import-Normal" style="margin-left: 36pt;"><a href="#4.5.1"><strong>4.5.1 Bourdon Gauges</strong></a></p>
<p class="import-Normal" style="margin-left: 36pt;"><a href="#4.5.2"><strong>4.5.2 Capacitance Diaphragm Gauges</strong></a></p>
<p class="import-Normal" style="margin-left: 36pt;"><a href="#4.5.3"><strong>4.5.3 Thermal Conductivity Gauges</strong></a></p>
<p class="import-Normal" style="margin-left: 54pt;"><a href="#4.5.3.1"><strong>4.5.3.1 Thermocouple Gauges</strong></a></p>
<p class="import-Normal" style="margin-left: 54pt;"><a href="#4.5.3.2"><strong>4.5.3.2 Pirani Gauges</strong></a></p>
```

[Learning Objectives](#)

[4.1 Introduction](#)

[4.2 Overview of a Rough Vacuum System](#)

[4.3 Gas Load in the Rough Vacuum Regime](#)

[4.4 Rough Vacuum Pumps](#)

Demos of Select E-Book Components: Sample Text in Editing View

- Finished Product View:



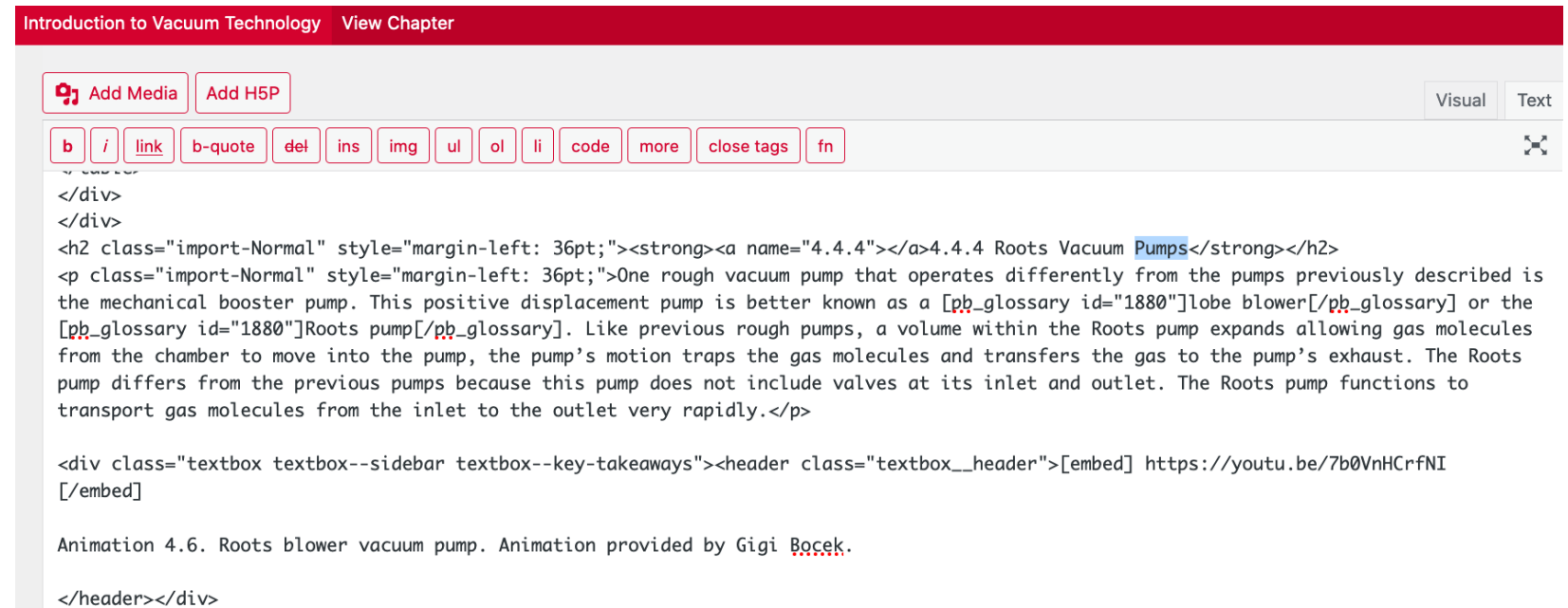
Editing View:

Demos of Select E-Book Components: Sample Text in Editing View

- Finished Product View:



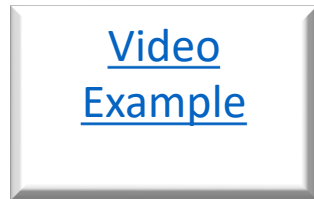
Editing View:



```
Introduction to Vacuum Technology View Chapter
Add Media Add H5P
b i link b-quote del ins img ul ol li code more close tags fn
</div>
</div>
<h2 class="import-Normal" style="margin-left: 36pt;"><strong><a name="4.4.4"></a>4.4.4 Roots Vacuum Pumps</strong></h2>
<p class="import-Normal" style="margin-left: 36pt;">One rough vacuum pump that operates differently from the pumps previously described is the mechanical booster pump. This positive displacement pump is better known as a [pb_glossary id="1880"]lobe blower[/pb_glossary] or the [pb_glossary id="1880"]Roots pump[/pb_glossary]. Like previous rough pumps, a volume within the Roots pump expands allowing gas molecules from the chamber to move into the pump, the pump's motion traps the gas molecules and transfers the gas to the pump's exhaust. The Roots pump differs from the previous pumps because this pump does not include valves at its inlet and outlet. The Roots pump functions to transport gas molecules from the inlet to the outlet very rapidly.</p>
<div class="textbox textbox--sidebar textbox--key-takeaways"><header class="textbox__header">[embed] https://youtu.be/7b0VnHCrfNI [/embed]
Animation 4.6. Roots blower vacuum pump. Animation provided by Gigi B  cek.
</header></div>
```

Demos of Select E-Book Components: Videos

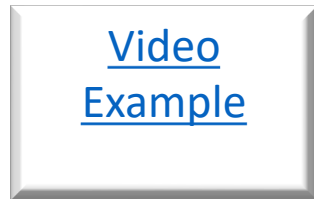
- Finished Product View:



Editing View:

Demos of Select E-Book Components: Videos

- Finished Product View:

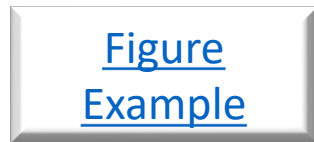


Editing View:

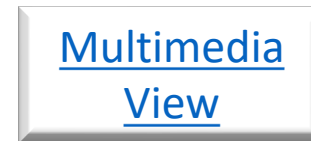
```
[caption id="attachment_50" align="aligncenter" width="500"] Figure 3.18. A Pyrex bell jar chamber from Figure 3.17 covered by the metal protective shield/guard. Photo provided by Richard Hill, SUNY Erie Community College. [/caption]
```

Demos of Select E-Book Components: Figures

- Finished Product View:



- Multimedia View:



Demos of Select E-Book Components: Figures

- Hint: Upload figures with the highest resolutions. Otherwise, PDF version of the e-book may have blurry images.

uploaded with medium resolution

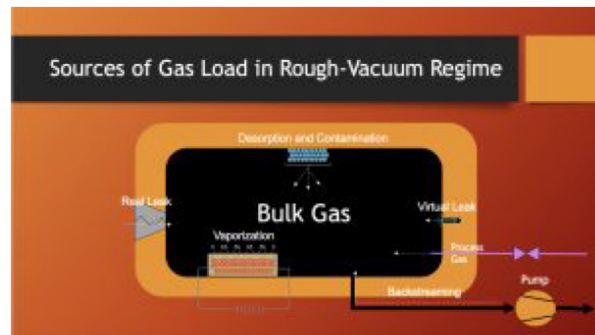


Figure 3.1. Sources that contribute to gas load in the rough-vacuum regime. Figure provided by John Laswell, Normandale Community College.

uploaded with the highest resolution

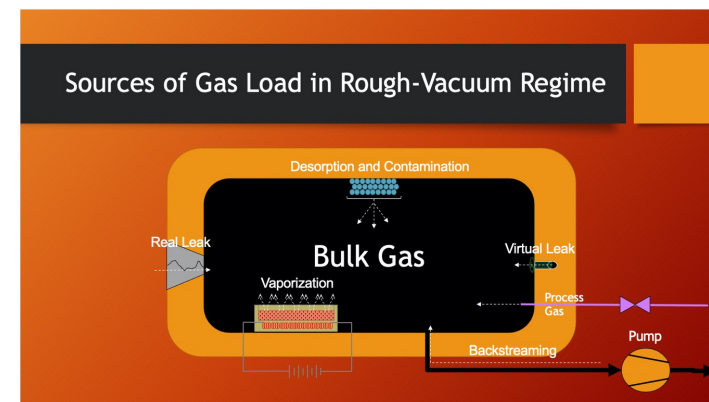
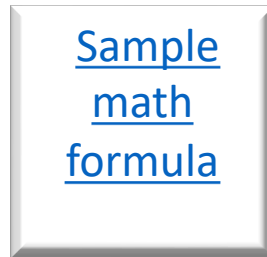


Figure 3.1. Sources that contribute to gas load in the rough-vacuum regime. Figure provided by John Laswell, Normandale Community College.

Demos of Select E-Book Components: Math Formulas

■ Finished Product View:

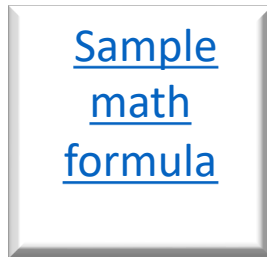


Editing View:

Demos of Select E-Book Components:

Math Formulas

- Finished Product View:



$$t = \frac{V}{S_{eff}} \ln \left(\frac{P_i - P_{ult}}{P_f - P_{ult}} \right) \quad (4.2)$$

- Editing View:

```
<div style="text-align: center;">[latex]\begin{equation} t = \frac{V}{S_{eff}} \thinspace \ln \left( \frac{P_i - P_{ult}}{P_f - P_{ult}} \right) \quad \quad \quad (4.2) \end{equation} [/latex]</div>
```

Demos of Select E-Book Components: Interactive Quizzes

[Interactive
Quiz Example](#)

Demos of Select E-Book Components: Licensing

[Licensing
Example](#)

Resource link to the comprehensive guide on attribution and licensing with Creative Commons:
<https://designshack.net/articles/business-articles/the-simple-guide-to-creative-commons-resources/>

Strengths and Weaknesses:

E-Book Development Using Milne Publishing Platform (PressBooks)

Strengths	Weaknesses
Self-generated TOC	Chapter's TOC allows for only level 1 and level 2 titles
Embedded interactive quizzes with different types of questions	Larger animations must be first recorded as videos and uploaded to Youtube before being embedded
Milne Publishing at SUNY Geneseo committed to house the resource at no cost indefinitely	One of the authors must be employed at SUNY to qualify for the E-book development assistance by Milne library staff
Adequate math formulas engine	No built-in SME review platform
Web, EPUB and PDF formats are available	
Ability to embed animations and simulations	
Good level of support from SUNY Geneseo library staff	

How to get started with E-book publishing

- Identify functionality that your E-book should have:
 - TOC
 - animations and/or simulations
 - math formulas
 - interactive components and testing
 - ease of embedding into LMS
 - E-book or modular curriculum formats
 - publishing format and availability on different types of devices
 - licensing of the content

Link to the comprehensive guide to Creative Commons and description of the six available Creative Commons licenses:

<https://designshack.net/articles/business-articles/the-simple-guide-to-creative-commons-resources/>

How to get started with E-book publishing

- Identify appropriate publishing platform based on:
 - Functionality requirements
 - Ease of use
 - Sustainability requirements and budget constraints

Links to OER Authoring Tools compiled by [Michele DeSilva, COCC](#), and by [SUNY Empire State College](#)

- Determine the attribution license

Link to the comprehensive guide to Creative Commons and description of the six available Creative Commons licenses:
<https://designshack.net/articles/business-articles/the-simple-guide-to-creative-commons-resources/>

How to get started with E-book publishing

- Enlist help with navigating the E-publishing process
- Enlist students to help generate animation, simulation, and video content
- Use free GIF creation engines to build simple animations
- Use low-cost off-the-shelf video editing software to put together simple video content. **Hint: ask for educational pricing!!!**

List of available OER Production Resources was compiled by SUNY Buffalo State College and included in your resource package.

Our Questions to You:

- What impact would a resource like the one we have described have on your students' experience in your program?
- What impact would a resource like the one we described have on an instructor's ability to teach their course?
- If you had access to a resource similar to the one described here, how likely would you be to integrate it into your course?



SCAN ME

[Or Enter in Your Browser](http://www.pollev.com/bobbailey086)

<http://www.pollev.com/bobbailey086>

Your Questions to Us?



This work is supported by the National Science Foundation under grant number 2000454. Any opinions, findings, and conclusions or recommendations expressed in this e-book are those of the authors and do not necessarily reflect the views of the National Science Foundation.

