Through the efforts of the HI Case Study Committee, HI has compiled a library of case studies that address a variety of topics. The purpose of each case study is to succinctly highlight a specific problem and/or circumstance, how a resolution was reached, and what lessons were learned.

This document provides guidance to the authors of HI case studies to ensure consistency throughout the library. Guidance includes:

1. An overview of the submission process
2. Criteria for a Strong HI Case Study
3. [Link to Existing Case Studies](https://www.pumps.org/category/blogs/case-studies/)
4. Submission Process

The submission process begins with drafting content. After that, the path to publication can be a winding road full of review and revision before final publication pumps.org is complete. Below is a graphic that illustrates the process.



When you are ready to submit your case study for committee review, email a word document to HITechnical@pumps.org to the attention of Amy Sisto. Subject line should read: Case Study Submission – Name of Author.

1. Criteria for a Strong HI Case Study

**NOTE:** The purpose of an HI case study is to inform and/or educate the reader rather than provide prescription or guidance on how to troubleshoot. HI Case Studies are reviewed to be informational and not promotional. All company branding images and language are not permitted and will be returned to the author for revision. HI Case Studies committee reserves the right to accept or reject case study submissions.

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| **Section** | **Guidance and Examples of Section Content** | **Criteria for a strong HI Case Study** (used by reviewers for assessment) |
|  **Title** | The title of the case study needs to be concise but ideally title contains enough information for the reader to get an idea of the problem, objective, solution. Details on the title can be fleshed out within the abstract of the case study.**Example:** Annual Energy Cost of Water Supply Pump Station Reduced by 10% Using Variable Speed Pumping  | * Is the title descriptive of the content?
* Are the subject, objective and solution present in the title?
* Does the title remain within the character maximum of 50-100 characters?
 |
| **Intended Audience: Sector and Instruction Level** | Identifying the intended audience helps the reader determine if this case study could meet their needs. Please select from the included list in section 3 below. Authors are encouraged to propose additional categories for consideration. **Note:** and Experience Level should be considered.**Example Sectors:** Water, oil & gas, etc.**Instruction Level:** Beginner, Intermediate, Advanced | * Is there an identified sector?
* Is there an identified instruction level?
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| **Abstract** | The abstract is a summary of a case study and should include:* Month and Year of Case (not publication date)
* Fluid Type of System
* Scale of System
* Intent of the Case Study
* The reason for the intervention and consequences of inaction
* General approach used
* Note if approach was successful

**Fluid Types:** WaterWastewaterAirChemical PetroleumOil and GasOther**Intent of Case Study:**Service/RepairFailure UpgradeCost SavingsOther**Scale:**<3 HP3-50 HP50-200 HP200-450 HP450+ HP | * Is there an identified topic and/or problem?
* Is there a month and year listed? (for context of case)
* Does the abstract meet the suggested word maximum? Less than 200.
* Did the author include commentary on the success and/or failure of the approach?
* Is there a fluid type or types identified?
* Is the intent of the case study specified?
* Is the scale of the system specified?
* Are the terms used universal or are they colloquialisms? E.g. deadhead/
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| **Objective** **(Problem Solving and/or education)**  | What motivated you to write this case study? Describe the problem, intervention methods, and/or improvement. Optionally, include any unique constraints that shape the overall approach of the case study. It is imperative to address what do you want the reader to take away. **Examples:*** Determine cause of catastrophic pump failure and propose solutions to prevent failure of remaining equipment.
* Address excessive pump vibration because it increased maintenance costs on neighboring equipment.
* Dedicated cooling systems required to control waste heat from system inefficiencies.
* Pump system fails to meet 25% efficiency minimum to avoid tax penalties imposed by new efficiency law.
 | Is the objective clearly stated at the beginning of this section?* Does the objective meet the approximate 100-200 words?
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| **Description of System (before problem solving)** | Concisely describe the existing conditions, layout and/or components that were the focus of this case study. Provide additional details, context or background required for the reader to understand the need for, approach to, or proposed solutions discussed in this case study. **Example:** The existing water distribution pump station consisted of two, vertically installed constant speed pumps rated at 1000 gpm at 50 ft TDH that were installed on a common 8-inch discharge header. When originally constructed in 1975, this system served a residential population of 10,000 with little to no industrial customers. Since then, the population has decreased to 7,000 but 20+ major industrial customers have been added to the system. | * Is the system described in a concise manner?
* Has this section addressed specific components that are relevant to the solution/approach?
* If applicable: are the diagrams of the system at a 300ppi resolution?
* If applicable: Is the level of detail in the diagrams commensurate with the case study?
* If applicable: Have you completed and submitted the HI/PSM Graphics Permission Form? If not, please contact HITechnical@pumps.org
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| **Description of Intervention (the problem solving)** | Describe the approach to and the analysis of the problem. Emphasize how alternatives were evaluated and why the final solution was selected. Note any non-cost factors that were apart of the decision-making process.**Example**: Historical pump run times, O&M costs, and electrical consumption was collected for each pump. Historical and projected water demands were used to select new pumps, evaluate the impacts of constant speed versus variable speed operation on both pump selection and electrical consumption to determine which alternative had the lowest life cycle costs, and the ROI on this lowest cost alternative. Head loss calculations were evaluated to determine if cost savings could be realized through modifications to the valving and piping network. One additional benefit of the project was that supply pressures were | * Was the implemented methodology defined?
* Were the metrics of success well-defined in the case study?
* Does the case study detail the strengths of the selected option and the weaknesses of alternatives?
 |
| **Summary of Results (after problem solving)** | Describe how the selected solution was implemented and if there were unanticipated issues that arose during implementation. Indicate whether or not the intended outcome was achieved.**Example:** From the analysis, it was determined that by simply installing VFDs on the two existing pumps that an annual power savings of 10% could be realized. The ROI on the VFDs was 1.5 years. Changes to the discharge headerwas not shown to have a meaningful impact on pump performance, thus were not pursued or evaluated further. One item not considered during the evaluation of alternatives was if there was space available inside the existing pump station for VFD cabinets. This resulted in additional cost to retrofit the existing cabinet layout to accommodate the new VFD cabinets, resulting in an additional expense, which increased the ROI to 3 years. | * Does the summary include a brief description of the lessons learned?
* Does the summary include figures/ graphics? Are they high resolution? Do they illustrate clearly?
* Does the summary meet the approximate 100-200 words?
* Does the summary include a description of how and why intervention was successful or not successful?
* Does the summary include some suggested improvements?
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| **Conclusions** | Quantitative measure of success (relative performance improvement, reduction in cost, etc.). Recommendations for future improvements (if applicable) or verification/further work. If the outcome was less than expected, would one of the alternatives be recommended instead?**Example:** Reliable flow requires proper operation of equipment in the system, and analysis of the hydraulic system. Use local atmospheric pressure when calculating net positive suction head available. Valve opening time should balance waterhammer risk and pump allowable operating region**.**  | * Does the conclusion re-state the objective of the case study?
* Does the conclusion state whether the final outcome achieved the objective?
* Does the conclusion list the lessons learned from the intervention?
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| **Source/ Citation (Optional)** | Please use the language below at the end of the case study:This case study is summarized from an existing work. Title: \*insert link for articles or list complete title. Include year of publication\*\* | * Has the author included the full title for the original source? (Not always applicable.)
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| **Guidance on Images** | Use of images is permitted granted they are brand neutral. Images should be a minimum of 300ppi to ensure high quality. If your case study is to be published you acknowledge that you have authority and grant permission to Hydraulic Institute (HI) and/or Pump Systems Matter (PSM) to use (in part or in whole), copy, and publish the file(s) listed in the case study within HI publications and educational content. Your organization retains all other rights for the file(s) included in the case study. |