

SCOPE OF WORK

SERVICE PROVIDER will be required to carry out structural analysis using commercial finite element software such as ANSYS/ ABAQUS or other high end finite element software for analysing structures pertaining to launch vehicle and ground structures for a period of 2 years from the date of announcement of contract at LPSC, Valiamala.

Details of Activities

Service provider will be required to carry out the following activities:

- Discussion with LPSC focal point to understand the requirements of each task.
- Creation of model geometry - either using ANSYS/APDL, Design Modeller, space claim etc.
- Meshing, definition of boundary conditions and loading.
- Model verification and quality checks.
- Solving the analysis jobs.
- Study of results and behavior, extraction of results as plots/ lists/ graphs.
- Review by LPSC focal point and incorporating corrections as suggested.
- Correction of models, boundary conditions, loadings, etc. to simulate defined conditions, repeating analysis (if required) and getting results, report generation.

Brief Description of Work: -

1.1. Areas of Work

Deployed personnel will be required to work for different developmental activities of LPSC (V).

1.2. Nature of Work

1.2.1. Preparation of models

- a. Verification of input and generation of preliminary 3D or 2D models using Ansys/APDL Design modeller or space claim based on the input.
- b. Updating the model based on review by the focal point and generating final model.

1.2.2. Preparation of Finite element model and solving

- a. Taking 3D or 2D model and converting it into finite element model.
- b. Applying proper boundary and loading conditions for different problems.
- c. Verifying the finite element model and doing element quality checks.

d. Solving the problem with suitable analysis types and conditions.

1.2.3. **Extraction of result and making reports**

e. Extracting the correct results and studying the behaviour of the model.

f. Plotting stress, strain and deformation contours and preparation of detailed report.

Minimum Qualification:

1) **Educational qualification**

Bachelor degree in Mechanical Engineering.

Experience:

1) Deployed personnel should have minimum one year experience in the specified activity.

2) Working Hours:

08.45 Hrs. To 17.15 Hrs with 6 days per week. If required, work shall be arranged on holidays and beyond normal working hours at the same rate as agreed for the normal working hours

Activity list & work units

Following is the estimate of works and related work units to carry out the activities mentioned below, by the deputed personnel at Thiruvananthapuram LPSC/ISRO Centre.

ESTIMATE FOR CONTRACT GRADUATE PERSONNEL

SI No.	Work description	Total work units (for 2 years)
1	Linear/non-linear static/dynamic analysis of multiple or multiple parts (no of non-repetive part ≤ 2) (Type - Simple)	4608
2	Linear/non-linear static/dynamic analysis of multiple parts (no of non-repetive part ≤ 4) or Single part burst perdition (Type - Moderate)	10368
3	Linear/non-linear static/dynamic analysis of multiple parts (no of non-repetive parts > 4) (Type - Complex)	4992
	Estimated work requirement	19,968 units

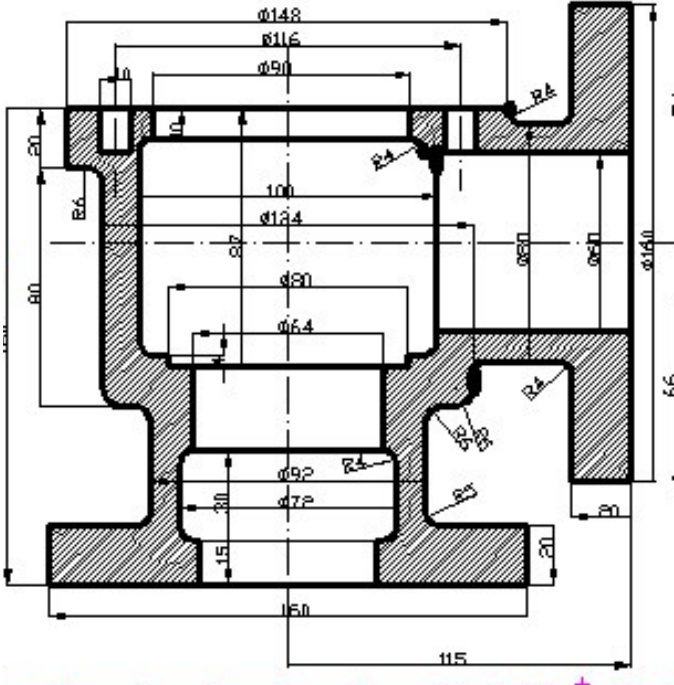
The service provider needs to deploy minimum of **Four** Graduate engineers on all the working days, to carry out the tasks specified above.

Work units and computation

For assessment of the quantum of work, one-hour duration of work/person is considered as a “work unit” and the total quantum of work carried out will be

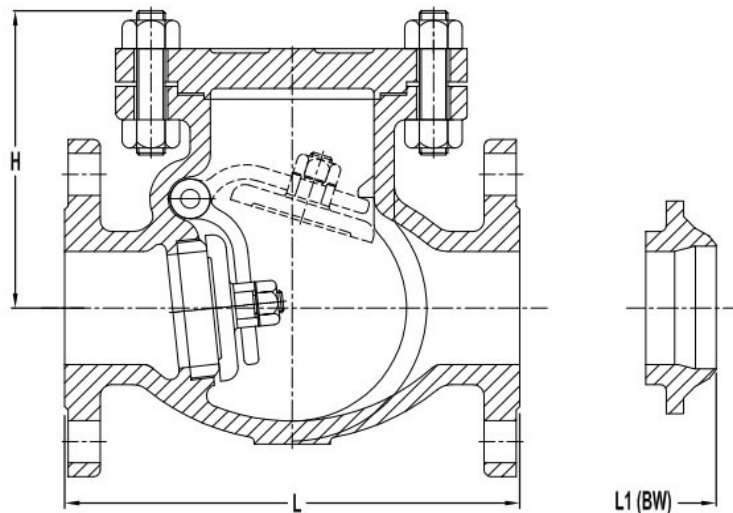
computed on monthly basis. The supplier shall be available for work not only during office hours but also during late office hours and on holidays if needed.

Typical example representing the input and output requirement for simple, moderate and complex analysis are stated below

(A) Simple analysis
Inputs : 2D/3D drawings parts (≤ 2), pressure, thermal, structural loads, material properties etc

Output: FE model, Stress plots and reports

(B) Moderate analysis (valve body with closure assembly)

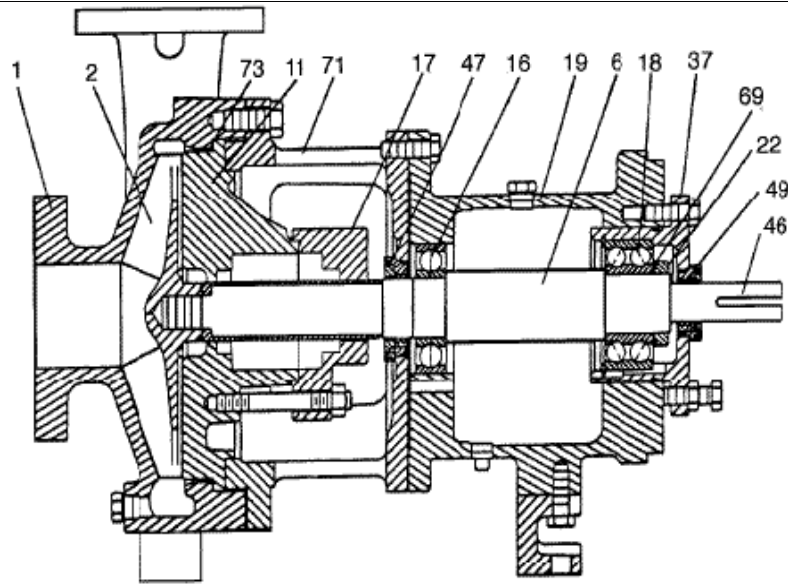
Inputs : 2D/3D drawings multiple parts (≤ 4), pressure, thermal, structural loads, material properties etc



Output: FE model, Stress plots, burst estimate, leak pressure estimate and reports

(C) Complex analysis (pump assembly)

Inputs : 2D/3D drawings includes multiple parts (>4), pressure, thermal, structural loads, material properties etc



FE model includes contacts b/w parts, pre-loads, multiple load step etc

Output: FE model, Stress plots, seal leak pressure, failure pressure estimate and reports