

Case Study Resume

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Nine different case studies have been offered to eighteen groups.

The results of your work have been presented yesterday.

What about the research experiences?

All of you have been working with great enthusiasm.

You have tried to use all given hints, and a lot of ideas have been investigated.

Some existing facilities have been taken as guide, but some new ideas have been developed as well.

The list of given cases were general, in some cases the requirements were not specified to 100%.

You have chosen parameter by your own, and that was perfectly right.

Some specifications were not realistic, you have shown that, and this was even better (LIS and synchrotron; ms→ μ s).

Unrealistic requirements might be given to you in the future again.

Of course, it was not possible for you to set up a complete list of the necessary work to do in the given time of several hours.

Taking this into account all of you have done a pretty good job.

Of course it has been tried to use existing experience, but this is absolutely not wrong.

A lot of information has been used from the given lectures, perfect.

Time tables were in most cases realistic.

Assumption for the required space for the ion source too; good that enough space for the coffee break has been foreseen in most cases.

Whether a beach reservation will be accepted is questionable.

To start with unrealistic ideas is not always just fun. It can make you ready for new ideas.

The solution for the negative ion source for 299€ will probably work. I liked that very much. But be careful with mis-using students. You might become problems with human-rights parties.

The same might be true for the laser ion source replacing the linac. Some linac specialists will stop to be friendly to you.

The clear winner of the ion source to be selected is the ECR ion source.

Even if not everything at this source is fully understood (by the experts).

Only for H⁻ production this source has not been chosen and for some specific application, where a LIS seems to have advantages.

It was not always clear to me, whether the correct extraction voltage has been chosen if the beam has to be injected into a linac. Remember, that once the linac has been designed, the input velocity is normally fixed, the total voltage has to be matched:

(extraction voltage+post acceleration voltage) * selected charge state / mass of desired isotope

Other new ideas might be helpful as well. Take as an example the mind mapping procedure. For me it seems specially applicable for brainstorming. But make sure that everybody can read it.

I missed my glasses.

Do not forget solutions of ancient times. Nobody has taken a Penning ion source, a Duoplasmatron, ..., into consideration.

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Some remarks on safety issues:

- you have tried to cover that point to a large degree.
- Just to be clear: distinguish always between safety for the device and safety for humans.
- Safety for humans must not depend on software or automatic procedures. Example: grounding. Usage of manual grounding (even if additional) is essential and necessary.

Some words on diagnostic:

- In most cases Faraday cups, and emittance meters have been specified. In some cases optical diagnostic have been requested.
- Of course, the lecture about beam diagnostic was given not before yesterday, but insist on suitable diagnostic if you are not developing the diagnostic by yourself. If this is the case, than you are responsible by yourself to get suitable elements.

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Some words on elements within the beam line:

- Make sure, that the elements are working together properly. Strong **E** or **B** fields close to a space charge compensated beam might be not a good idea.
- It will not help to pass the responsibility to other persons or other departments. Work together!

Some words on costs and time tables:

Sometimes costs were under estimated. More costly devices require a European wide call for tender, which can last longer than half a year, and you cannot start to order before that have been finished. Because such a device is probably not in the shelf of the company, the company will not start to build it before the order has been issued.

Planning of these devices is critical. What if the company, which get the order, fails?

Absolutely perfect ideas have been shown when it came to find a good logo and a good name for your project. There is no need for further improvement. Really good.

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I hope you will proceed with that working style in the future.

I wish you the very best for that! Have fun at work!

see you at the next conference

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