



Defkalion Green Technologies

Site Visit by National Instruments, July 8 to 11, 2013

Proposed Trip Plan

July 7, 2013

Contents

1	Background and Objectives.....	2
2	Phase 1. Pre-Visit Activities.....	2
2.1	Measurement and Protocol Assessment.....	2
2.2	Measurement Software.....	2
2.3	Calorimeter Assessment and Support	3
2.4	Visit of Dr. Truchard.....	3
3	Phase 2. Site Visit Activities	3
3.1	Measurement and Protocol Assessment.....	3
3.2	Measurement Software.....	3
3.3	Calorimeter Assessment and Support	4
3.4	Visit of Dr. Truchard.....	4
4	Phase 3. Post-Visit Activities	4
4.1	Measurement and Protocol Assessment.....	4
4.2	Measurement Software.....	4
4.3	Calorimeter Assessment and Support	4
4.4	Visit of Dr. Truchard.....	4
5	Participants	5
6	Schedule.....	5

1 Background and Objectives

Defkalion Green Technologies (DGT) has been developing a potential new source of energy that may be based on low energy nuclear reactions. The DGT energy production device is referred to the “Hyperion” reactor. National Instruments (NI) and DGT have been discussing a Letter of Intent (LoI) for potential future marketing cooperation. A visit was made by Stefano Concezzi, NI Vice President, to DGT on May 24, 2013. The visit included a demonstration of the Hyperion reactor.

Several “Next Steps” were set forth with the LoI after the visit by Concezzi. The major topics included were the following:

- Measurement and Protocol Assessment
- Measurement Software
- Calorimeter Assessment and Support
- Visit of Dr. Truchard

Subsequently a schedule was proposed for a site visit by the NI team for the week of July 8 to address these topics (Concezzi email of July 1).

Several conversations and exchanges of documents have taken place between DGT and NI since May 24. The purpose of this Trip Plan is to document the activities that have taken place before the site visit (Phase 1) and are projected to take place during and after the visit (Phases 2 and 3). Both DGT and NI activities are included in this plan. It is recognized that this plan will likely require modification based on experience gained as the site visit is conducted.

2 Phase 1. Pre-Visit Activities

A number of activities have taken place and are underway in preparation for the site visit. Several emails and phone exchanges are also underway.

2.1 *Measurement and Protocol Assessment*

- DGT has provided a test plan document, “Hyperion Lab Devise Functional & Performance Test Protocol, Test Plans & Test Results” (including “Testing Map”).
- NI is reviewing the test plan document to provide observations and suggestions to DGT.
- NI may have questions or require clarification that will be addressed during the site visit.
- Any needed modifications of the review will be included in the NI report described in Phase 3 below.

2.2 *Measurement Software*

- DGT has provided a copy of their LabVIEW software to NI.
- NI is reviewing the software for possible problems.
- The review includes proper error handling, isolation of bugs, and determining if problems are due to hardware or software.

- Per Defkalion guidance, valve control review will be performed in the next generation reactor.
- NI is not modifying the program architecture or core functionality.

2.3 *Calorimeter Assessment and Support*

- DGT has provided datasets for a test that was conducted on April 22 and 23, 2013.
- NI is reviewing and analyzing the data, which appears to indicate that excess heat is being produced.
- NI is also reviewing the instrumentation, such as power meters and flow meters.
- Issues that may be identified in the measurement and protocol assessment described above may delay validation or verification of the details of the April 22 and 23 tests until the issues are resolved.

2.4 *Visit of Dr. Truchard*

- The NI Team is keeping Dr. Truchard and Stefano Concezzi apprised of progress and findings in Phases 1 and 2.

3 Phase 2. Site Visit Activities

A number of activities by the NI Team, supported by DGT staff, are planned for the site visit. NI plans to arrive with a meeting agenda for a kickoff meeting on the day of arrival at DGT. NI will need to have flexibility to work during all hours of the day during the visit if necessary for measurement and testing. NI will also need to have access to a source of laboratory supplies.

3.1 *Measurement and Protocol Assessment*

- NI will provide a status summary for Phase 1 activities during the kickoff meeting.
- NI will describe its review of the measurement and protocol; NI activities during the site visit to accomplish the objectives stated in the LoI are planned to vary from the DGT protocol.
- NI will attempt to resolve any issues that are identified in Phase 1.

3.2 *Measurement Software*

- Based on the Phase 1 review, NI will obtain more information and attempt to isolate and debug the software.
- DGT will demonstrate to NI previous reported problems, such as freezing up.
- DGT will run its code, followed (if required) by NI's code; these activities will not take longer than one day.
- If required, NI will contact the DGT consultant who prepared the LabVIEW code for additional information or guidance.

3.3 *Calorimeter Assessment and Support*

- NI will perform an independent assessment of calorimetric methods and measurements, including components such as power input and flow meter performance.
- NI will engage consultants to design and perform supplementary tests that may be required, such as flow measurements without the use of flow meters.

3.4 *Visit of Dr. Truchard*

- The NI Team is keeping Dr. Truchard and Stefano Concezzi apprised of progress and findings in Phases 1 and 2.

4 Phase 3. Post-Visit Activities

Several activities will likely be needed after the site visit to complete the work and meet the objectives as outlined in the LoI Next Steps.

4.1 *Measurement and Protocol Assessment*

- Using the additional information and insight gained during onsite discussions, NI will refine observations and suggestions on the measurement and protocol employed by DGT.
- The results of the assessment will be communicated in the report to DGT and will not be subject to reporting during the site visit.

4.2 *Measurement Software*

- Follow-up will be provided by NI to assist DGT in maintaining a successful LabVIEW implementation.

4.3 *Calorimeter Assessment and Support*

- NI will refine the initial assessment based on the findings of the site visit.
- Any post-visit tests that may be required will also be identified.

4.4 *Visit of Dr. Truchard*

- As noted in the Next Steps of the LoI, Dr. Truchard will visit the DGT lab at UBC, alone or with his staff, on July 17, 2013.
- A confidential report will be prepared as described in the Concezzi email of July 1: “NI – Defkalion confidential and will be disclosed to third parties only with your written consensus, otherwise will be shared only with Dr. Truchard.” The report is expected to include the three areas set forth in the LoI Next Steps.

5 Participants

The primary participants in the site visit to DGT are shown below. Additional staff not shown, such as support staff and consultants, may also be involved.

DGT

John Hadjichristos, Sponsor
Ted Colletis
Symeon Tsalikoglou
Finlay MacNab

NI

Stefano Concezzi, Sponsor
Lothar Wenzel, Leader
Measurement and Protocol Assessment
Calorimeter Assessment
Brian Glass, Measurement Software
Thomas Grimshaw, Reporting

6 Schedule

The site visit activities covered in this plan began on the date of Stefano Concezzi's visit to DGT on May 26, 2013. The onsite visit is taking place during the week of July 8. A draft report is expected to be prepared within two weeks after completion of the site visit, approximately July 28, 2013.