Project Name:	Mold Leaders Mold designs LOSS	**Start Date:**	2023-04-01
Project Number:	2304	**Completion Date:**	2023-10-31

Project Details:

Scientific or Technological Objectives:

Measurement	Current Performance	Objective	Has results?
units before misalignment (cycles)	200	10000	No
Hardness (hrc)	40	55	No

This project description is based on the Tax Court of Canada judgment of MOLD LEADERS INC., Appellant, and HIS MAJESTY THE KING, Respondent Citation: 2023 TCC 127, Date: August 21, 2023, Docket: 2019-3354(IT)G

[9] Mr. David Duong was the primary witness for the appellant, ML. He is ML's owner and president. I found him knowledgeable and credible. He testified in English - his fourth language. Following high school, he graduated from a two-year mechanical technician program at Humber College in Toronto. He there learned CAD/CAM design and CNC machining.

[10] CAD/CAM means computer-aided design and computer-aided manufacturing. CNC means computer numerical control machining. Mr. Duong worked for five years with a company that introduced him to mold making, and where he became head of the CNC machining department.

[11] He moved from there to a newly established company that grew quickly in the business of mold making. In turn, in 2002 this prompted Mr. Duong to start his own mold maker company, being the appellant, ML.

[52] ML called one other witness, being Mr. Amit Saini. He is a professional engineer and certified professional accountant. Also, he is president of National R&D Inc. (National R&D). Neither he nor National R&D had any involvement with the subject projects while being worked on by ML.

The Eight Projects:

ML spent much time in high- precision machining in the making of molds and related items. In the relevant years of 2016 and 2017, ML engaged in approximately 320 projects brought to it by customers. The projects were not carried on with SRED in mind. But, subsequently eight of these projects were claimed for SRED and are at issue in this appeal.

For illustrative purposes we will examine the first of the 8 projects then summarize the basis for judges denial of the claim.

Project 1: this project commenced with a 2016 contract ML had with a customer, Dynaplas, for ML to design and make a 4-cavity mold for production of a particular valve for use in anti-lock braking systems in the automotive industry.

[16] The mold was to open and eject the part once solidified. Initially H13 steel was used for making the mold. The part was plastic but hardened with 30 percent glass, which made the plastic harder than ML was used to. The first mold made with H13 steel was not acceptable. The customer's testing of the mold revealed that it misaligned after a short period. After further work ML and Dynaplas agreed that W360 steel be used, having a higher hardness rating than H13 steel. ML did not itself have experience with W360 steel. ML obtained the W360 steel from a European company.

Field of Science/Technology:

Materials engineering & metallurgy (2.05.01)

Project Details:

Intended Results:	Develop new processes
Work locations:	Commercial Facility
Key Employees:	David Duong (Mold Leaders) (CNC machining - mechanical technician (2000) / President)

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Evidence types:	Design of experiments; Test protocols, test data, analysis of test results, conclusions; Records of resources allocated to the project, time sheets; Samples, prototypes, scrap or other artefacts; Photographs and videos; Records of trial runs		

Scientific or Technological Advancement:

Uncertainty #1: Technological uncertainty

[17] ML had to learn to work with W360 steel, with which it was unfamiliar. W360 steel was harder to cut and grind, i.e. mill. Ultimately, eight versions of the mold were tested by the customer (not ML) and sent back to ML six times with comments for improvement. Ultimately, a mold was accepted.

Technology or Knowledge Base Level:

Benchmarking methods & sources for citings:

Benchmark Method/Source	Measurement	Explanatory notes
Internet searches	1 Articles	examples of key issues in machining hard metals

Activity #1-1: Activity 1 (Fiscal Year 2023)

Methods of experimentation:

Method	Experimentation Performed
Physical prototypes:	8 samples

[18] ML's counsel, in his direct examination of Mr. Duong, asked him what ML achieved "in terms of technology" through its work on this project:

Q: But in terms of technology, what did you advance? What did you achieve, what did you advance? [underlining added]

A: So we learned that the hard milling processing is like - - it's just like a science, you put too many - - so many things together then you can achieve it.

Q: Okay. But at the beginning you said you had - - you know, you would be able to go and give it a shot. But how - - what did you anticipate the problems being versus what the problems were? Was it - - how relatively - - how hard was it relative to what you anticipated?

A: We did not expect that we were going though [sic] these issues. It was some kind of - - something is just pulling you, that caught us off guard. But it's the way that we wanted to - - we don't want to keep doing those projects that we are not going anywhere.

So we like to delegate certain jobs that we should take challenges or take a new approach to bring out our experience, so to compete in this (inaudible). So we learned in a hard way, yes, that's what - - have to say that [sic].

Q: You learned the hard way?

A: Yeah.

Results:

The judge noted:

[19] In answering what was achieved, Mr. Duong did not identify a technological advance. Of note also is ML counsel's reference to the ML work as, "all this trial and error".

[54] I note also that as its first witness in this matter ML called an individual seeking his acceptance as an expert witness knowledgeable of the plastic injection molding industry.

A voir dire was conducted on the first day of the hearing into whether he could be accepted as an expert. I rendered an oral decision finding based on the voir dire that the individual did not have sufficient background in the plastic injection molding industry to be qualified as an expert in that industry.

Accordingly, he was not accepted as an expert and his expert report was not admitted into evidence.

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Conclusion:

RULING & RATIONALE: LOSS

The judge commented;

[59] Here there was not evidence as to the overall industry state of knowledge in the context of any of the eight projects.

[60] It is pleaded “the Appellant did not identify or encounter any technological uncertainty which could not be removed by the Appellant’s knowledge base”. This assumption was not disproven.

The fact that no evidence was called as to the state of knowledge in the mold making industry generally made it difficult to know if and when a “challenge” for ML did or did not constitute a technological risk or uncertainty.

[61] The above extracts from Mr. Duong’s testimony for the eight projects generally reflect that ML’s success or advancement as to those projects involved a routine engineering and standard practices approach, using methodology familiar to ML.

When he was asked by ML’s counsel for each project what had been achieved or learned, the answers did not reveal or identify technological uncertainties being addressed in a scientific manner.

This is not compatible with technological risk or uncertainty intended in a SRED context. Routine engineering and standard practices includes a trial and error approach, although not a scientific approach of forming and testing hypotheses.

[68] The appeal will be dismissed, with costs. ML did not establish that four of the five requirements for establishing SRED for each of the eight projects were met.

Documentation:

- Uploaded to RDBASE.NET: MachinabilityFactors-wp.pdf (385KB)
- Offline Documents: docs

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