

Foreign Filing at the USPTO: Utilising Big Data Insight to Outperform Your Competitors

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Executive Summary

Over half a million patent applications are filed at the USPTO every year, approximately half of which originate from companies outside the U.S. Non-U.S. companies clearly play a significant role in the U.S. patent landscape but how do they fare compared to U.S. companies in terms of prosecution efficiency and patent claim quality?

The issues encountered by international filers of applications in the United States differ from those faced by their U.S. counterparts. These include:

- Choosing and managing outside counsel

- Effective translation of patent applications

- Distance between parties and time zones

- Experience and focus

But do such variables negatively affect the results of the patent prosecution process?

An analysis of U.S. patent filings in the technical area of 'internal combustion engines' shows that European and Asian companies have similar allowance rates and appear to obtain patents as efficiently as their U.S. counterparts. We use this field of technology as an example to demonstrate the types of prosecution analytics that are now available. It would be relatively easy to conduct similar studies in other technical filing areas. Regardless of their location, it is clear that all companies filing in the U.S. face similar pitfalls.

The good news is that patent prosecution analytics will predictively expose many such pitfalls on an examiner-specific basis. Commercial products that compile USPTO public data confirm that the vast majority of U.S. examiners have predictable prosecution patterns. An examiner's previous behaviour has proved to have significant value to help guide optimal prosecution decisions.

Using examiner past performance data to support more flexible application management will generate better prosecution outcomes. In this white paper, we demonstrate this theory by providing examples of how readily available examiner and art unit statistics relating to 'internal combustion engines' provide a clear opportunity for applicants to advantageously alter their prosecution strategy.

Table of Contents

1. Introduction.....	2
2. Background information.....	3
3. Where are the applicants located?	4
4. Benchmarks for the total 30,282 'Internal Combustion' applications	5
5. How does the group of corporations in each filing region perform:	
Europe, Asia and the U.S.	6
5.1 Number of applications per region.....	6
5.2 Allowance rate.....	7
5.3 Allowance rate without filing an RCE.....	8
5.4 Allowance without filing two RCEs or more	9
5.5 Allowance rate immediately after a first RCE	10
5.6 Total allowance without office action after first RCE.....	11
5.7 Conclusions from the comparison of the three filing regions.....	12
6. The more challenging examiners	13
7. Better prosecution outcomes	15
8. Recommended strategies	17
Conclusion.....	18

1. Introduction

Filing at the USPTO is a very important step for many companies worldwide.

Obviously, the USPTO is one of the largest patent offices. Around half of the filings at the USPTO originate from outside the United States. In 2015, these totalled 301,075 utility patent applications.

Bearing this global outlook on patent filings in mind, our goal in this paper is to compare the effectiveness of prosecution process management across a range of worldwide locations of application origin. We are essentially asking whether filers from one region are more or less successful than filers from another region. In light of our findings, we proceed to explore strategies that any company could utilise to improve prosecution management, particularly strategies for obtaining better prosecution results than competitors filing similar applications. We identify several data-driven decision making methods that may enable companies to obtain better quality patents in the U.S., in a shorter space of time and at a lower total cost.

Given the volume of applications filed in the U.S. on an annual basis, it would be an enormous undertaking to consider all the available public data. For the purpose of illustration, we will therefore study a smaller group of filings specifically related to 'internal combustion engine' technologies. The data has been derived from LexisNexis PatentAdvisor® using its extensive view into public USPTO databases. This data includes:

- a. USPTO application filings related to internal combustion engines
- b. More specifically, applications assigned to Art Unit 3747 or 3748
 - i. There are approximately 1,000 art units at the USPTO.
 - ii. We identified 3747 and 3748 as the primary art units for handling internal combustion type applications.

2. Background information

Definition of an Office Action

In the USPTO, an office action is a document written by an examiner as part of a patent examination procedure and mailed to the patent applicant. Colloquially, and in this paper, this term is used to refer to communications that include patent claim rejections.

The primary types of office actions are non-final office actions and final office actions. A non-final office action is generally one that raises new issues, so the first office action during prosecution is almost always non-final. A final office action generally repeats at least one of the issues from a non-final office action. Typically, examiners issue a final action after each non-final action, but sometimes they issue multiple non-final actions in a row.

Effects of an Office Action

Applicants are usually required to respond to an office action (final or non-final) within three months (for no fee) or within six months (with a fee) or the application is abandoned. They may generally respond with arguments or a combination of both arguments and claim amendments.

Definition of an RCE

A Request for Continued Examination (RCE) is generally a request by an applicant for continued prosecution after the patent office has issued a final rejection or after prosecution “on the merits” has been closed (for example by a Notice of Allowance (NOA)). An RCE is not considered a continuing patent application - rather it is simply a continuation of prosecution of the pending application. The inventor pays an additional filing fee and continues to argue his case with the patent examiner. (Source: Wikipedia)

Effects of filing an RCE

Filing an RCE allows patent applicants to continue negotiations with the examiner. In general, U.S. patent applicants are allowed two rounds of negotiations with the examiner for the price of the filing fee: a non-final office action, a response, a final office action and a limited opportunity for response. By filing an RCE, applicants are effectively extending prosecution into another round of negotiations. In response, the examiner can either allow the case immediately or issue another non-final office action.

The costs of an RCE and an Office Action

The combined attorney and patent office fees for responding to an office action vary but usually range between \$1,000 and \$4,000, depending on the circumstances. Furthermore, there is often a cost in terms of patent quality, as responding frequently requires making arguments that can be used against the applicant in litigation, or amendments that narrow the scope of the claims.

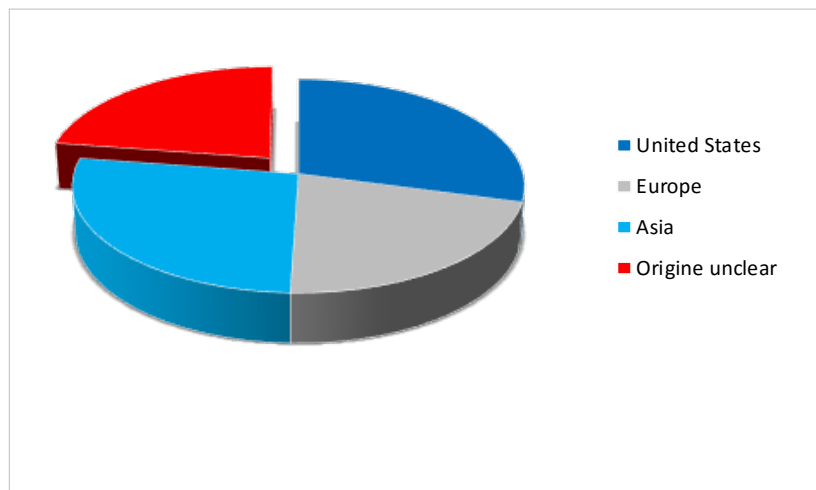
3. Where are the applicants located?

Using PatentAdvisor™, we retrieved records for all applications assigned to art units 3747 and 3748. Our research indicated that these art units seem to be responsible for almost every internal combustion engine application filed in the U.S.

We then limited the research set to applications filed between 2007 and 2015 to ensure that we are looking at recent data but still have enough information from which to derive reasonably informed conclusions. A total of 30,282 of the applications were filed during this period.

Internal combustion applications are most likely to be filed by automobile and machinery companies. Anecdotaly, we know that there are relatively large numbers of such companies throughout Asia, Europe and North America. It therefore makes sense to compare prosecution performance across these geographic regions. We thus divided applications where the corporate geographic origin was identified clearly within the USPTO assignment record, giving us 23,438 applications geographically distributed as follows:

- i. 8,845 internal combustion apps originating from companies with HQ in North America
- ii. 8,142 internal combustion apps originating from companies with HQ in Asia
- iii. 6,451 internal combustion apps originating from companies with HQ in Europe



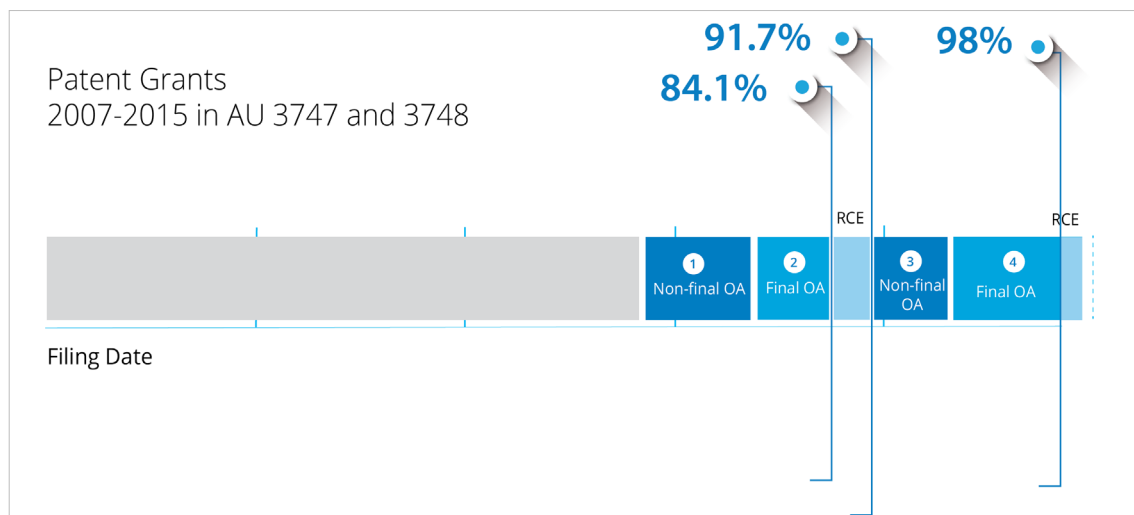
Data derived from LexisNexis PatentAdvisor

4. Benchmarks for the total 30,282 ‘Internal Combustion’ applications

In order to evaluate prosecution performance based on geographic filing origin, it is helpful to establish a performance benchmark. For the purpose of this study, a set of baseline prosecution metrics was derived from the total 30,282 internal combustion engine patent applications filed between 2007-2015 in art units 3747 and 3748. In other words, for the purpose of determining the baseline prosecution metrics, the geographic origin of the applicant was ignored.

We chose to orient the baseline prosecution metrics around the RCE prosecution event, as RCEs are a good proxy for measuring the expense of a patent grant—both in terms of money and time. Based on an analysis of all applications filed in art units 3747 and 3748 between 2007 and 2015, we determined the baseline prosecution metrics as follows:

- Examiners allowed 76.8% of all applications (18,105 grants and 5,466 abandonments. 6,711 still pending)
- 84.1% of patented applications were allowed without filing an RCE (an RCE was required in only 2,867 applications out of 18,105 grants)
- Allowance came without filing two RCEs or more in 98% of the grants (379 grants with two or more RCEs out of 18,105 grants)
- But allowance came immediately after a first RCE in 47.7% of applications in which an RCE was filed (1368 out of 2867), where ‘immediately’ means without a new Office Action after the first RCE was filed
- Thus 91.7% of the patented applications were allowed very quickly—either without an RCE or immediately thereafter.



Relative to the USPTO as a whole, the authors know that these allowance statistics are quite favourable. Thus any applicant filing in art units 3747 and 3748 has a relatively good chance of receiving a patent quickly and at a low cost.

5. How does the group of corporations in each filing region perform: Europe, Asia and the U.S.

It is now possible to compare the prosecution performance of the collective group of applicants from each of the geographic regions, Europe, Asia and the U.S., in relation to the benchmarks identified in Chapter 4 (also referred to as the 'baseline prosecution metrics'). We could just as easily have studied the same metrics in the context of any individual company or country, for example, in order to evaluate prosecution performance in a different context. For the sake of the present investigation, however, we will only look at metrics divided by applicants within these three geographic regions. applicant filing in art units 3747 and 3748 has a relatively good chance of receiving a patent quickly and at a low cost.

5.1 Number of applications per region

1. As noted in Chapter 3, the collection where the geographic origin was clear includes 6,451 applications from Europe
2. As noted in Chapter 3, the collection where the geographic origin was clear includes 8,142 applications from Asia
3. As noted in Chapter 3, the collection where the geographic origin was clear includes 8,845 applications from the U.S.

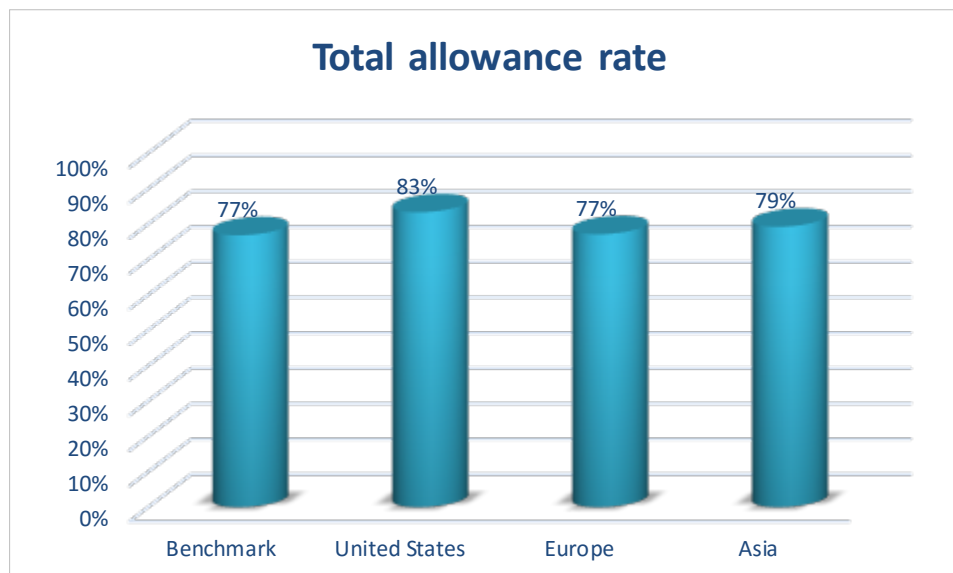
5.2 Allowance rate

Allowance rate is defined as the percentage of all terminated applications (granted and abandoned) where grant was the outcome. It does not take pending applications into account.

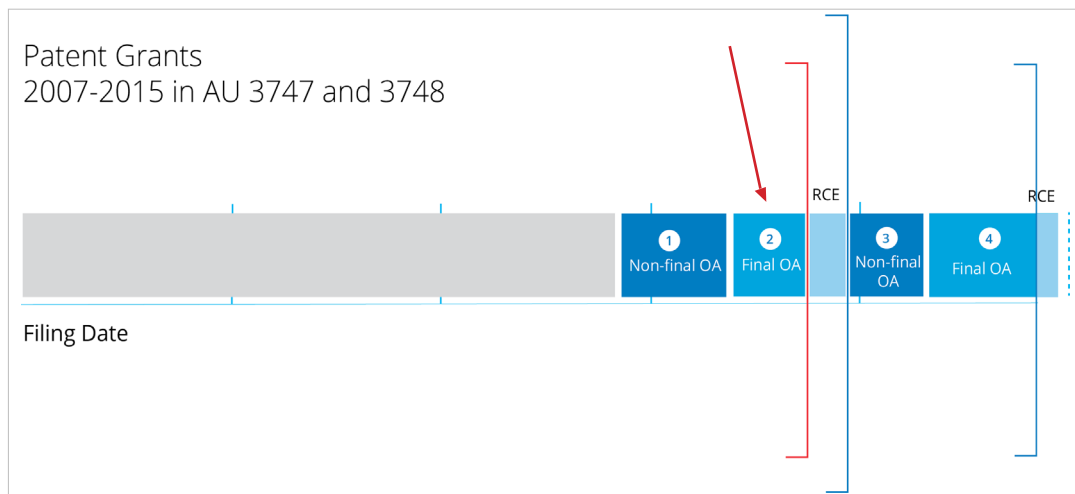
$$\text{Allowance rate} = \frac{\text{granted applications}}{(\text{granted applications} + \text{abandoned applications})} * 100$$

Statistical analysis of allowance rate has many possible practical implications. For example, an allowance rate of 15% for a certain examiner tells you that there may be a small chance of obtaining a patent, especially when the low allowance rate is consistent year after year during an examiner's career. Detailed allowance rate profiles are provided by prosecution analytics tools like PatentAdvisor™, providing insight into what 'normally' happens when dealing with a particular examiner. Allowance rate profiles are not limited to the examiner context. An analysis profile may be generated for any set of patent applications, for example within a particular industry, region, timeframe, art unit or company.

The allowance rate analysis of 'internal combustion' applications filed in the U.S. originating from companies in Europe, Asia and the U.S. reveals a similar outcome for each region. For example, examiners allowed 77.1% of applications originating from Europe (baseline = 76.8%), 79.2% of applications from Asia (baseline = 76.8%) and 83.3% of applications from the U.S. (baseline = 76.8%). As a reminder, the baseline statistics include cases where assignee origin is not clear. These extra applications may reduce the overall average allowance rate slightly, explaining why all three regions may be above the baseline allowance rate value.



5.3 Allowance rate without filing an RC

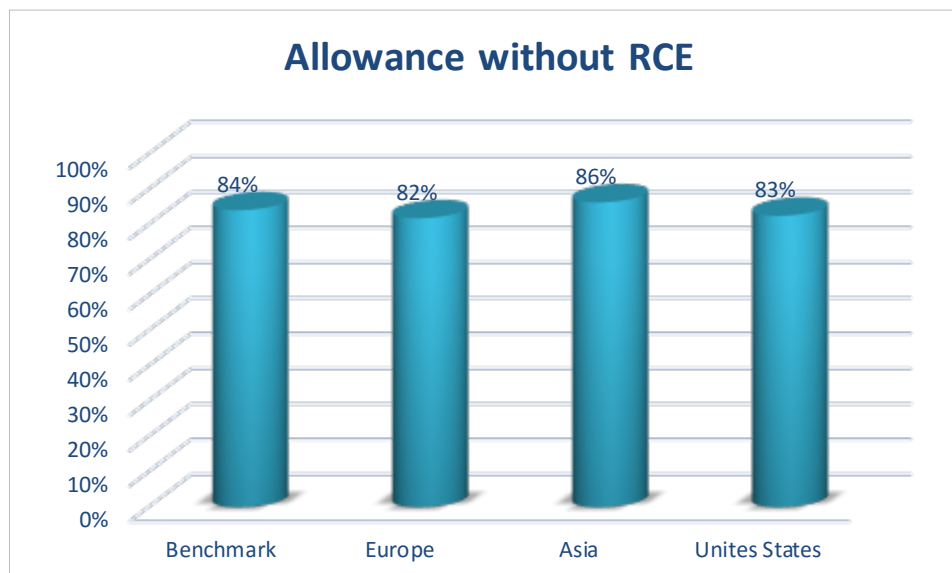


Of the applications in the baseline set of 30,282 applications where a patent was granted, the vast majority (84.1%) did not require an RCE. Not necessarily uncommon in the mechanical arts, the ability to obtain a patent without filing an RCE is considerably less expensive than a longer prosecution path that does include an RCE. Looking into each individual filing region, we see a similar trend.

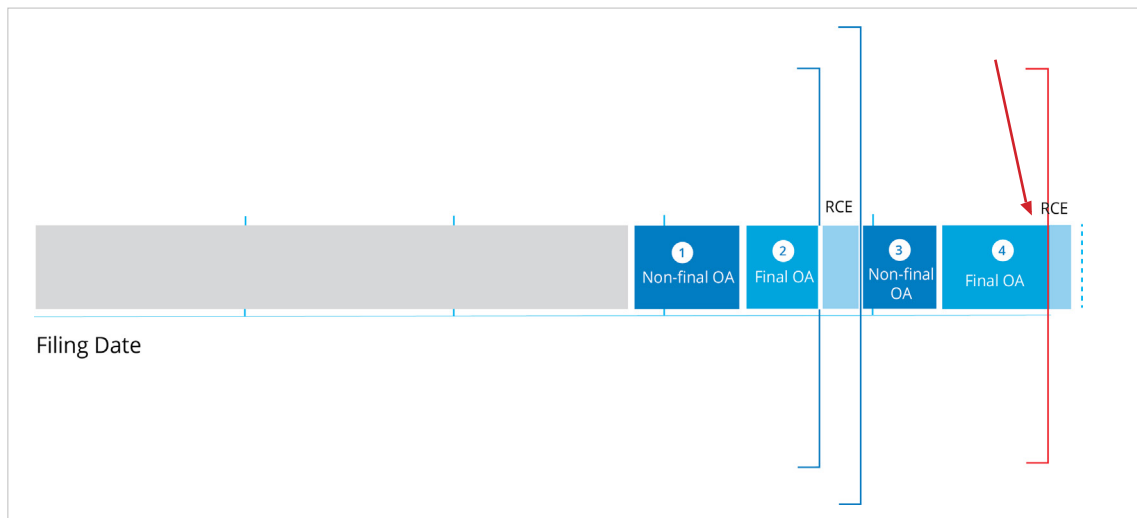
81.8% of patented applications from Europe were allowed without filing an RCE (baseline = 84.1%)

86.3% of patented applications from Asia were allowed without filing an RCE (baseline = 84.1%)

82.5% of patented applications from the U.S. were allowed without filing an RCE (baseline = 84.1%)



5.4 Allowance without filing two RCEs or more

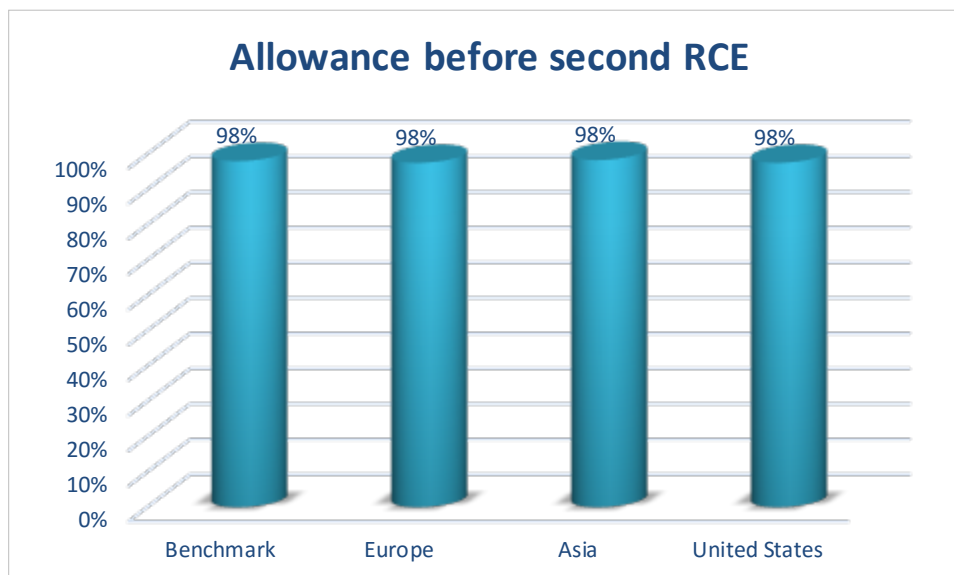


When we extend analysis of the baseline set of patented applications to include granted applications with fewer than two RCEs, we discover that very few applications (only 2%) went into extended, multiple RCE prosecution. Once again, the data in each filing region reflects a similar trend.

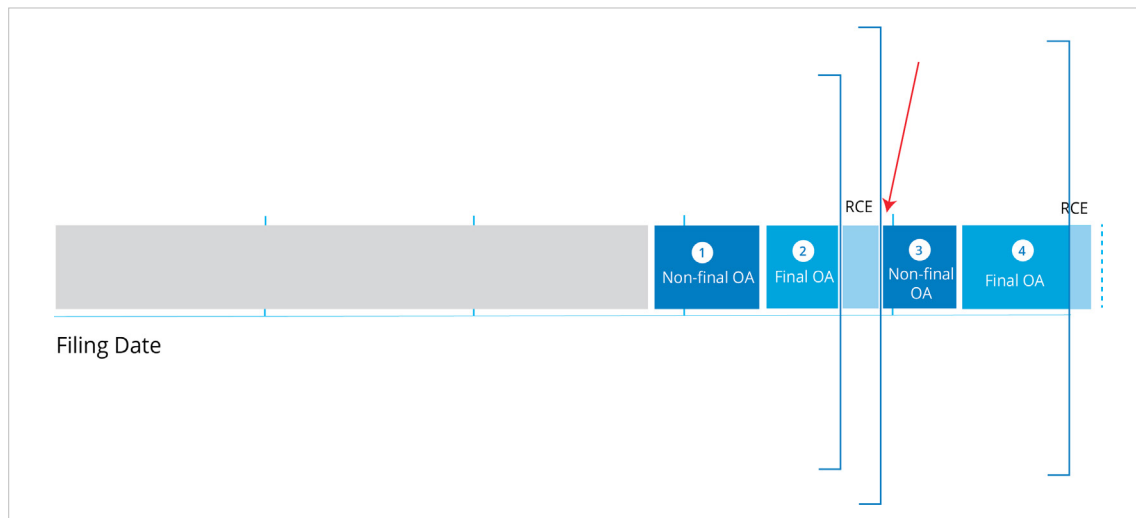
Allowance without filing two RCEs or more in 97.5% of patented applications from Europe (baseline = 98%)

Allowance without filing two RCEs or more in 98.3% of patented applications from Asia (baseline = 98%)

Allowance without filing two RCEs or more in 97.5% of patented applications from the U.S. (baseline = 98%)

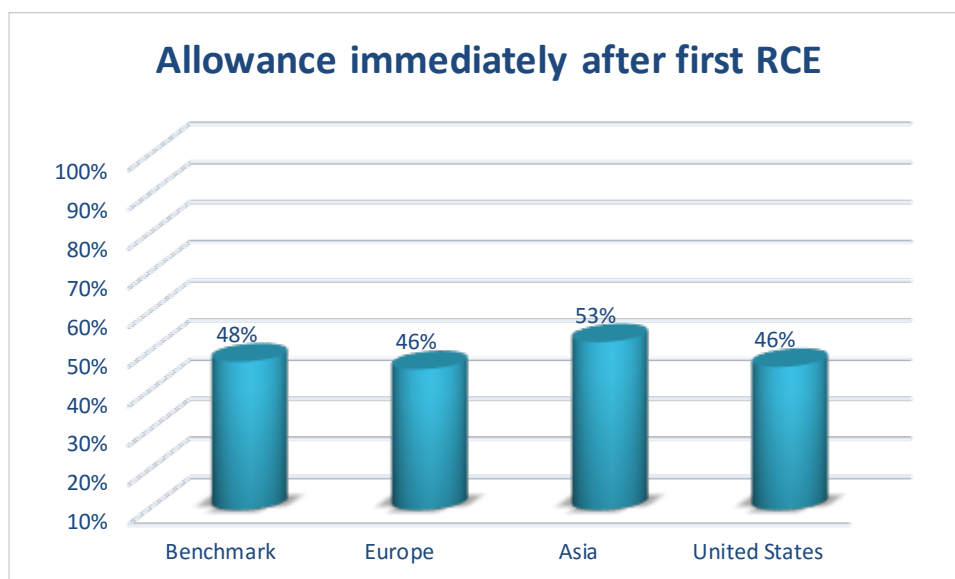


5.5 Allowance rate immediately after a first RCE



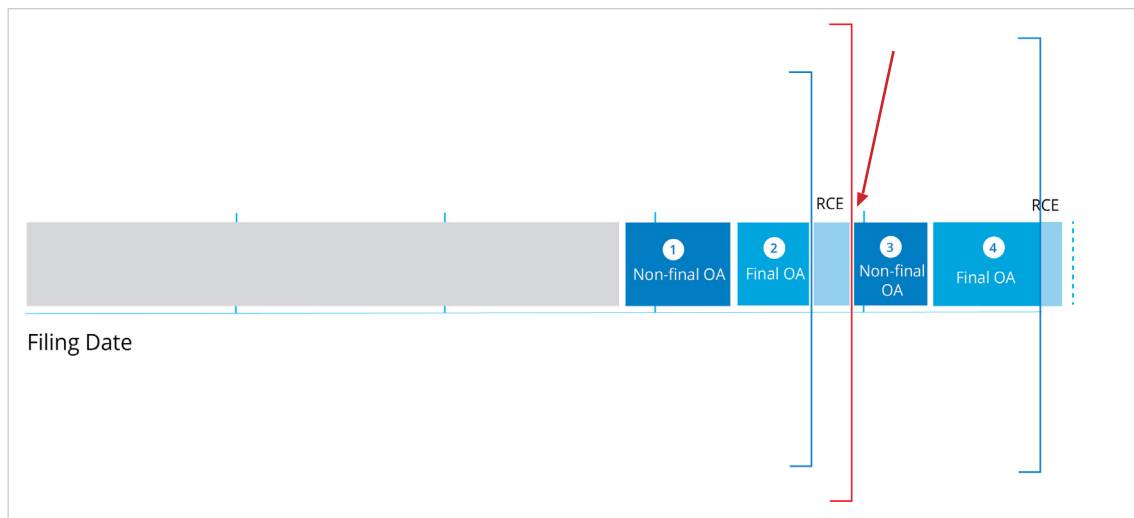
Of course, RCEs do not tell the entire story. Each office action requires time and money from the applicant and possibly an undesirable claim amendment. So how do different filing regions compare to the baseline following a first RCE? The breakdown is as follows:

1. Allowance came immediately after a first RCE in 45.8% of applications from Europe where a first RCE was filed, where 'immediately' means without a new office action after the first RCE was filed (baseline = 47.7%)
2. Allowance came immediately after a first RCE in 52.7% of applications from Asia where a first RCE was filed, where 'immediately' means without a new office action after the first RCE was filed (baseline = 47.7%)
3. Allowance came immediately after a first RCE in 46.4% of applications from the U.S. where a first RCE was filed, where 'immediately' means without a new office action after the first RCE was filed (baseline = 47.7%)



Again, these numbers reflect reasonably efficient prosecution and the outcome does not vary significantly across filing regions.

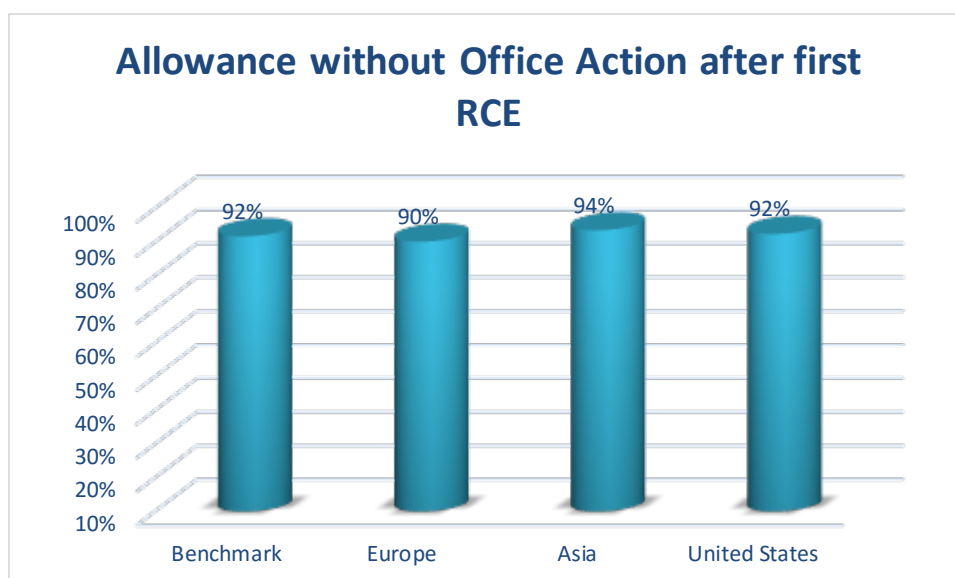
5.6 Total allowance without office action after first RCE



Combining a couple of the metrics above, we now look at the number of grants that occurred either immediately after the first RCE or without any RCE at all. In other words, what percent of patents were granted quickly in terms of U.S. prosecution?

Yet again, we find consistency across the baseline and the filing regions. The breakdown is as follows:

1. For Europe, 90.1% of the patented applications were allowed with no office actions after a first RCE (baseline = 91.7%)
2. For Asia, 93.5% of the patented applications were allowed with no office actions after a first RCE (baseline = 91.7%)
3. For the U.S., 92.4% of the patented applications were allowed with no office actions after a first RCE (baseline = 91.7%)



5.7 Conclusions from the comparison of the three filing regions:

Looking at the statistical categories above, all three filing regions perform more or less the same and reasonably in line with the baseline. There are some minor differences in performance but these do not seem to have a consistent origin in terms of filing region. This is a very interesting result, especially in view of the unique combination of prosecution management challenges faced by companies in each filing region. In terms of filings in this category of technology, success and efficiency in the USPTO seem to be controlled more by variables internal to the United States Patent Office than by external variables related to corporate prosecution management.

Here is a list of interesting thoughts and takeaways:

A significant worldwide competitive advantage is available to any company that adjusts its prosecution management processes in order to do even slightly better than average.

When examiners rarely tend to require an RCE before allowance, the appeal of RCE-alternative strategies increases greatly. Such strategies include the USPTO's Amendment After Final Pilot Program, the P-3 After Final Pilot Program, Interviews after Final and pre-appeal/appeal. The company that considers data and selectively invokes these RCE alternatives will ultimately receive better patent claims at a lower price than their competitors. They will also receive their patents much sooner.

When filing applications in this technology category, choose a claim amendment scope that takes the likely prosecution path into account.

If a patent is likely to be granted at an early stage in the prosecution process, it makes no sense to make aggressive amendments that will drastically affect the corresponding scope of protection. The same applies to the scope of arguments that are made. The more you say, the greater the potential for a negative impact on the scope of protection.

The USPTO has been fairly consistent in its treatment of companies in all filing regions.

The sample data shows fairly consistent treatment of all applications, regardless of origin. Consistency is a good thing! Consistency makes it easy for applicants to know sooner rather than later when an application has strayed "off track" and therefore needs special intervention. Knowing the most likely path to allowance also gives applicants an opportunity to anticipate what is likely to happen next and make strategic adjustments accordingly.

It costs less to obtain an internal combustion patent than it costs to obtain a patent in a different technology category.

Within this technology category, many applications are allowed before an RCE and most applications with an RCE are allowed before a new office action is issued following the RCE. When companies are allocating patent investment dollars, they should consider which patents may cost more in terms of likely prosecution costs and which may cost less. The relative cost of patents varies from one art unit to another. There is an opportunity to take these differences into account during the planning phase.

It is possible to know ahead of time when your assigned examiner is an outlier relative to his/her peers.

It is clear that most examiners in the internal combustion engine art units manage the prosecution process in a similar way. However, there are certainly some outlier examiners with different tendencies. Knowing early in the prosecution process that you have been assigned to an outlier is critical to your ability to make strategic adjustments and maximise the likelihood of obtaining the best possible result.

6. The more challenging examiners

It is interesting to note that, of the total pool of 30,282 internal combustion technology patent applications filed during 2007-2015, a total of 13,938 or 46% of the applications seem to have been handled by a small set of only 10 different examiners! The allowance profile of these examiners is generally consistent with the benchmark “baseline metrics” described in Chapter 4. This certainly contributes to the tight range of variation in prosecution performance. The table below shows a breakdown of the applications linked to each of the 10 examiners.

Examiner	APPs	Average Number of Office Actions between Filing Date and Patent Issuance	Allowance rate	Perc. of App. with at least One RCE before Patent Issuance	Perc. of Applications Where Applicant Filed Notice of Appeal before Patent Issuance	Average Amount of Time Between First Office Action and Patent Issuance
NGUYEN, HOANG M	2275	1.2	75.9% (1625 / 2142)	12.5%	3.3%	0 Y, 10 M
GIMIE, MAHMOUD	2058	1	88.3% (1742 / 1974)	6.8%	1.5%	0 Y, 7 M
HUYNH, HAI H	1686	0.9	92.7% (1500 / 1619)	3.8%	0.1%	0 Y, 7 M
TRIEU, THERESA	1667	1.3	84.1% (1316 / 1565)	10%	1.9%	1 Y, 0 M
CHANG, CHING	1642	0.9	90.5% (1393 / 1539)	9.9%	1.5%	0 Y, 7 M
TRAN, BINH Q	1566	1.4	86.5% (1278 / 1478)	14.9%	5.5%	1 Y, 0 M
TRIEU, THAI BA	1542	1.7	77.1% (1132 / 1469)	16%	2.8%	1 Y, 1 M
KWON, JOHN	1502	0.7	91.8% (1323 / 1442)	5.1%	1.4%	0 Y, 6 M
ESHETE, ZELALEM	1471	1.2	83.3% (1152 / 1383)	14.3%	2.7%	0 Y, 9 M
SOLIS, ERICK R	1406	0.6	90.6% (1220 / 1347)	5.8%	0.5%	0 Y, 5 M

generated from LexisNexis PatentAdvisor

However, other active examiners in this same pool of applications handled a significant number of applications in a manner that differs significantly from the “key baseline metrics” described in Chapter 4. Consider the same “key baseline metrics” as applied to the 240 applications assigned to one particular examiner, who we will call Examiner X:

- a. Examiner X only allowed 50.4% (compared to baseline 76.8%) of all assigned applications (67 grants and 66 abandonments and 107 still pending)
- b. Only 36.9% (compared to baseline 84.1%) of patented applications were allowed without filing an RCE (an RCE required in 49 out of 67 grants)
- c. Allowance came without filing two RCEs in 85.1% (compared to baseline 98.0%) of the grants (10 grants with two or more RCEs out of 67 total grants)
- d. Allowance came immediately after a first RCE in 16.3% (compared to baseline 47.7%), where ‘immediately’ means without any new office action after the first RCE was filed (8 out of 49)
- e. Thus, only 38.8% (compared to baseline 91.7%) of the applications were allowed by Examiner X either immediately after a first RCE or with no RCE at all (26 out of 67 allowed applications)

What could this mean?

Consider the significant resources that have been invested by companies worldwide to obtain low quality, high cost patents from Examiner X. If your application is assigned to Examiner X, you automatically face a diminished 50 % chance of being granted a patent. This is very different than having a 76.8% chance. With Examiner X, only 36.7% are granted without an RCE. Only 16.3% of those RCEs applications do not require an additional office action. So, 83.7% require an additional office action with associated costs, time and probable loss of claim quality.

Obviously, if the applicant knew in advance that they had been assigned to Examiner X, wouldn't they be wise to adjust their prosecution strategy accordingly? Perhaps options like appealing early or frequent interviews would lead to a better outcome. Knowing the tendencies of the examiner will almost certainly give you an advantage. Knowing early in prosecution whether you have Examiner X or one of the fast moving 10 examiners is powerful information.

7. Better prosecution outcomes

In monetary and patent quality terms, just how important is it to have insight into the typical path to allowance for your assigned internal combustion examiner?

Company level analyses for Examiner X

Here is a company assignee breakdown of the internal combustion applications handled by Examiner X:

THIS EXAMINER'S TOP 10 MOST FREQUENT OWNERS/ASSIGNEES

# ▲	Name	▼ Applications ▼
1	TOYOTA	14 Filter
2	GENERAL ELECTRIC COMPANY	9 Filter
3	GENERAL MOTORS	9 Filter
4	FORD	9 Filter
5	LG	8 Filter
6	DAIKIN	7 Filter
7	EMERSON CLIMATE TECHNOLOGIES	6 Filter
8	MTU AERO ENGINES	6 Filter
9	HONEYWELL	6 Filter
10	ROBERT BOSCH	6 Filter

generated in LexisNexis PatentAdvisor

Now, consider additional details of Toyota's experience in relation to just their 14 Examiner X applications:

1. 40 office actions issued across the 14 applications (for an approximate investment in response filing of \$120,000)
 - i. Five patents obtained, seven applications abandoned and two applications still pending (allowance rate less than 50%).
 - ii. An average of 4.6 office actions were issued in each of the five granted applications (23 office actions in the five granted applications).
 - iii. As one would expect, a typical Toyota claim allowed by this examiner was quite narrow in the sense that it included many claim elements and words.

The results are no better for Bosch:

- iv. 17 office actions issued across the six Examiner X applications for an approximate investment in response filing of \$51,000.
- v. ZERO patents obtained, four applications abandoned and two still pending (allowance rate of 0%).
- vi. A considerable four responses have already been filed in each of the two pending applications.

More, better quality patents

Again, there is a significant opportunity for almost any company filing internal combustion technology applications to gain a competitive advantage in the form of more and better quality patents. Better prosecution outcomes will be obtained when the prosecution tendencies of each individual examiner are considered. The company should slightly adjust their prosecution management workflow, taking into account:

1. the tendencies of the examiner handling each application
2. the optimal prosecution strategy in light of those tendencies.

Consider this:

What would have happened if Toyota or Bosch had known the general statistics of Examiner X before incurring their significant costs? What strategic prosecution adjustments could they have made to limit the damage?

8. Recommended strategies and conclusion

The data related to internal combustion patents seems to support a recommendation of any or all of the following specific strategies for optimising patent prosecution management.

Identify examiner tendencies early in the prosecution

Early on in the prosecution, perhaps even before responding to any office actions, it is important to identify whether you have been assigned to an examiner with a performance history that is consistent with the benchmark “baseline metrics.” Any prosecution cycle that departs from “normal” will probably be easy to get back on track for an early, high quality allowance.

For a smaller subset of internal combustion examiners in the USPTO, the likelihood of obtaining a high-quality patent is considerably lower from the very beginning of the prosecution cycle. It is therefore critical to identify early in the prosecution whether you have been assigned to a more problematic examiner, like Examiner X. If you adhere to your usual approach to prosecution in these circumstances, there is a good chance that the prosecution outcome will be undesirable. Early detection will give you the confidence you need to choose a more aggressive prosecution strategy, such as an early appeal.

Avoid making unnecessary aggressive amendments

For the speedier “baseline” examiners, it is also critical to avoid making unnecessarily aggressive amendments early in the prosecution process. Using the information provided in Chapter 5, you can develop a simple process to identify applications which are likely to be allowed quite early in the process. You could intentionally monitor and limit the aggressiveness of amendments for each application.

Avoid filing an RCE whenever possible

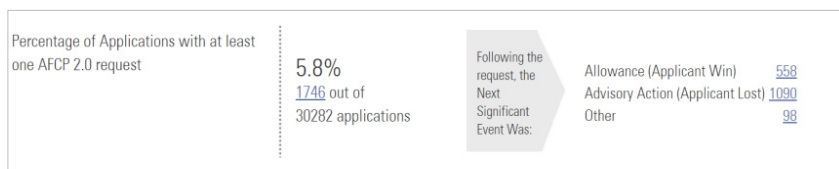
When the data shows that your assigned examiner does not usually require an RCE, it is a good idea to consider all the alternatives before filing an RCE.

This is another area where examiner data can prove useful. For example, data is available in the market that will demonstrate whether or not an examiner is likely to allow you to make an amendment after a Final Rejection. For example, looking at all 30,000+ of the internal combustion applications, we find that examiners fairly frequently allow an application following an entered Amendment After Final (note: this same data is also available on an examiner-specific basis):

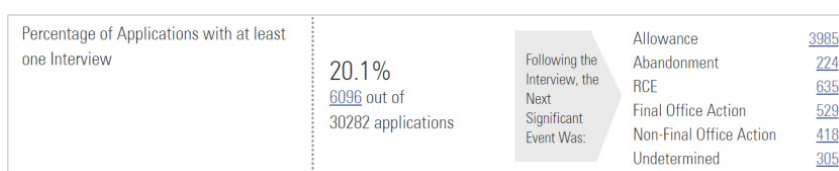
How often the Examiner issues a Notice of Allowance in response to an Amendment After Final that affects the claims

27.6% [399](#) out of 1444 applications

Data is also available to show you whether you are likely to receive allowance as a result of entry into the After Final Consideration Pilot program. The data in that category for the 30,000+ internal combustion applications looks like this (note: this same data is also available on an examiner-specific basis):



Data is also available to show you whether you are likely to receive allowance following an interview. The data in that category for the 30,000+ internal combustion applications looks like this (note: this same data is also available on an examiner-specific basis):



Conclusion

The patent prosecution landscape for patent filings in a different field of technology will probably be different from the ‘internal combustion engine’ example described above. But even in this quick and high allowance area of the USPTO, we were able to identify easily obtainable business benefits by implementing data-driven prosecution strategies.

Innovation Elevated

Serving you across the entire patent workflow

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