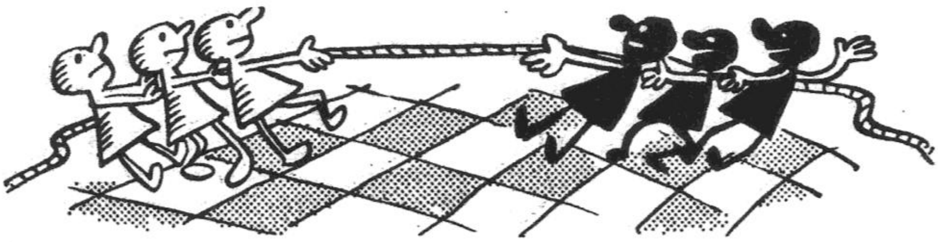
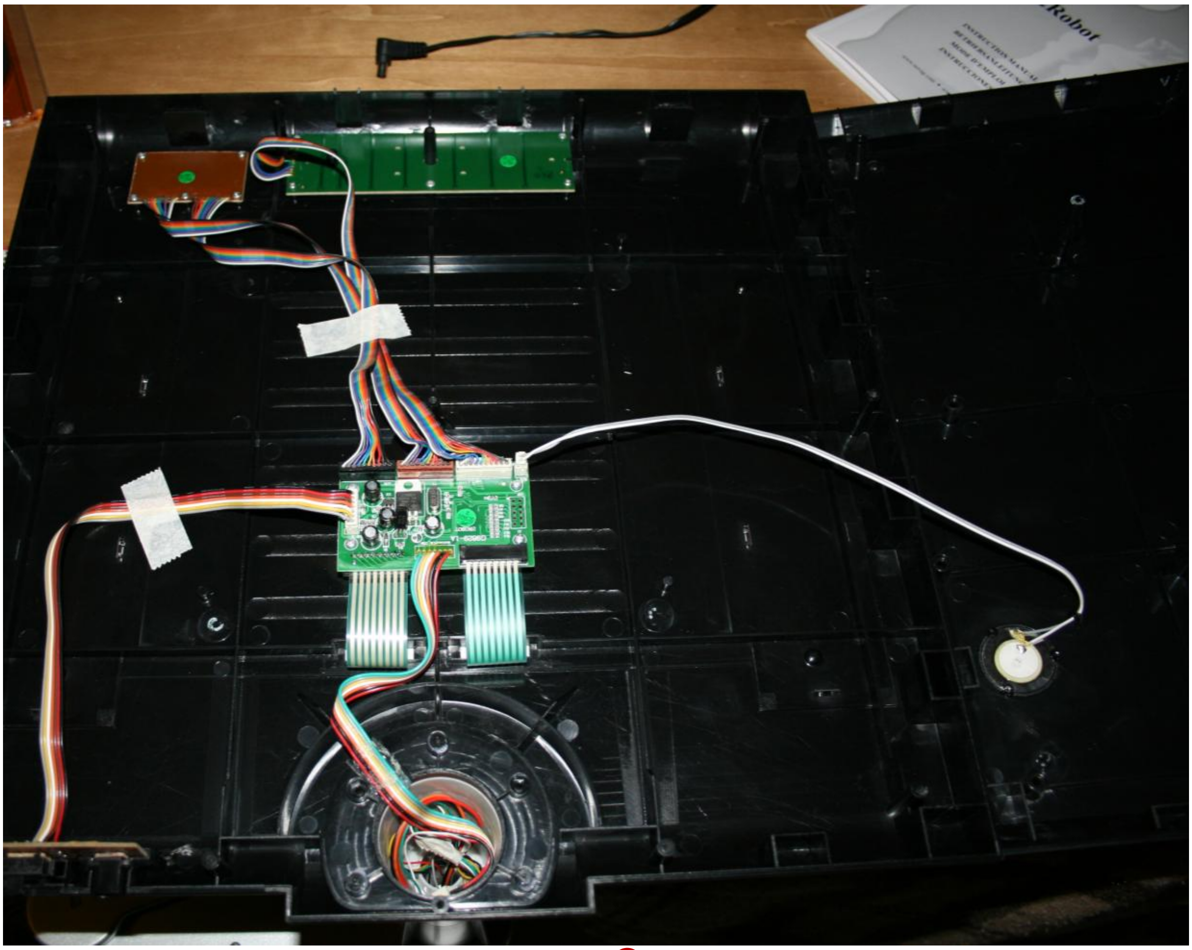
11-2008 [D-3201] Novag - **2Robot**

On Saturday, November 22, 2008, Ruud Martin and I left early in the morning for the Niggemann company in Germany. It was not an easy trip, because the winter weather was quite bad. There was rain or (wet) snow, with patches of frozen road surface here and there. The frozen trees along the side of the road created a beautiful scene. They could have been straight out of a Christmas card. Fortunately, Ruud is an experienced driver and he also has an excellent car. Sensors indicate when the road surface becomes really dangerous, such as at very low temperatures or when there is a risk of black ice. Nevertheless, I remain a real scaredy-cat. Ruud knows this by now and sometimes teases me about it. Of course, I would rather be behind the wheel myself, but as a novice driver with barely four months of driving experience, I am too inexperienced for this trip. I just let it happen and we have a wonderful day with a few stops here and there to eat and drink something, not to mention our quick chess games in between. It's always a treat to play chess with Ruud. When we turned into the driveway at Niggemann, there was that delivery van again with large advertising prints from, among others, Tasc ChessSystem.



Where have those good old days gone, because that company has long since ceased to exist. Once inside, the many boxes from Hong Kong were still stacked high and untouched in the store. A demonstration model of the Perfect 2Robot was ready on the large and beautiful table among the other computers on display. Only this test model didn't look very good anymore. The sensor board looked like a golf course and the sound of the drive motor in the arm sounded somewhat melancholic. Upon inquiry, it turned out that this model had worked overtime at the toy fair in Nuremberg and in Cologne during the match between Anand and Kramnik. Indirectly, of course, this indicated that the quality of the mechanical part was actually quite good! We wanted to place a large order, so the models were checked one by one beforehand to ensure they were functioning properly. All control buttons and sensor fields were checked. The robot arm was, of course, the most work, as it was assessed for correct centering when placing the chess pieces. A unique feature of this robot is that you can reprogram (calibrate) the computer yourself for this function! Of the approximately 12 robots unpacked, only about half were good enough to take home.

In most cases, the plastic casing (of the arm) was slightly damaged, so we naturally did not accept delivery. They were not at all difficult about this. In one case, the arm's reach was insufficient to place a damaged piece next to the board. This was a job for the Niggemann technician to fix later, and if not, return it to Hong Kong. In our conversation with the Niggemann employees, it became clear to us that Novag, or rather the new company ‘Perfect Technology’, was in a hurry to get this model, in an initial shipment of 100 units (!?) for the Christmas shopping season in Europe. Even at the chess and Go shop Het Paard in Amsterdam, they were not yet aware of the release of this model. In the end, we returned home very satisfied. Testing the 2Robot would certainly be a priority for us in the coming days. Of course, I wanted to know right away how strong it was, and Ruud... well, what else could you expect from him but to immediately unscrew one to see what was inside. That evening, I received a short email...



Hein, There's not much in it ☺ 8 MHz... Cheers, Ruud.

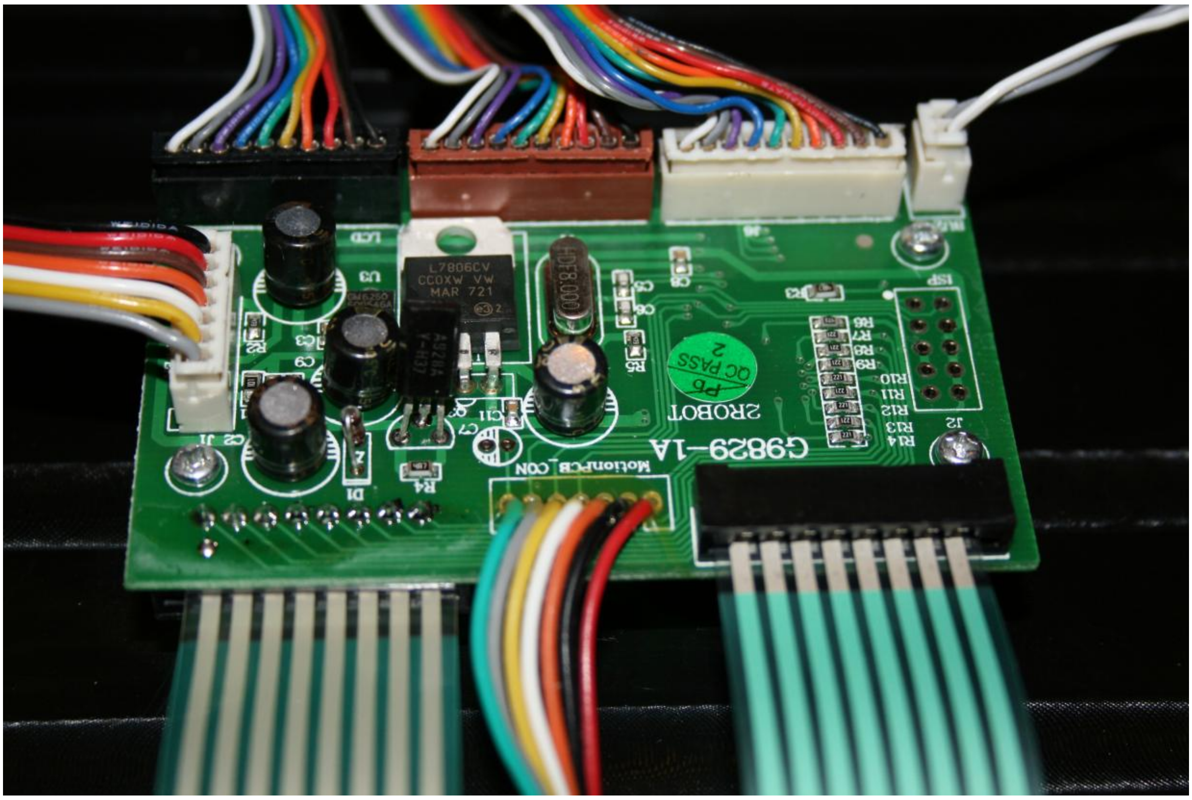
(Picture: Novag 2Robot by Ruud Martin – copyright 22.11.2008)

A brief comparison between the '1Robot' and the '2Robot'

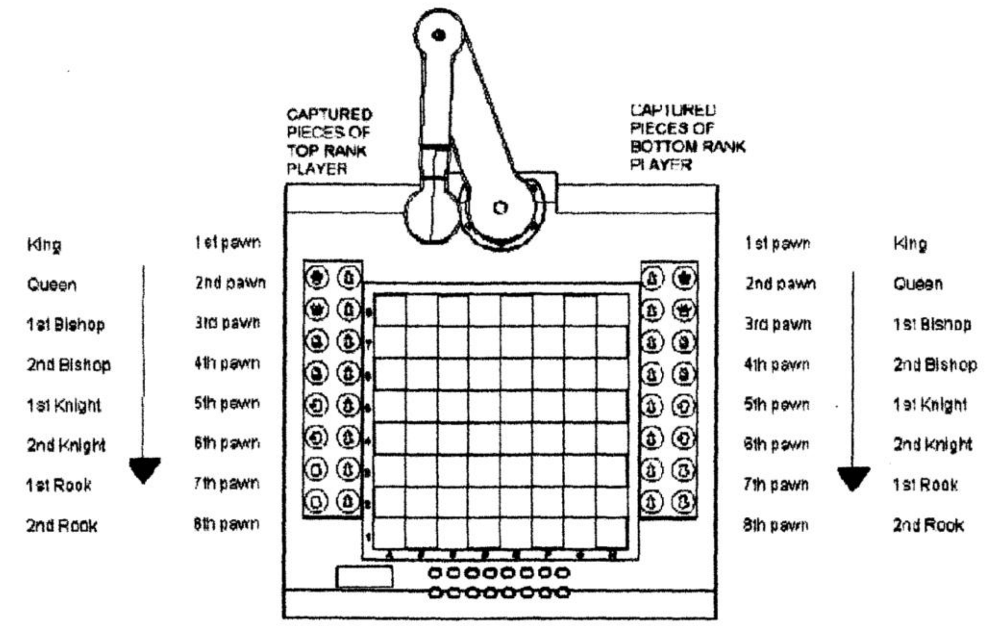
For some time now, I have had the legendary Robot Adversary in my display cabinet. As we know, this Adversary is extremely rare, and there are only a few examples worldwide that still function (very) well. After a long announcement, the Adversary finally came onto the market in November 1982. This robot was certainly not 'perfect', as the (control of the) robot arm remained a weak point. In early 1984, Novag did introduce some improvements, but production was ultimately discontinued fairly quickly. And now, exactly 26 years later, Novag has introduced the 2Robot. Is it meaningful to compare these two robots? I don't think so, because the Adversary was clearly a prestige object and the 2Robot a mass-produced product! It's like comparing a Mercedes to a Trabant. The Adversary is made of aluminum and also has a stronger chess program. What's more, it has emotions! Something I really miss in the 2Robot. On the other hand, the 2Robot has many more levels to practice on. It also has an information display. Its light and compact housing makes it easier to transport. I think the arm control has been improved in terms of technology, but only time will tell. And then there's the price. It's incredibly low, so everyone can afford a 'Trabant'.

The chess computers released by Perfect Technology

The Novag company was managed by Peter Auge from 1978 onwards. His daughter, Jeannine, took over the company in 2002 or 2003. Since then, this manufacturer has been renamed Perfect Technology with (later) the new brand name Perfect®. Since then, they have produced several new models such as the Obsidian, Star Diamond, Graphite, Star Sapphire, Beryl Plus, Carnelian, Aquamarine Athenas, Star Ruby, Carnelian II, Star Opal, Star Beryl, Citrine, Touch, and now, as the latest model (since November 2008), the 2Robot.



(Picture: Novag 2Robot by Ruud Martin – copyright 22.11.2008)



Which chess program is installed in the 2Robot?

Apparently, it is unclear to almost everyone which chess program is installed in the 2Robot. Let's take a look at my database. I came across the following 4K ROM programs (viewed from 1995) that might have a chance...

04?-1995! [A-1864] **Amethyst**
mate-7/145 book openings/take back: 32 ply/
single chip/4K Rom/768 Byte Ram/8 MHz
04?-1995! [A-1865] **Tourmaline**
63 levels/mate-7/book openings: 145 ply/take back: 32 ply/
single chip/4K Rom/768 Byte Ram/8 MHz
04?-1996! [B-1006] **Aquamarine Premier**
56 levels/take back: 32 ply/book openings: 145 ply/
single chip/4K Rom/768 Byte Ram/8 MHz
05?-1997! [A-1877] **Amethyst Plus**
119 levels/mate-7/take back: 32 ply/
single chip/4K Rom/768 Byte Ram/8 MHz
05?-1997! [B-3146] **Tourmaline Plus**
119 levels/mate-7/take back: 32 ply/
single chip/4K Rom/768 Byte Ram/8 MHz

07!-1997! [B-3116] **Aquamarine Premier Plus**
119 levels/mate-7/take back: 32 ply/
single chip/4K Rom/768 Byte Ram/8 MHz
05?-1997! [B-3161] **Jasper**
679 levels (= 119 levels?)/mate-7/take back: 32 ply/
single chip/4K Rom/768 Byte Ram/8 MHz
05?-1998! [A-1886] **Jasper Special**
679 levels (= 119 levels?)/mate-7/take back: 32 ply/
single chip/4K Rom/768 Byte Ram/8 MHz
01?-2001! [A-0663] **Granite**
119 levels/mate-7/take back: 32 ply/
single chip/4K Rom/768 Byte Ram/8 MHz
01?-2001! [A-0664] **Beryl**
119 levels/mate-7/take back: 32 ply/
single chip/4K Rom/768 Byte Ram/8 MHz
09?-2003? [C-6501] **Graphite**
119 levels/mate-7/take back: 32 ply/
single chip/4K Rom/768 Byte Ram/8 MHz

06?-2004! [A-2385] **Beryl Plus (!)**
128 levels/mate-6/take back: 25 ply/set up/verify/hint/training & coach/
LCD-display/board: 22,5 x 22,5 cm
single chip/4K Rom/768 Byte Ram/8 MHz

06?-2005! [A-6704] **Star Beryl (!)**
128 levels/mate-6/take back: 25 ply/set up/verify/hint/training & coach/
LCD-display/board: 22,5 x 22,5 cm
single chip/4K Rom/768 Byte Ram/8 MHz

My final conclusion is simple. The last two models have the most similarities. Although, of course, the other models described are also very similar.

Perfect 2Robot

Der 2Robot ist ein Schachcomputer der neuen Generation der als einziger einen robotischen Arm besitzt und somit seine Spielfiguren selbst bewegen kann. Erlernen oder verbessern Sie Ihr Schachspiel mit diesem interessanten und geduldigen Schachmeister und beobachten Sie wie er seine Spielfiguren selbst versetzt! Hauptmerkmale: Allroundgerät mit robotischem Arm für Anfänger und fortgeschrittene Spieler.

- Preis: € 139,95
- Hersteller: Perfect Technology (Novag)
- Gehäuse: Kunststoff
- Stromversorgung: Netzbetrieb (9V / 1,33 A - Zentrum Positiv)
- Adapter ist in der Verpackung Enthalten
- Gehäuse: 38 x 38 cm
- Höhe Roboterarm: 20 cm
- Spielfläche: 22,4 x 22,4 cm
- Gewicht: 1,8 kg
- Zugeingabe: Drucksensoren
- Zugausgabe: robotischer Arm und Display
- 128 programmierten Spielstufen
  - Trainings- und Turnierspiel
  - Analysestufen
  - Spielstufen zur Lösung von Mattaufgaben bis zu 6 Zügen
- Gut ablesbare LCD-Display (6-stellige, 7-Segment Anzeige)
- Rechentiefe: 12 Halbzüge
- Eröffnungrepertoire: 145 Halbzüge (?)
- Auf Wunsch können eine Vielzahl von Spezialfunktionen gewählt werden
- Nach internationalen Schachregeln programmiert mit En-Passant, Rochade und Bauernumwandlung
- Schach-, Patt und Mattansage
- Korrektur von Fehleingaben durch Zugzurücknahme (bis zu 25 Halbzüge)
- Schiedsrichter- und Trainingfunktion, sowie Zugvorschlag als aktive Hilfe für Anfänger
- Leichte Stellungseingabe und Spielstandkontrolle
- Garantie: 2 Jahre
- Verwandt: Novag Beryl Plus und Novag Star Beryl

Die LCD Anzeige

1	=	Zugfarbe	5	=	Symbol für En Passant
2	=	6-Stellige Anzeige	6	=	Symbol für Remis /Patt
3	=	Separation der Zeitanzeige	7	=	Symbol für Schach / Matt
4	=	Figurenanzeige	8	=	Symbol für geschlagene Figuren

A new chess computer always livens things up...

Luuk Hofman
Duivendrecht, 23.11.2008

Hein and Ruud,

It's great that you've handled this so thoroughly, and thank you for this flash sale. I'm not really surprised that the quality of the robots left something to be desired. But Novag needs to be careful not to shoot itself in the foot with this product. A good end product with a higher price tag is far preferable to this rush job to get it ready for Christmas. Rush job?

I believe this product was announced quite some time ago. What is your impression of the technology? I think the durability will leave something to be desired? In any case, I think it should be used in moderation. Hein, congratulations on your victory. The rating is probably around 1450 as announced (unfortunately, it is intended as a toy). Of course, I'm very curious about the robot. We'll talk about that some more. ...

Greetings,
Luuk

Rob van Son
Amsterdam, 28.11.2008

Hi Hein,

My 2Robot has now arrived in Amsterdam and I picked it up from the parcel company in Sloterdijk. Of course, I wasn't home when they delivered it. As you know, Sloterdijk is only a few minutes away by car.

It looks good, with just two tiny scratches, but that's nothing to worry about. The playing field is fine, although I initially thought that this type of material might cause bulging. We'll see...

It works great. Even though it can do less than the Adversary, it's still amazing to see how that arm lifts everything up and puts it in the right place. Calibration wasn't necessary yet. I immediately put the robot in checkmate in 23 moves...

Still, Hein, I think it's a nice design and you certainly couldn't buy one like this in the 1980s for this price. The technology has of course improved and become much cheaper than it was back then. But we already know that
from PCs.

Regards,
Rob

Novag 2Robot vs Renaissance (standard program)

The next test match was between the Novag 2Robot and the Saitek Renaissance. The Renaissance played with its built-in (i.e., non-replaceable) program. This program is identical to the Leonardo (standard), Galileo (standard), SciSys Turbo 16K, and Saitek Conquistador. I myself have played more than 100 games with it. Its rating is fairly accurately set at 1460. The Novag 2Robot has no chance of winning this game. In fact, it plays rather haphazardly. Over the years, I have played hundreds of games with all kinds of weak chess computers. I therefore give the 2Robot no more than an Elo rating of 1380!

In the game below, Renaissance played at level A6 = 60 sec./move. The 2Robot was also given the same time. Renaissance is completely winning in the endgame and can even promote a queen in two ways. But due to a very remarkable repetition of moves, this game still ends in a draw! In the analysis, I saw that Renaissance was apparently afraid that its king would be trapped by the white g-pawn advancing to g7. In this position, this is completely irrelevant, and therefore actually a program error! It immediately reminded me of the ‘Coko incident’ from 1971. A lot was written about this in the literature at the time. Coko could then checkmate in 1 move in various ways but was indecisive, and as a result, that game also ended in a draw.

Novag 2Robot vs Saitek Renaissance (standard program)

```
Novag 2Robot - Elo 1380 (Level WF1 = 60 sec/zet) - Renaissance - Elo 1460 (Lev
22.11.2008  Renaissance laat 3x zetherhaling toe!!

  1.  e2-e4   c7-c6   Caro-Kann
  2.  d2-d4   d7-d5   Caro-Kann
  3.  e4xd5   c6xd5   Caro-Kann
  4.  c2-c4  Pg8-f6   Caro-Kann\Panov-variant
  5. Pb1-c3   e7-e6
  6. Pg1-f3  Pb8-c6
  7.  c4-c5  Lf8-e7
  8. Lf1-b5  Lc8-d7
  9.   O-O    a7-a6
 10. Lb5xc6  Ld7xc6
 11. Tf1-e1  Ta8-c8
 12. Pf3-e5  Pf6-e4
 13. Pc3xe4   d5xe4
 14. Dd1-h5   g7-g6
 15. Pe5xc6  Tc8xc6
 16. Dh5-d1  Le7-f6
 17. Te1xe4  Tc6xc5
 18. Lc1-f4  Tc5-c4
 19. Lf4-e3    O-O
 20. Dd1-d3  Dd8-d5
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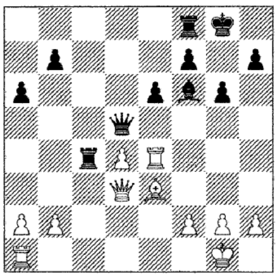
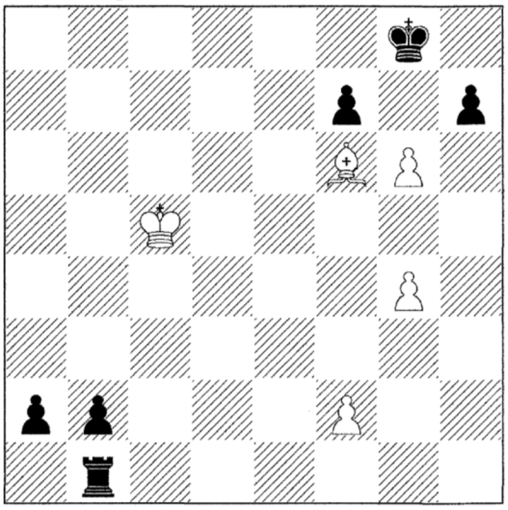


```
 21. Ta1-e1  Tf8-c8
 22. Te4-f4  Lf6-g7
 23. Tf4-e4  Tc4-c2
 24. Le3-f4  Dd5xa2
 25. Te4-e2  Da2xb2
 26. Te2xc2  Tc8xc2
 27. Lf4-e3  Db2-c3
 28. Dd3xc3  Tc2xc3
 29. Kg1-f1   a6-a5
 30. Kf1-e2   a5-a4
 31. Ke2-d2  Tc3-c8
 32. Te1-a1   b7-b5
 33.  g2-g4  Tc8-d8
 34. Kd2-c3   e6-e5
 35. Ta1-d1   e5xd4+
```

Novag 2Robot vs Saitek Renaissance (standard program)

```
36. Le3xd4   a4-a3
37. Ld4xg7  Td8xd1
38. Lg7-f6   a3-a2
39. Kc3-b4  Td1-b1+
40. Kb4-c5   b5-b4
41.  h2-h4   b4-b3
42.  h4-h5   b3-b2
43.  h5xg6
```



```
43.   ...   Tb1-c1+
44. Kc5-d5  Tc1-d1+
45. Kd5-c4  Td1-c1+
46. Kc4-d5  Tc1-d1+
47. Kd5-c4  Td1-c1+
```

En remise door een 3 voudige zetherhaling!!

A very remarkable game, in which 2Robot performed very well.
A disgrace for Renaissance due to a programming error?

(Picture: Novag 2Robot by Ruud Martin – copyright 22.11.2008)

CXG Enterprise S vs Novag 2Robot

This time, a tournament game! The Enterprise S (6301/4K Rom/128 Bytes Ram/1.78 MHz) is a chess computer from 1984 (!) with a program by Kaare Danielsen. I thought: surely the 2Robot can win that? It turned out to be an exciting game with attacks on both sides. The CXG Enterprise S (Elo approx. 1350) came out on top in the end...

CXG Enterprise S (D = 3 min/zet) - Novag 2Robot (WF6 = 3 min/zet)
23.1.2008 Wit wint in 62 zetten (mat)

```
 1.  e2-e4   e7-e5
 2.  f2-f4  Lf8-c5   Koningsgambiet\Geweigerd
 3. Pg1-f3   d7-d6   Koningsgambiet\Geweigerd
 4.  f4xe5   d6xe5
 5.  d2-d3  Lc8-g4
 6.  h2-h3  Lg4xf3
 7. Dd1xf3  Pb8-c6
 8. Pb1-c3  Pc6-d4
 9. Df3-d1  Dd8-h4+
10. Ke1-d2   O-O-O
11. Dd1-g4+ Dh4xg4
12.  h3xg4  Pg8-f6
13.  g4-g5  Pf6-e8
14. Lf1-e2  Pd4xe2
15. Kd2xe2  Pe8-d6
16. Lc1-d2   f7-f5
17.  g5xf6   g7xf6
18. Pc3-d5  Pd6-f5
19. Ke2-d1  Lc5-d4
20.  c2-c3  Ld4-c5
21.  b2-b4  Lc5-e7
22. Kd1-c2   c7-c6
23. Pd5xf6  Pf5-g3
24. Th1-h6  Th8-f8
25. Pf6-g4  Pg3-f1
26. Th6xh7  Pf1xd2
27. Th7xe7  Tf8-f4
28. Te7-g7  Pd2xe4
29.  d3xe4  Tf4xe4
30. Kc2-b3  Te4-e2
31. Ta1-g1  Td8-d2
32. Tg7-g8+ Kc8-d7
33.  a2-a4   e5-e4
34. Pg4-e5+ Kd7-e7
35. Pe5-c4  Td2-c2
36. Tg8-g7+ Ke7-f6
37. Tg7xb7  Te2xg2
38. Tg1-e1  Tg2-e2
39. Te1-d1  Te2-h2
40. Tb7xa7  Kf6-g5
41. Td1-d6  Tc2-g2
42. Ta7-g7+ Kg5-h5
43. Tg7xg2  Th2xg2
44. Td6xc6  Kh5-g5
45.  b4-b5  Tg2-g3
46.  b5-b6   e4-e3
47. Tc6-e6  Kg5-f5
48.  b6-b7  Tg3-g8
49. Te6xe3  Kf5-f4
50.  a4-a5  Tg8-b8
51.  a5-a6  Kf4-g4
52. Kb3-a3  Kg4-h5
53.  a6-a7  Tb8xb7
54.  a7-a8D Tb7-b1
55. Da8-g8  Tb1-a1+
56. Ka3-b2  Ta1-h1
57. Te3-e5+ Kh5-h4
58. Dg8-h7+ Kh4-g3
59. Dh7xh1  Kg3-g4
60. Dh1-f1  Kg4-h4
61. Df1-g1  Kh4-h3
62. Te5-h5#
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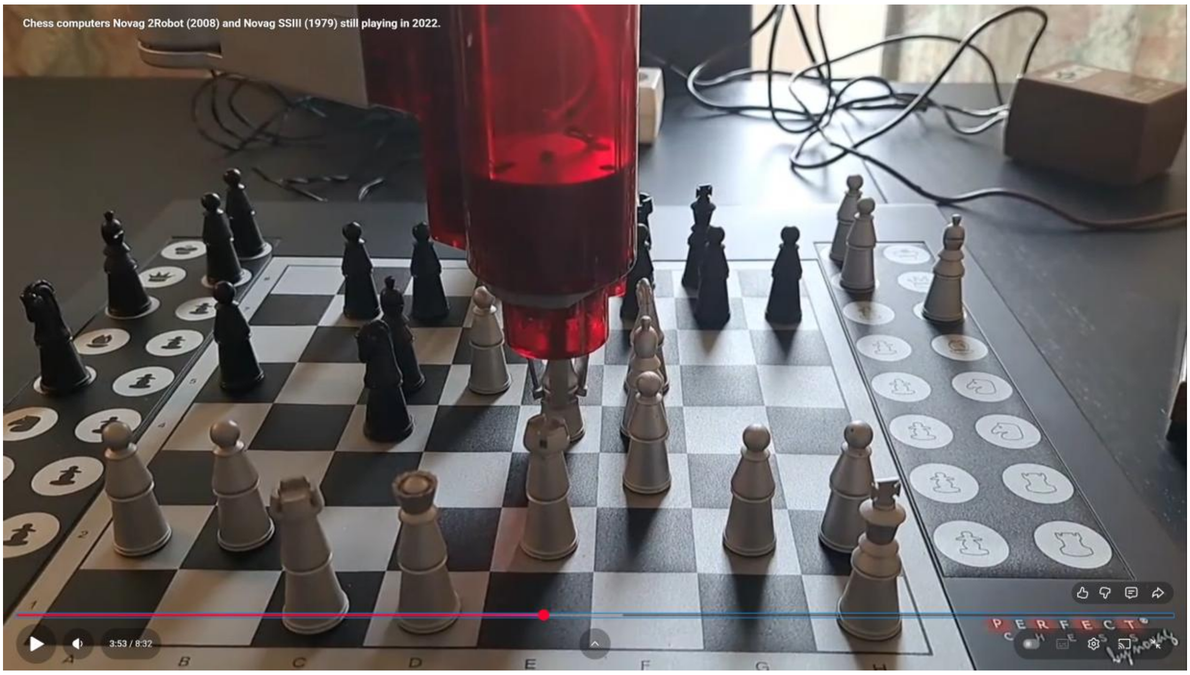

Another great video made by Rob van Son. He has the Novag 2Robot (from 2008) play a game against the Novag Chess Champion Super System III (from 1979).
https://www.youtube.com/watch?v=vEcxi_jC5l0

What to do in case of malfunctions?

All owners of a Novag 2Robot know that malfunctions occur regularly. I was told that when the 2Robot is turned on, it must first warm up. So the first five minutes do not set the robot arm in motion, otherwise the arm cannot lubricate itself properly! Too bad this important notice was never in the manual. The following recommendations can help you keep the Novag 2Robot in good condition, recognize malfunctions, and temporarily switch off the robot arm in case of faults or defects.

In case of malfunctions or error messages (arm error, crash)

Step / Action	Why
1. Stop playing immediately	Prevents further damage to the arm or motor
2. Press CLEAR immediately	Allows the arm to release the piece and try again
3. Wait 5–10 seconds after CLEAR !!	Give the robot time to respond internally
4. CLEAR not working? Turn off the robot	Avoid repeated pressing, which may exacerbate the error
5. Remove the adapter from the power strip	Ensure it is completely de-energized
6. Leave it alone overnight	This helps with internal reset and mechanical relaxation
7. Next day: plug in the adapter, turn on the robot	Start again, without any pieces on the board
8. Let it make a few moves without load	Test whether the arm moves smoothly
9. Only then, if necessary, play with pieces	Only if it works stably

Disable robot arm (emergency solution in case of malfunction or prevention)

1. Press and hold CLEAR for ±5 seconds → Display shows P I 2 0
2. Press SOUND (blue speaker icon at bottom right) 3 times → Display shows Robot with three vertical lines
3. Press TAKEBACK once → The three lines disappear
4. Press CLEAR once → Normal display appears, arm is disabled
5. You can now play chess without arm movements → The arm also remains disabled in New Game mode
6. Want to reactivate the arm? → Unplug the adapter from the power strip and plug it back in
7. Is the arm defective? → Repeat the above steps to keep it disabled

Additional tips

- **Do not use it too often: a few moves once a month is sufficient to keep it running smoothly.**
- **Listen to the motor noise: changes may indicate wear and tear.**
- **Store it in a dust-free, stable place with protection against temperature fluctuations.**

(Picture: Novag 2Robot by Ruud Martin – copyright 22.11.2008)

External Links:

https://www.chess.com/blog/chrislamuk/inside-the-novag-2robot

https://www.chess.com/blog/chrislamuk/introducing-the-3robot

https://www.theoldrobots.com/Novag2.html

https://www.theoldrobots.com/Novag.html

Programmierer / Programmer
- David Kittinger

Baujahr / Release
- Erste Einführung: 20 November 2008 (firma E. Niggemann)

Technische Daten / Technical specification
- Mikroprozessor: Single chip (H8 - 8 Bit)
- Taktfrequenz: 8 MHz
- Programmspeicher: 4 KB ROM
- Arbeitsspeicher: 768 Byte RAM

Spielstärke / Playing strength
- Hersteller / Manufacturer: Elo 1800 (USCF)
  SSDF: Elo 1450