

EA DEVELOPMENT PROJECT

Project Details	
Client:	Cornelius
Project Title:	Nanobot
Developer:	
Project Start Date:	2025.05.xx
Project End Date:	2025.05.xx
Agreed Upon Budget:	
Language	MT4
Compatible Pairs / Indices	All – the EA should be useable on any chart, pair or index.
Deliverables	• Functioning EA in MT4 • EA must function in the strategy tester • Uncompiled code (must compile without errors). • Compiled EA must be able to be uploaded to the MQL5 marketplace – an indication of robust and clean coding.
Reference Documents	Nanobot v2.0.pptx

Introduction

I would like to create an EA that, after opening of a first position, builds a system of opposite positions (as a grid) when the market goes in the wrong direction. The EA however also closes these opposite positions when the market goes back the right way, reducing the initial loss-making position piece by piece where possible.

In this system we will use pending orders to build our opposite positions. We ensure that there is never more than a small volume of open opposite positions open in the event the market again goes in right direction, so that we always can close the overall trade system (more lots on the winning side than on the losing side).

The EA is not a true grid or martingale, as it will always maintain a SL on the overall trade system.

Some terms:

- The initial position, whether a BUY or a SELL = the Anchor.
- A position placed in the opposite direction to the Anchor: Opposite Position.
- Anchor plus any other open and pending opposite positions = the Trade System / the System

This initial development will rely on a manual entry trigger, to be located on the chart and operable within the strategy tester.

This word file is accompanied by a supporting powerpoint presentation Nanobot v2.0.pptx (as pdf).

Please note: A requirement of this job is to be able to **open manual positions within the strategy tester**.

If you **cannot** do this, please provide an alternative in your job application so that the EA may operate within the tester. For example, a simple entry strategy based on the CCI indicator or price gap. I have provided two examples in the annexe that could be used.

Entry Conditions

The opening of an initial position will be done manually using controls on the chart. This functionality will be available during the strategy tester to test the system, in addition to during live trading¹.

The design of the chart controls is left to the developer, however, will have the following minimum characteristics:

- Located on the bottom right of the chart
- There will be
 - Open BUY button
 - Open SELL button
 - Close System button (to close all the open and pending positions including Anchor).
 - A field where we can input the position size.

All the positions should be related to the same magic number (the Anchor and all other pending and open positions).

Note: *there can be only one Anchor open at a time per magic number so that we cannot keep clicking to open more and more positions.*

Anchor Position Sizing

The Anchor position size is set manually by the user on the chart. Pending order sizes are defined based on the Pending order size factor (see below)

Pending Orders

Once the Anchor is opened, the EA will open several pending orders in the opposite direction. The characteristics of these pending orders are defined by the user:

- Spacing: the pending orders are opened at a distance from each other of spread + this amount.
- Sizing: the pending orders are a smaller % of the Anchor, for example 20%.
- Number: how many pending orders should be created initially, and how many pending orders should be maintained. For example: 20 are created. 3 are activated leaving 17 pending orders. Another 3 are added to the end of the system to always maintain this number. The reason is to ensure that we have enough of a “net” to catch fast price movements that go in this direction.

Note: *If the initial order / Anchor is a buy, then the pending orders will be **sell stops below** it. If the initial order / anchor is a sell, then the pending orders are **buy stops above** it.*

Initial TP and SL

The user shall define a TP level (ATR or points) for the Anchor position. The TP is used only if there are no opposite positions opened. If there are also opposite positions opened, we rely on the “Compound Profit” approach defined below.

The user shall define a SL level in % of total account size. When the total loss on the account (sum of Anchor + opposites + swap if any etc) is equal to this amount, the entire System closes at a loss. If the user selects 0%, the SL is not used. This SL % is monitored at all times by the EA.

¹ Unless an alternative method has already been agreed between the customer & developer prior to the job start.

Compound Profit

The Compound Profit is to be used when the Trade System (Anchor + open opposite orders) can be closed in profit. Normally the volume of opposite positions which are open should remain low relative to the Anchor, allowing this to eventually happen.

For this the user has defined a value for the “Compound Profit”, which is a % such as 25%. When the ROI of the system reaches this amount, the Trade System is closed in profit.

The ROI calculation is $[(\text{profitable positions} - \text{abs(losing position)}) / \text{abs(losing positions)}]$.

Swap costs or profit, if any, shall be included where applicable.

For example, assume the three following positions and their values: 70, -20, -35. The ROI calculation would be $(70 - 55) / 55 = 27\%$, therefore we can conclude that this is >25% and all three positions should be closed.

Pending & Opposite Order Management

Please see the pptx slides 4 – 8 for visual examples of this management approach.

When a pending order is activated, it is created without a SL² and without a TP. This is the same for the activation of a second pending order. So long as there are 2 or fewer opposite orders in existence, we maintain them open (unless closed by one of the previously outlined methods).

Once there are **at least three** opposite orders opened, all open opposites have their SL's unified at the level of the **2nd furthest position** from the Anchor.

Meaning that if there are 3 open opposites, #1(closest to Anchor) has a SL set to the open level of #2. When that SL is hit, all the open opposite positions are **closed together**.

If there are 10 open opposite positions, **all of the SLs** are set to the opening level of #9. When that SL is hit, all the opposite positions are **closed together**.

Once this happens, the EA will tally how much profit has been made from the operation (all of the positive and negative values of the closed positions including swap). Using only this profit, the EA will close down as much of the Anchor position as it can, if any. If the profit made is too small, the EA retains the information until the next time (or until the system is closed).

Example:

A total of 3 opposite positions are closed with a total profit of \$0.50, however the value of the Anchor is \$1.00 / 0.01 lot, therefore nothing happens and the EA remembers that the 0.50 are “on hold”. Soon thereafter the EA closes 5 opposite orders with a total profit of \$6.50. There are therefore \$7.00 (0.50 + 6.50) available to close out 0.07 lots of the original anchor position.

If instead the Trade System closes via the “compound profit” method while the 0.50 are “on hold”, the data is erased and we prepare for the next position open.

² Here we are discussing the SL on the individual position, the overall SL % on the entire Trade System, as selected by the user, is still being used.

After the closing of the open opposite orders, the EA will reset all of the pending orders and management continues as it did before. The new pending orders will take into account the potential new volume of the Anchor.

For example: the initial Anchor is 1.00 lots and the opposite orders are 0.20 lots (20%). After closing some opposite orders the EA is able to reduce the Anchor to 0.60 lots. The EA resets the pending orders to $0.60 \times 20\% = 0.12$ lots.

Please see the pptx slide 9 for a visual example of reset of the pending orders.

Flexible Pending Order Management

Using the system as described so far, we can easily imagine a situation where we open a buy, the market turns to the sell side (opening and closing the opposite orders on the way), however begins to range between the open of the buy and the SL (and other pending orders). Theoretically the position could be frozen here for a long time, generating swap and generally being annoying.

In the scenario where we start to range, we would like the opportunity to be able to restore pending orders, to potentially profit from them repeatedly and over time whittle down the initial position.

Please see the pptx slides 10 - 15 for a visual example of the flexible pending orders.

On slide 10 we see that instead of triggering the next downward level, in fact price has gone up immediately after closing out the batch of opposite orders, leaving room for the pending orders to be restored behind the price as it climbs. We use the same level definitions as already exist (spread + x).

Recall that the distance between the different levels is defined as (spread + x).

When the gap between the price and the closest pending order is $2 * (\text{spread} + x)$, we add in a new pending order at (spread + x) (the green box that says "added" -> compare to the previous slide).

Note that this flexible functionality only works if there are **no open opposite orders** (pending orders notwithstanding).

On slides 10 and 11 we see that new pending orders are added as price rises. On slide 12 price falls enough to trigger one of the pending orders, however then continues again upwards (slide 13). As there is now one open opposite order, we no longer fill in additional pending orders (unless it closes and the condition is again valid).

Required Inputs

- Magic number 15151
- Pending order spacing (points) 10
- Pending order size factor 20%
- Pending order number 20
- SL% 2%
- TP points 100 (0 not used)
- TP ATR 21 (0 not used)
- Compound Profit 25%

Annexe 1 Gap Open

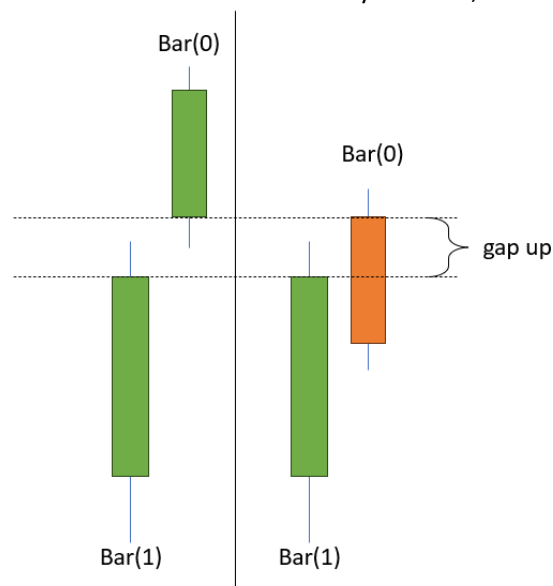
Identifying Price Gaps

A gap will be identified when there is a discontinuity in price between the close of one bar and the open of the next, of some minimum distance defined by the user. The user defined distance will be as a multiple of ATR, making it a dynamic value. (e.g. the gap must be at least $\times 1.0$ or $\times 1.5$ or $\times 0.25$ ATR).

The user will define the value “Gap Open ATR Multiple”, which will default to 0.5.

The gap value is calculated only on open of a new bar (bar(0)). The ATR value used will be the ATR at the close of the previous bar (close of bar (1)).

The figure below gives an example for a gap up. In both cases the open of bar(0) is some amount above the close of bar(1). If this distance is $\geq$ the amount determined by the user, it will be considered an entry flag.



Opening Positions

BUY Positions

- A BUY signal is received after a gap down, where the difference in price is $\geq$ to the distance defined by the user.

SELL Positions

- A SELL signal is received after a gap up, where the difference in price is $\geq$ to the distance defined by the user.

We anticipate that the price will “fade” back towards the point from which it gapped.

Annexe 2 CCI & SMA Open

Entry Conditions

The open signal for this strategy will be based on the CCI indicator. We are looking for a directional confirmation of an overbought or oversold condition.

This will be detected first when the CCI level of the previous bar (n-1) has passed some fixed level (e.g. 150 for BUY and -150 for SELL) and confirmed by an increase in volume over the past bars (volume n-1 > volume n-2). The entry is further filtered by a fast and slow SMA (50, 200). A position will only be opened when the fast MA is above the slow, and increasing (for a BUY). It will be the opposite for a SELL.

Example BUY logic

- IF (CCI (n-1) > 150) AND
- (Volume (n-1) > Volume (n-2)) AND
- (Fast MA (n-1) > Fast MA (n-2)) AND
- (Fast MA (n-1) > Slow MA (n-1))
- Open